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Development of Learning Evaluation Instruments to Measure Creative Thinking Skills in The Reproductive System Concept

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Abstract

The passage highlights the significance of creative thinking skills as an essential component of 21st-century education, alongside critical thinking, collaboration, and communication skills, collectively known as the 4Cs. The research aims to develop evaluation instruments to enhance students' creative thinking skills in reproductive system material. This topic involves contextual health content, requiring creative thinking to address it. The four indicators for creative thinking skills include fluency, flexibility, originality, and elaboration. The research and development (R&D) method is employed in this developmental study. The passage describes the process of creating 10 open-ended questions based on curriculum achievements, followed by validation by experts and a final stage of testing the questions on 40 ninth-grade science students at MAN 2 of Bandung. The results indicate that one question was accepted without revisions, six questions were accepted with revisions, and three questions were rejected. The reliability of the questions reached a score of 0.73, categorized as high, meaning the questions consistently provided similar measurement results. The students' answers to the evaluation questions require creative thinking skills, indicating that these questions effectively train those skills.

Keywords: Creative Thinking Skill, Development, Learning Evaluation Instrument, Reproductive System.

INTRODUCTION

Creative thinking skills are one of the educational demands in the 21st century that students must master, along with critical thinking, collaboration, and communication skills. These four skills are known as the 4Cs: critical thinking, collaboration, creativity, and communication skills (Zahroh & Yuliani, 2021). It is essential to cultivate students' creative thinking abilities, considering the evolving challenges of the future and the increasingly competitive environment. Students are expected not only to possess skills in understanding specific fields of knowledge but also to exhibit creativity in developing those fields (Sugestiana, 2014). Therefore, creative thinking skills are need to be integrated into every school lesson, including biology lessons on the reproductive system.

Examining its characteristics, the reproductive system is a fundamental concept closely related to daily life. Learning the reproductive system has implications for students' awareness of maintaining the health of reproductive organs and proper sexual education. The human reproductive system discusses processes that occur in the body and cannot be observed directly (Sapitri & Ridlo, 2021). Some content within the reproductive system is concrete and tangible, such as the organs involved. However, physiological content like gametogenesis, fertilization, menstruation, pregnancy, and disorders in the reproductive system is abstract and complex. Additionally, the presence of

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numerous scientific terms may hinder students' concept construction (Laksmi et al., 2022; Rahmawati et al., 2018; Wahyuni et al., 2019).

Based on the characteristics of the reproductive system material mentioned above, several studies propose teaching strategies for this content. Illustrative visuals are seen to be vital for transforming abstract physiological reproductive knowledge into a more tangible form with the help of students' creative and imaginative thinking (Reiss & Winterbottom, 2023). Additionally, since the material cannot be directly observed, a better understanding can be achieved through problem-solving observation activities (Novitasari et al., 2020; Sapitri & Ridlo, 2021). Student learning outcomes by problem solving are also better compared to problem based learning model in this material (Listianti et al., 2017). Engaging in problem-solving observation activities not only demands critical thinking skills but also necessitates creative thinking skills to address identified issues. This aligns with the assertion that scientific problem-solving through the inquiry process requires creative thinking as a fundamental ability (Lederman et al., 2013). Problem-solving involves creative thinking skills that combine logical and divergent thinking. In other words, understanding and resolving problems can be approached through diverse methods, ways, and strategies by creativities.

Furthermore, evaluation strategies applicable to reproductive system learning include the use of open-ended questions and two-tier questions (Sorgo & Siling, 2017). The elaboration of these two strategies supports the idea that creative thinking skills can thrive not only in the learning process but also in the evaluation of learning, given the demands of the material's characteristics. This is particularly reinforced by the fact that the scope of reproductive system issues is considered complex, as it intertwines biology on both individual and social levels. Moreover, high school students are adolescence, a period where one begins to wonder regarding several phenomena that occur in surrounding environment and body as their reprodutive system (Chodzirin, 2019).

