

## Elementary School Teachers Perceptions toward Teaching Reproductive Material as Part of Science Education in Elementary Schools

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**Abstract:** Teaching reproductive education at the elementary school level remains a sensitive issue, balancing the need to prevent sexual abuse through proper knowledge with concerns about social, religious, and cultural norms. This study aims to explore the perceptions of prospective elementary school teachers in Gorontalo regarding reproductive content in science education. Using a descriptive quantitative design, data were collected from 60 respondents through a closed-ended questionnaire. The findings show that while most respondents opposed teaching reproductive material at the elementary level due to moral and cultural concerns, many were not against the content itself but rather the method of delivery and the consideration of children's maturity. This suggests that reproductive education could be implemented if presented through contextual and values-based approaches, such as moral-educational narratives. The study highlights both the sensitivity of the topic and the potential pathways for its gradual and culturally aligned integration into science education.

**Keywords:** Elementary School Science; Reproductive Education; Sensitive Learning; Social Norms; Teacher Perception.

### Introduction

The Natural Sciences subject in elementary schools is not only intended to equip students with factual and conceptual knowledge about the natural environment, but also to foster scientific awareness of their own bodies and personal health. [1,2]. One important yet sensitive topic is the human reproductive system, introduced in a limited scope in Grades 5 and 6 under both the Merdeka Curriculum and the 2013 Curriculum [3,4].

At the same time, Indonesian children, including those at the elementary level, face increasing vulnerability to sexual harassment and abuse [5,6]. Such cases often stem from a lack of understanding about body functions, personal boundaries, and self-protection [7]. In this regard, teaching the reproductive system can serve as a preventive strategy if delivered scientifically and adapted to students' developmental stages [8].

Nevertheless, the integration of reproductive material often encounters resistance rooted in social and cultural values. For many communities and educators, openly discussing body parts remains taboo [9], which may affect teachers' delivery or even result in avoidance. This tension between curricular demands and socio-cultural constraints underscores the importance of examining teacher readiness, particularly among pre-service teachers who will soon enter the classroom.

Recent research also highlights similar tensions globally and nationally. School-based sexual and reproductive health education at the primary level can effectively reduce misconceptions and foster healthy attitudes, provided it is designed to be culturally sensitive and age-appropriate [10]. Reproductive education programs such as SETARA improved adolescents' knowledge and attitudes, though their implementation in schools remains

fragmented and often hindered by socio-cultural constraints [11]. These findings underscore the importance of understanding teachers' perceptions as a key determinant of how sensitive content can be effectively integrated into classroom science.

While reproductive education has been widely debated, limited research has explored the perceptions of prospective elementary school teachers in Gorontalo, a region with strong socio-cultural norms. Understanding their views is crucial to identifying how reproductive material can be taught in ways that are both scientifically accurate and culturally appropriate. This study, therefore, examines pre-service teachers' perceptions regarding the importance of reproductive education, their attitudes toward biological terminology, and their preferred strategies or boundaries for classroom delivery. The findings are expected to provide insights for curriculum development, teacher preparation, and strengthening science pedagogy that is responsive to both scientific and socio-cultural challenges.

### Research Methods

This study employs a quantitative approach, utilising a descriptive research design that incorporates both quantitative description and thematic analysis to capture respondents' perspectives. This approach was chosen to objectively describe the perceptions of prospective elementary school teachers in Gorontalo regarding the teaching of reproductive material as part of science education in elementary schools. Data were collected through a questionnaire distributed to 60 students of the Madrasah Ibtidaiyah Teacher Education Program at IAIN Sultan Amai Gorontalo Class of 2023. The entire relevant population was included as respondents using a total

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sampling technique, given the limited number and the fact that all met the participation criteria.

The instrument used in this study was a questionnaire consisting of both closed-ended and semi-open-ended questions. The questions were developed based on indicators such as perceptions of biological terms considered vulgar, the urgency of teaching reproductive material in elementary schools, the appropriate depth of content to be delivered, and concerns about its social impact. The questionnaire comprised ten main questions, each with several follow-up branches depending on the respondents' selected answers.

Data were collected in person (during a classroom session). Prior to completion, the researcher provided an explanation of the context and meaning of the sensitive terms used, so that respondents could understand the scientific and educational intent behind the material. Once collected, the data were analyzed using descriptive quantitative methods with percentage techniques applied to each response category. The results of the analysis are presented in tables to illustrate response trends. For open-ended questions, thematic analysis was used [12,13] to group responses based on emerging answer patterns.

## Results and Discussion

Teaching reproductive content as part of science education has been implemented since the 2013 curriculum and continues under the current *Merdeka Curriculum*. This is not surprising; however, if it receives negative reactions,

as sexuality-related topics are often stigmatised, whether in terms of religious norms, politeness, morality, or even legal frameworks. Even among the 60 prospective teachers who participated as respondents in this study, individuals with strong foundations in both pedagogy and religious values, 81.67% (49 individuals) received their first reproductive education during the later years of junior high school or beyond. Another 15% (9 individuals) received it during the early years of junior high school, and only 3.33% (2 individuals) reported having received proper reproductive education at the elementary school level. This indicates that the inclusion of reproductive education in elementary school, introduced through the 2013 curriculum, is still relatively new. Moreover, not all respondents received their reproductive education through formal channels. A total of 16.67% (10 individuals) reported that their first proper understanding of reproductive concepts came through non-formal sources such as community experiences or social media content. These respondents stated that in formal education settings, reproductive topics were limited to memorizing body parts and their functions, without understanding the underlying meaning or purpose.

The results of this study reveal a range of perceptions among prospective elementary school teachers regarding the teaching of reproductive topics in science subjects. Among the 60 respondents, the majority held moderate views, yet remained cautious about the sensitivity of teaching reproductive content to elementary school students.

**Table 1.** Perceptions of the terms 'testis' and 'vagina' in general contexts and in science education

Statement	The Type of Respondents	Yes (%)	No (%)
The terms 'testis' and 'vagina' are considered vulgar when spoken in public	From the IPA SMA/SMK background	79.31	20.69
	From a non-IPA SMA/SMK background	51.61	48.39
	Cumulative	65	35
The terms 'testis' and 'vagina' are considered vulgar when spoken in the context of science education	From the IPA SMA/SMK background	27.59	72.41
	From a non-IPA SMA/SMK background	25.81	74.19
	Cumulative	26.67	73.33

Table 1 presents perceptions of the terms “testis” and “vagina” in both general and science education contexts. A total of 65% of respondents (39 individuals) perceived the terms “testis” and “vagina” as still vulgar when mentioned in public spaces. However, this percentage decreased to 26.67% (16 individuals) when the context was science learning. This suggests that most respondents can distinguish between the use of biological terms in a scientific context and their use in everyday social situations. This finding aligns with the view that science education provides a legitimate space to discuss scientific topics, including the reproductive system, as long as they are delivered pedagogically and in accordance with students' cognitive development [7].

An interesting finding emerged from the distribution of responses regarding the terms “testis” and “vagina” being considered vulgar when spoken in public. The chi-square test result reached a value of 5.062, which is notably higher than the critical value at the 5% significance level ( $\chi^2$  calculated = 5.062 >  $\chi^2$  table = 3.841). This indicates a

significant difference between the response distributions of students from SMA/SMK IPA backgrounds and those from non-IPA backgrounds. Strikingly, it was the students from SMA/SMK IPA who appeared more sensitive to the vulgarity of these biological terms when used in public settings. At first glance, this finding seems to contradict the expectation that students from an SMA/SMK IPA background would be more familiar and comfortable with such terms. However, several explanations can account for this phenomenon. First, students from an IPA background may possess a higher level of semantic awareness regarding biological terminology due to their exposure to these terms within formal and scientific contexts during their schooling. This awareness might make them more attuned to the appropriateness of word usage, leading them to view such terms as improper or impolite when uttered outside academic settings, especially in general social environments. Second, their habit of interpreting these terms within scientific frameworks may heighten their sensitivity to the shift in meaning and perception that

occurs when these words are used outside an educational context. Third, the structured and cautious way in which sensitive topics are typically addressed in IPA classrooms may also shape the perception that such terms should only be spoken in academically appropriate situations. In other words, the deeper a person's understanding of the scientific meaning of a term, the stronger their ethical awareness of its appropriate use in public discourse [14].