Various studies on the development of evaluation instruments in the reproductive system have been conducted. The evaluations developed include multiple-choice questions and three-tier questions (Magfurin & Kiswardianta, 2019; Nila Wati, 2020). Integrated competencies encompass science literacy (Rozianti, 2023) and cognitive/critical thinking based on Bloom's taxonomy (Taufiq, 2015). Furthermore, the incorporation of Quran verses on reproductive system material into evaluation instrument content has also been implemented (Jenny, 2021). Yet, a search for the development of evaluation instruments in the form of open-ended questions specifically designed to cultivate students' creative thinking skills has yielded no results. Open-ended questions permit respondents to create a much more diverse set of answers compared to closed-ended questions. It is well established that open-ended questions are advantageous because researchers can collect rich and detailed information from respondents (Schmidt et al., 2020). Creative thinking skills are undeniably crucial for addressing contextual problems within reproductive system material. Therefore, the earlier consideration underscores the necessity of creating evaluation instruments to nurture students' creative thinking skills in the realm of the reproductive system. As a result, this research aims to develop an evaluation instrument to enhance students' creative thinking skills in reproductive system material.

RESEARCH METHODS

The method in this research was conducted through the research and development (R&D) approach, intending to generate a new product and assess its effectiveness. The development stages with the

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R&D method referred to Borg & Gall's model (1983), which had been modified according to the research needs, including:

(1) Research and information collecting: Examining the information of learning objectives, learning indicator and evaluation based on the 2013 curriculum and Merdeka curriculum,
(2) Planning: planning involved developing the matrix of evaluation instruments to be use
(3) Developing a preliminary form of the product: creating the evaluation question instruments
(4) Preliminary field testing: developed questions tested on 40 ninth-grade science students
(5) Main product revision: the revision of questions after testing and analyzing item.

The initial stage encompassed curriculum analysis and a thorough literature review. In the subsequent phase, the instrument blueprint was crafted. The third stage involved the creation of 10 open-ended questions focused on the reproductive system based on creative thinking indicators, followed by expert validation. The indicators for evaluating creative thinking skills in reproductive system material are detailed in Table 1.

Table 1. The creative thinking indicators

Indicators	Sub indicators
Fluency	1.a. Skills in creating ideas, answers, solving problems or questions
	1.b. Skills in providing ways or suggestions
	1.c. Skills in thinking of alternative answers
Flexibility	2.a. Skills in producing varied ideas, answers or questions
	2.b. Skills in observing problems from different perspectives
	2.c. Skills in finding many different alternatives
	2.d. Skills in ways of approach or way of thinking
Originality	3.a. Ability to create new and unique ideas
	3.b. Ability to combine
Elaboration	4.a. Skills in enriching or developing ideas
	4.b. Skills in adding or detailing the details of an object

Source: Torrance, 2003.

Subsequently, the validated questions are examined to 40 eleventh-grade students at MAN 2 Bandung. The results of the test questions were analyzed for item discrimination, difficulty level, significance, and reliability using Anates. The analysis of item characteristics determines whether the developed questions are accepted or rejected. The acceptance criteria for questions are met if the item discrimination, difficulty level, and significance are ≥ 0.40. The final stage involves revisions based on the test results.

RESULT AND DISCUSSION

The research results of this development are categorized into five stages of the R&D design: (1) research and information collecting, (2) planning, (3) developing a preliminary form of the product, (4) preliminary field testing, and (5) main product revision.

Research and Information Collecting

In the initial stage of this research and development, data collection and analysis were conducted. Examining the information based on two curricula, namely the 2013 curriculum and the Merdeka curriculum, the learning objectives obtained are listed in Table 2.

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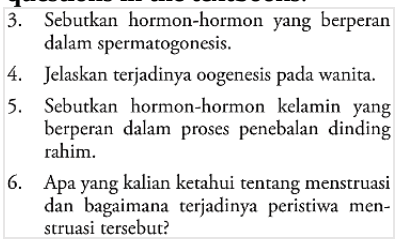
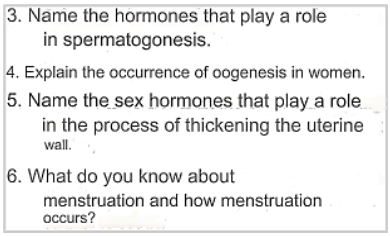
Table 2. Comparison of Learning Objectives in 2013 Curriculum and Merdeka

Learning Objectives for the Reproductive System in 2013 Curriculum
Analyzing the relationship between the structure of reproductive organ tissues and their functions in the human reproductive system, including processes such as gamete formation, ovulation, menstruation, breastfeeding, technology in the reproductive system, and disorders and diseases occurring in the human reproductive system.

Example of item questions in the textbooks:



3. Sebutkan hormon-hormon yang berperan dalam spermatogonesis.
4. Jelaskan terjadinya oogenesis pada wanita.
5. Sebutkan hormon-hormon kelamin yang berperan dalam proses penebalan dinding rahim.
6. Apa yang kalian ketahui tentang menstruasi dan bagaimana terjadinya peristiwa menstruasi tersebut?



3. Name the hormones that play a role in spermatogonesis.
4. Explain the occurrence of oogenesis in women.
5. Name the sex hormones that play a role in the process of thickening the uterine wall.
6. What do you know about menstruation and how menstruation occurs?

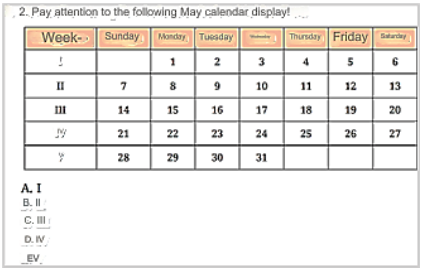
Learning Objectives for the Reproductive System in Merdeka Curriculum
Analyzing the interdependence of roles among organ systems in the process of hormone function and reproduction in the human body; and investigating phenomena related to the hormonal processes in human reproduction along with their abnormalities

Example of item question in the textbooks:

2. Perhatikan tampilan kalender bulan Mei berikut!

Minggu ke-	Minggu	Senin	Selasa	Rabu	Kamis	Jumat	Sabtu
I		1	2	3	4	5	6
II	7	8	9	10	11	12	13
III	14	15	16	17	18	19	20
IV	21	22	23	24	25	26	27
V	28	29	30	31			

A. I
B. II
C. III
D. IV
E. V



2. Pay attention to the following May calendar display!

Week-	Sunday	Monday	Tuesday		Thursday	Friday	
I		1	2	3	4	5	6
II	7	8	9	10	11	12	13
III	14	15	16	17	18	19	20
IV	21	22	23	24	25	26	27
V	28	29	30	31			

A. I
B. II
C. III
D. IV
E. V

Sources: Solihat et al., 2022; Widiyati et al., 2009.

There is a similarity in the learning objectives between the Curriculum 2013 and the Merdeka curriculum, as both aim to interconnect organs with their physiological functions. However, the Merdeka curriculum takes a broader approach, extending this interconnection beyond the physiological aspects of the reproductive system to include the hormonal system. Consequently, the Merdeka curriculum exhibits a clearer integration among various systems within the human body. Meanwhile, significant differences exist in the evaluation questions presented in the textbooks for Curriculum 2013 and the Merdeka curriculum. The Curriculum 2013 handbook contains questions that only test students' memorization (C1-C2 in Bloom's taxonomy) (Widiyati et al., 2009). In contrast, the Merdeka curriculum textbook includes questions that require higher-order thinking skills such as analysis and prediction (C4-C6) (Solihat et al., 2022). Nonetheless, incomplete instructional questions persist in the evaluation queries. In response to the information collected and analyzed, this research is designed to address the needs of both the Curriculum 2013 and the Merdeka curriculum, aiming to provide questions that effectively train students' creative thinking skills.

Planning

The second stage is Planning. In this stage, the planning involves developing the matrix of evaluation instruments to be used. There are four indicators of creative thinking skills that will be examined in this study. The number of comparisons for these indicators is adjusted based on the

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content of the reproductive system material. The matrix of evaluation instruments is provided in Table 3.