As for the distribution pattern of responses regarding the perception of the terms “*testis*” and “*vagina*” as vulgar when used in the context of science education, no significant difference was found, with a chi-square value of 0.025 ( $\chi^2_{0.05} = 0.025 < \chi^2_{tab} = 3.841$ ). Both students from science and non-science senior high school backgrounds tended to similarly perceive the use of terms like “*testis*” and “*vagina*” in science education as non-vulgar. This suggests that when such terms are presented in a legitimate educational context, their perceived vulgarity becomes substantially less pronounced. One possible explanation for this finding is the presence of a widely accepted scientific framing, which enables both groups to interpret the terms through an academic lens. In classroom settings, regardless of academic background, students tend to view these terms as part of scientific discourse rather than as taboo or indecent topics [4]. In addition, the inclusion of science subjects across all high school tracks, albeit with varying

levels of intensity, may also provide a common foundation for understanding the scientific approach to the human body [14,15]. Another contributing factor is the influence of the academic environment in higher education, which allows students, including those from non-science backgrounds, to experience the normalization of scientific terms throughout their studies. This finding reinforces the view that sociolinguistic context plays a crucial role in shaping perceptions of sensitive terms, as their use in educational settings enables a process of decontextualization from vulgar meanings to scientific ones [16]. This is certainly encouraging news, indicating that the planned implementation of reproductive education as part of science instruction in elementary schools, aimed at preventing child sexual abuse through formal scientific education, does not encounter significant socio-cultural resistance from the perspective of prospective teachers. With a sound understanding that allows them to distinguish between scientific and immoral terms, future educators are expected to support the integration of reproductive topics into primary science education, moving it beyond mere discourse. Compared to its potential negative consequences, this approach can help protect young children from being exploited due to their lack of knowledge about the functions of their own intimate body parts.

**Table 2.** Perceptions Regarding the Need for Reproductive Education in Elementary Schools

Statement	The Type of Respondents	Yes (%)	No (%)
Elementary school children need to receive reproductive education	From IPA SMA/SMK background	48.28	51.72
	From a non-IPA SMA/SMK background	19.35	80.65
	Kumulatif	33.33	66.67

Based on the data presented in Table 2, as many as 66.67% of respondents (40 individuals) still believe that reproductive education is not suitable for delivery at the elementary school level. When examining the distribution of responses between participants with science (IPA) and non-science (non-IPA) high school backgrounds, a significant difference emerges, with a chi-square value of 5.631 ( $\chi^2$  calculated = 5.631 >  $\chi^2$  table = 3.841). The percentage of students with an IPA background who agreed with the provision of reproductive education starting from elementary school was notably higher (48.28%) than that of students from non-IPA backgrounds (19.38%). This discrepancy can be attributed to the differing learning experiences of the two groups. Students from science backgrounds are generally introduced earlier to the topic of the human reproductive system through structured biology lessons, which include discussions on puberty, fertilization, and the prevention of sexually transmitted diseases. Exposure to such content not only enhances scientific literacy but also fosters a scientific mindset, allowing them to interpret reproductive topics as part of scientific knowledge rather than merely moral or taboo issues [14]. In this context, students with a background in science-focused fields tend to view reproductive education as an essential preventive measure to protect children from an early age, particularly in addressing the risks of sexual harassment and the spread of misinformation from social environments or media. Conversely, students from non-science

backgrounds, who have not received curricular reinforcement on this topic, are generally more cautious and may even reject the introduction of such material to elementary school children. This reluctance is often based on ethical considerations, social norms, or religious teachings that take a more conservative stance, viewing reproductive issues as taboo for discussion at an early age. This finding aligns with the view of Lederman dan Abell (2014) [17] who argue that science education plays a crucial role in shaping an objective scientific mindset toward sensitive issues, including sexuality and reproduction. This represents an important challenge to consider, given that prospective teachers may come from either science-oriented (SMA/SMK IPA) or non-science (non-IPA) educational backgrounds.

Based on the questionnaire results, among the 66.67% (40 individuals) of respondents who disagreed with including reproductive topics in science education for elementary school children, 36.67% (22 individuals) cited reasons related to moral decency, 15% (9 individuals) referred to legal norms, 8.33% (5 individuals) referred to religious norms, and 6.67% (4 individuals) cited reasons related to etiquette norms. The finding that the majority of prospective teachers who opposed the inclusion of reproductive topics in elementary school did so based on moral decency (36.67%) rather than religion (8.33%) seems to reflect a shifting perception regarding sexual sensitivity in educational settings. Although the respondents came

from religious-based educational institutions, moral decency is understood in a broader, cross-religious context, encompassing general societal values of what is considered appropriate or inappropriate. This norm is social and cultural in nature and often becomes the primary reference in determining what information is appropriate to convey to children, especially on the topic of sexuality. The fact that legal norms ranked second (15%) also indicates increasing awareness of regulations that protect children from age-inappropriate information, as stipulated in the Child Protection Law. Meanwhile, the low proportion referring to religious norms (8.33%) may indicate that, within the context of formal education, religion is not always the primary framework for interpreting such issues, perhaps because respondents believe that religious values are implicitly embedded within the broader notion of moral decency. Etiquette norms, occupying the lowest position (6.67%), are likely perceived as individual or situational values that are not as strong or collective as moral decency, which serves as a more widely accepted societal standard. In this context, it can be concluded that the rejection of reproductive education in elementary schools is more strongly driven by cross-norm socio-cultural conventions than by religion-specific norms, even though the respondents came from religious education environments.

Based on the findings that most prospective teachers who reject reproductive education in elementary schools do so on the grounds of morality, law, religion, and propriety, any solution targeting this group must adopt a sociocultural approach aligned with their concerns. One such approach is to design reproductive education materials in the form of moral-educational narratives rather than explicit biological content [18]. For instance, values such as modesty, responsibility, and self-protection can be integrated into the context of body awareness and puberty education. The materials do not need to directly describe sexual intercourse, but can instead focus on concepts such as personal body boundaries, safe and unsafe touch, and normal physical changes. Moreover, the involvement of religious and community leaders in the development or dissemination of the curriculum is also crucial [2] so that prospective teachers feel the lessons do not conflict with their personal values. This collaborative approach may broaden the acceptance of reproductive education as a form of character education and child protection, rather than as a threat to prevailing norms. Strengthening teacher competencies in delivering value-based reproductive education tailored to children's developmental stages is also essential to ensure the content is conveyed accurately and with sensitivity to the local cultural context [19].

Upon further investigation, among the 66.67% (40 individuals) of respondents who disagreed with the inclusion of reproductive education at the elementary school level, more than half, specifically 48.33% (29 individuals), stated that the early years of junior high school (SMP) were the most appropriate time to begin introducing reproductive education. Interestingly, this age range in early junior high school differs by only one to two years from upper elementary school students (grades V–VI), many of whom are already experiencing puberty. This finding suggests that the concept of reproductive education is indeed perceived as important and should be delivered at an age not far removed from the elementary level, although

there remains hesitancy about implementing it too early. In other words, the rejection of reproductive education at the elementary level is not entirely rooted in opposition to the subject matter itself, but rather stems from concerns regarding the delivery approach, the child's psychological readiness, or prevailing social norms. Therefore, this result opens up opportunities for a compromise approach whereby reproductive education can still be introduced at the end of elementary school, provided that the content is presented in an educational, gradual, and context-sensitive manner, for example, by focusing on bodily changes, privacy boundaries, and self-protection, without directly addressing more complex biological aspects [14].

Meanwhile, the remaining 10% (6 respondents) stated that the most appropriate time to introduce reproductive education is during adulthood (around the age of 18), while 8.33% (5 respondents) believed it should be after one has a partner. Although these proportions are relatively small, they reflect a segment of prospective educators who still perceive reproductive education as something only appropriate to be taught once an individual has reached full maturity or enters a marital relationship. This view is likely influenced by more conservative cultural or religious norms that consider discussions of sexuality taboo until one is deemed "morally and socially ready." However, such a stance risks overlooking the informational needs of children and adolescents during critical stages of biological development-periods in which they are particularly vulnerable to misinformation and unsafe behaviors if not equipped with proper knowledge from an early age [20]. Considering that there are still a few prospective teachers who believe that reproductive education should only be given once a child reaches adulthood or even after they have a partner, the approach taken should not be confrontational, but rather dialogical and empathetic. Prospective teachers need to be encouraged to reflect on the fact that a child's right to accurate information about their body is not a violation of social norms, but a form of protection against misunderstanding, fear, and even potential abuse that can arise from ignorance. This approach can begin by appealing to the sense of parental care, maternal or paternal, that may already be developing within them as future educators, through a simple question: *"If our students begin experiencing changes in their bodies and feel afraid or confused, who will they turn to if not their teacher?"* From this starting point, reproductive education can be introduced not as a vulgar biological topic, but as essential life knowledge, just like teaching children not to touch a hot stove or to avoid spoiled food. By reframing reproductive education as an act of compassion, protection, and the upholding of children's dignity, resistance should not be confronted aggressively, but nurtured gently through empathy and awareness.