Table 3. Evaluation Question Instrument Grid

No.	Indicator	Number	Assessment Criteria
1.	Fluency	1, 10, 2	0: For blank answer, do not provide any relevant idea to problem solving 1: Provide a relevant idea to problem solving but less clearly 2: Provide a relevant idea to problem solving by completely and clearly 3: Provide more than one relevant idea to problem solving by completely and clearly
2.	Flexibility	3, 4, 5	0: For blank answer, do not provide answer in one way 1: Provide only one way to give an answer and wrong results. 2: Provide only one way to give an answer and the results are correct. 3: Provide answers in more than one way (various) and the results are correct
3.	Originality	6	0: For blank answers, do not provide any answer in its own way 1: Provide answers in its own way but cannot be understood. 2: Provide answers in its own way and appropriate. 3: Provide answers in its own way, appropriate and unique
4.	Elaboration	7, 8, 9	0: For blank answers, do not provide any detailed answer 1: Provide answer in deeper meaning but do not taking detailed steps 2: Provide answer in deeper meaning and take detailed steps 3: Provide answer in deeper meaning by detailed steps, developing, enriching an idea

Developing a Preliminary Form of the Product

The third stage is Development, which involves creating the evaluation question instruments. Ten open-ended questions have been developed with indicators of creative thinking skills. The questions have been through a validation process by 2 experts and was declared suitable for testing. The developed evaluation question instruments were then tested by students. However, similar research on the development of evaluation instruments only includes validation by experts (Jenny, 2021). The evaluation question instruments resulting from the development are attached in Table 4.

Preliminary Field Testing

There were 10 questions tested on 40 ninth-grade science students at MAN 2 of Bandung. The trial questions had undergone the revision and validation processes by expert lecturers. The maximum score for these questions is 30 points. The instrument analysis using Anates revealed an average score of 22.38 points. The profile analysis of other item characteristics is presented in Table 4.

Table 4. Results of Student Trial Analysis

No.	Item Discrimination	Level of Difficulty	Sig. Correlation	Interpretation
1.	18,18	Moderate	0,427	Accepted with revision
2.	15,91	Moderate	0,547	Accepted with revision
3.	13,64	Moderate	0,263	Rejected, not suitable for use
4.	18,18	Moderate	0,442	Accepted with revision
5.	13,64	Moderate	0,362	Rejected, not suitable for use
6.	20,45	Moderate	0,509	Accepted with revision
7.	27,27	Moderate	0,574	Accepted with revision
8.	40,91	Moderate	0,715	Suitable for use
9.	18,18	Moderate	0,448	Accepted with revision
10.	11,36	Moderate	0,376	Rejected, not suitable for use

The trial results presented in Table 4 indicate that 1 question is accepted and suitable for use, 6 questions are accepted with revisions, and 3 other questions are rejected. The reliability of these questions reaches a score of 0.73, categorized as high, meaning the questions exhibit high

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consistency in providing the same measurement results repeatedly. However, this value is lower than in other studies that achieved reliability scores of 0.91 and 0.86, categorized as very high. This difference is attributed to the larger number of questions tested (40 questions), as the likelihood of variability increases with more questions (Magfurin & Kiswardianta, 2019; Shima, 2018). Nevertheless, Taufiq's study (2015) also achieved a reliability score of 0.71. Despite this, the developed evaluation question instruments are still deemed reliable for repeated testing.
There are seven development questions that are acceptable, meaning only three questions (30%) are rejected. The rejection criteria include not meeting the basic requirements of question eligibility, specifically if the item discrimination and correlation significance are below 0.40. Several other development research studies have also yielded 10–30% of evaluation question instruments deemed unfit for use (Jenny, 2021; Magfurin & Kiswardianta, 2019; Nila Wati, 2020; Taufiq, 2015). The accepted questions can be used by biology educators at the XI level to train students' creative thinking skills in reproductive system material.

Main Product Revision

The final stage is the revision of the six questions accepted with revisions. Meanwhile, the three rejected questions are not used at all. In the end, this developmental research resulted in seven evaluation questions that enhance students' creative thinking skills in the reproductive system materil. The seven final questions from this development research can be adapted and used to measure creative thinking skills in reproductive system concept of Biology subject at level 11 high school. Questions that can be used are shown in table 5.

Table 5. Questions Resulting from R&D research

Questions	Answer Keys
Indicator: Fluency	
1. A husband and wife who have only been married for about 5 years are blessed with 4 children. The wife plans to carry out a program to avoid getting pregnant again. Her husband also supported her decision. In your opinion, what program is suitable to minimize the occurrence of pregnancy? Give a statement!	A suitable program to minimize the occurrence of pregnancy for the husband and wife in this scenario would be **a long-term contraceptive method**, such as: (1) Intrauterine Device (**IUD**): An IUD is a highly effective contraceptive method that is inserted into the uterus. It provides long-term protection against pregnancy for several years. (2) **Sterilization**: Either the husband or the wife can opt for sterilization, which is a permanent form of contraception. **Both** options offer effective means to minimize the risk of future pregnancies without requiring daily attention or active intervention during sexual intercourse. However, it's important to discuss with a healthcare provider to ensure they choose the best method that suits their health, preferences, and future family planning.
2. When fertilization occurs, the sperm produced by the testicles then exits the urethra, enters the vagina then travels to the egg cells in the fallopian tubes. On average, sperm can travel 2.5 cm every 15 minutes. The occurrence of this cannot be separated from the function of the semen. What is the function of semen? What organ produces semen, and what will happen if the organ is damaged?	Semen plays several crucial roles in the process of fertilization and reproduction. Here are its primary functions: (1) **Transport Medium**: Semen provides a fluid medium that helps sperm to move more effectively through the female reproductive tract towards the egg. (2) **Nutrient Source**: Semen provides nutrients and energy sources for sperm, helping to sustain their viability and motility during their journey towards the egg. (3) **Protection**: Semen contains substances that protect sperm from the acidic environment of the female reproductive tract, increasing their chances of survival and reaching the egg. (4) **Alkaline Buffer**: Semen helps to neutralize the acidic environment of the female reproductive tract, creating a more hospitable environment for sperm to survive and fertilize the egg. **Semen is produced** by the male reproductive organs, primarily the seminal vesicles, prostate gland, and bulbourethral glands (Cowper's glands). If any of these **organs are damaged** or malfunctioning, it can significantly affect semen production and quality, leading to various reproductive issues, including infertility. Damage to the prostate gland, for example, can result in decreased semen volume or alterations in its composition, affecting sperm motility and viability. Damage to

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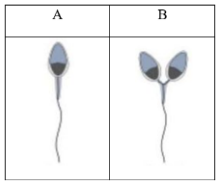
Questions	Answer Keys
	the seminal vesicles or bulbourethral glands can also impair semen production and its ability to support sperm function. **In severe cases**, damage to these organs may lead to complete cessation of semen production or ejaculatory dysfunction.
Indicator: Flexibility	
4. There are two cases of pregnancy in mother A and mother B with the following medical record categories: Mother A: Experienced morning sickness, sensitive to various food odors, experienced pain in the breasts, experienced stomach contractions, slight spotting, and frequent urination Mother B: Excessive morning sickness, high blood pressure, fatigue and excessive weakness, heavy bleeding. Based on the 2 cases above, which case shows a normal pregnancy condition? And how do you maintain a healthy pregnancy?	**Based on the medical records provided**: Mother A symptoms are generally considered normal in a healthy pregnancy. Mother B symptoms could indicate complications or underlying health issues that may require medical attention. **Therefore**, Mother A's case appears to show a more typical or normal pregnancy condition compared to Mother B's case. To maintain a healthy pregnancy, here are some general guidelines: 1. **Regular Prenatal Care**: Attend all scheduled prenatal appointments with health care for monitoring of the mother's health and the baby's development, and it provides an opportunity to address any concerns or complications early. 2. **Healthy Diet**: Eat a balanced diet rich in fruits, vegetables, whole grains, lean proteins, and dairy products. Avoid alcohol, smoking, drugs, limit caffeine intake. 3. **Regular Exercise**: Engage in regular, moderate exercise as recommended by a healthcare to improve mood, energy levels, overall well-being during pregnancy. 4. **Adequate Rest**: Get plenty of rest and sleep. Take breaks when needed. 5. **Prenatal Vitamins**: Take prenatal vitamins as prescribed by a healthcare. Ensure that both the mother and baby receive essential nutrients for optimal health. 6. **Stay Hydrated**: Drink plenty of water throughout the day to stay hydrated. 7. **Avoid Harmful Substances and stress**: Avoid exposure to harmful substances such as chemicals, certain medications, and environmental toxins. Practice stress-reducing techniques such as relaxation exercises, meditation, or prenatal yoga. 8. **Educate Yourself and seek support**: Learn about pregnancy, childbirth, and newborn care. Attend childbirth classes and seek information from reliable sources. Surround yourself with a supportive network of family, friends, and healthcare providers. Don't hesitate to reach out for help or support when needed.
Indicator: Originality	
6. There are 2 sperm results in the following picture:  Based on picture A and picture B, which picture do you think is normal sperm, and which picture is abnormal sperm? And explain how the reproductive ability of abnormal sperm works	In a typical semen analysis, sperm morphology is one of the parameters assessed to evaluate the health and quality of sperm. **Normal sperm** typically have an oval-shaped head, a midpiece containing mitochondria for energy production, and a long tail (flagellum) for motility. **Abnormal sperm** may have various defects, such as a misshapen head, a bent or coiled tail, or multiple heads or tails. Based on the morphology picture A is a normal sperm and picture B is abnormal sperm. These abnormalities can affect sperm motility and their ability to penetrate and fertilize the egg, resulting in decreased fertility or infertility. **Reproductive ability** of abnormal sperm can vary depending on the extent and type of abnormalities present. Some abnormal sperm may still be capable of fertilizing an egg, albeit with reduced efficiency. **It is best to consult with a healthcare** provider or a fertility specialist who can provide personalized guidance and recommendations based on individual circumstances of sperm analysis results or fertility concerns,
Indicator: Elaboration	
7. The process of fertilization or fertilization occurs due to the meeting of egg cells and sperm cells to unite so that they can then form a zygote which then develops into an embryo as the embryo of the fetus. However,	**If the mature egg cell is not fertilized** by sperm during the process of fertilization, several things will occur: 1. **Degradation of the Egg Cell**: The unfertilized egg cell will eventually undergo a process called degeneration or apoptosis. This is a natural mechanism by which the egg cell breaks down and is reabsorbed by the body. 2. **Menstruation**: the thickened uterine lining that developed in anticipation of implantation and pregnancy is no longer needed. This lining, along with any

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Questions	Answer Keys
what will happen if the mature egg cell is not fertilized by sperm? Describe your answer!	unfertilized egg cells, is shed during menstruation. 3. **Hormonal Changes**: The absence of fertilization triggers hormonal changes in the female body. Levels of progesterone and estrogen, which are hormones involved in regulating the menstrual cycle and supporting pregnancy, decrease. This drop in hormone levels signals the body to begin the process of menstruation and prepares for the start of a new menstrual cycle. 4. **Preparation for the Next Cycle**: After menstruation, the ovaries begin to develop and mature new egg cells in preparation for ovulation in the next menstrual cycle. The reproductive system continues its cyclic pattern of egg maturation, ovulation, and preparation for potential pregnancy. **Overall**, if the mature egg cell is not fertilized, the body undergoes natural processes to eliminate the unfertilized egg cell and prepare for the possibility of a new reproductive cycle. This is a normal part of the female reproductive system's, ensuring that the body remains capable of conceiving a pregnancy in future cycles.
8. A newborn baby is not allowed to eat hard food, the food for babies from 0-6 months is breast milk. Breast milk is removed from the mother's breasts gradually. What is the process of forming breast milk in the mother's body? What hormones play a role in the process of producing breast milk? Explain!	The process of forming breast milk in a mother's body is known as lactation, a complex physiological process regulated by hormones. Here is an overview of the key steps in the production of breast milk and the hormones that play a role: 1. **Stimulation**: either through breastfeeding, nipple stimulation, or breast pumping triggers the release of hormones that signal the body to start producing milk. 2. **Prolactin**: the primary hormone responsible for milk production. Produced by the anterior pituitary gland in response to stimulation of breast tissue. Prolactin stimulates the alveolar cells in the mammary glands of the breasts to produce milk. 3. **Milk Synthesis**: Once stimulated by prolactin, the alveolar cells begin synthesizing milk from nutrients in the bloodstream, including proteins, fats, carbohydrates, vitamins, and minerals. These components are then secreted into small sacs called alveoli, where they combine to form breast milk. 4. **Oxytocin**: another hormone produced by the hypothalamus and released by the posterior pituitary gland in response to stimulation. Oxytocin causes the muscles surrounding the alveoli to contract, facilitating the ejection or let-down of milk from the alveoli into the milk ducts, making it available for the baby to feed. 5. **Feedback Mechanism**: The production of breast milk is regulated by a feedback mechanism involving both prolactin and oxytocin. As the baby feeds and removes milk from the breasts, nerve signals from the nipple stimulate the release of prolactin and oxytocin, promoting continued milk production and ensuring an adequate milk supply for the baby's needs. **Overall**, the process of forming breast milk involves the coordinated action of multiple hormones, primarily prolactin and oxytocin. Ensures that mothers can provide nourishing milk to their babies to support their growth and development.
9. Breast milk contains almost all the nutrients needed by babies with a composition that suits the baby's needs. Apart from providing adequate nutrition for babies, what are the other benefits of breast milk for babies?	Breast milk offers numerous benefits beyond providing essential nutrition for babies. Here are some additional benefits of breastfeeding: 1. **Immune Protection**: Breast milk contains antibodies, immune factors, and white blood cells that help protect babies from infections and illnesses. 2. **Optimal Growth and Development**: Breast milk is perfectly formulated to meet the nutritional needs of infants, providing the right balance of proteins, fats, carbohydrates, vitamins, and minerals for healthy growth and development. 3. **Digestive Health**: Breast milk is easily digestible and gentle on the baby's immature digestive system. It helps promote the growth of beneficial bacteria in the baby's gut, reduces the risk of digestive problems: constipation, diarrhea, colic. 4. **Brain Development**: essential fatty acids: DHA (docosahexaenoic acid), crucial for brain development and cognitive function. Studies told breastfed may get better cognitive development and higher IQ scores compared to formula-fed babies. 5. **Bonding and Emotional Connection**: Breastfeeding promotes close physical contact and bonding between the mother and baby, fostering a strong emotional connection, sense of security and emotional well-being for the baby and mother. 6. **Reduced Risk of Chronic Diseases**: Breastfeeding has been associated with a

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Questions	Answer Keys
	lower risk of developing chronic diseases later in life, such as obesity, type 2 diabetes, asthma, allergies, and certain types of cancer. 7. **Convenience and Cost Savings**: as it is always available at the right temperature and requires no preparation or cleanup. It saves parents time and money to purchasing formula and feeding supplies. **Overall**, breastfeeding provides numerous health benefits for both babies and mothers, supporting optimal growth, development, and well-being during infancy.

The results of this development research above will impact the development of science and learning practices especially in evaluation process. Evaluation in learning aims to determine the effectiveness and efficiency of the learning system as a whole. The learning system in question includes objectives, materials, methods, media, learning resources, environment, and the assessment system itself. Furthermore, learning evaluation also aims to evaluate the effectiveness of learning strategies and improve the effectiveness of curriculum programs. Assess and identify student strengths and weaknesses, and provide data to inform decision making (Asrul et al., 2022; Suardipa & Primayana, 2023). The importance of evaluation as part of learning implies the results of this research to be used in increasing the effectiveness of learning that targets creative thinking skills.

CONCLUSION

Creative thinking instruments for the reproductive system material were developed based on flexibility, originality, elaboration, and fluency indicators. Based on expert validation, the instruments are suitable for trial. However, trial results indicate that only 7 evaluation questions (70%) were accepted, with 1 question deemed suitable for use and 6 questions requiring revision. Meanwhile, 3 other questions were rejected. The reliability reached a score of 0.73, categorized as high. The seven final questions from this development research can be adapted and used to measure creative thinking skills in reproductive system concept of Biology subject at level 11 high school.

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