Of the 33.33% (20 participants) who stated that reproductive education is important to be taught at the elementary school level, 28.33% (17 participants) agreed that the appropriate approach should be limited to introducing the body and puberty, as previously mentioned. However, 1.67% (1 participant) believed it is necessary to visually demonstrate the process of reproduction, and 3.33% (2 participants) felt it is important to teach the physical mechanism of sexual intercourse from an early age

using direct teaching aids. Although this proportion is very small, it nevertheless deserves critical attention in the context of early childhood education. Such views may reflect a misunderstanding of the goals and developmental boundaries of reproductive education appropriate for children. At the elementary level, reproductive education should not focus on the explicit physical aspects of sexual activity, but rather on introducing the human body, biological changes during puberty, and self-protection skills [1,6,7,18,21]. In this regard, the role of higher education institutions becomes crucial in providing adequate preparation for prospective teachers, particularly in terms of teaching ethics, developmentally appropriate approaches, and cultural sensitivity when delivering sensitive content [3]. Therefore, such overly permissive opinions should not be condemned, but instead addressed through stricter academic education to correct the misconceptions of prospective teachers. This is essential to prevent practices that may hinder children's development and to reduce potential social resistance toward science education itself.

It is undeniable that reproductive education at the elementary school level is a highly sensitive issue. This is evidenced by the fact that 80% (48 out of 60) of respondents expressed concern that incorporating reproductive topics into science lessons at the elementary level could potentially encourage early engagement in promiscuous behavior among children. This concern is understandable, considering the prevailing social and cultural norms in our society, which tend to regard sexuality as a taboo subject. However, the assumption that reproductive education leads to promiscuity is not supported by scientific evidence. On the contrary, various international studies have shown that children who receive appropriate reproductive education from an early age tend to develop greater self-awareness, understand personal boundaries, and are more likely to delay sexual activity until they reach a more mature age [21]. UNESCO (2018) [22], its international technical guidance emphasizes that comprehensive sexuality education—when delivered appropriately according to developmental stages—does not increase sexual activity among children. Instead, it enhances their ability to make healthy and safe decisions. This suggests that promiscuous behavior is more often triggered by a lack of accurate information, unsupervised media exposure, and limited space for open discussion, rather than by structured formal education. Therefore, the most appropriate approach is not to restrict children's access to legitimate and age-appropriate information, but rather to provide education that is informative, ethical, and contextually relevant. Such education is essential to fostering self-protection and awareness from an early age. This view aligns with the survey results, in which 20% of respondents (12 out of 60) indicated that promiscuity is more influenced by social environments and lack of parental attention, rather than by the inclusion of reproductive topics in the curriculum. In fact, by having a good understanding of reproductive topics, where children are clearly taught what is allowed and what is not allowed within that topic, it can potentially prevent them from engaging in promiscuous behavior, as long as the educational approach is carried out in the right way, not carelessly, which could instead lead to the very risks that many respondents are concerned about.

The findings of this study resonate with broader international literature emphasizing that teachers' perceptions are crucial in shaping the feasibility and acceptance of reproductive or sexuality education in schools. For instance, the success of sexuality education programs depends not only on curricular content but also on teachers' confidence, training, and ability to contextualize sensitive material in culturally appropriate ways [23]. Similarly, pre-service teachers across several European countries expressed ambivalence toward teaching reproductive topics, often citing moral and cultural sensitivities as barriers, but also acknowledging the importance of early education for preventing abuse and misinformation [24].

In the Indonesian context, School-based reproductive health programs remain fragmented and often face resistance due to social and religious values, despite pilot programs demonstrating positive impacts on knowledge and attitudes. These parallels suggest that the perceptions of prospective teachers in Gorontalo are not unique, but rather reflect a broader global and national pattern of cautious acceptance shaped by normative frameworks [11].

Despite these insights, this study has certain limitations. First, the research was conducted with a relatively small sample size (60 respondents) limited to one province, which restricts the generalizability of the findings to other regions of Indonesia. Second, the reliance on self-reported questionnaires may introduce social desirability bias, as respondents could have tailored their answers to align with perceived cultural expectations. Third, the cross-sectional design captures perceptions at a single point in time, without accounting for possible shifts in views as respondents gain more teaching experience or professional training. Future research should therefore involve larger and more diverse samples across different cultural settings, adopt longitudinal designs, and incorporate qualitative methods such as interviews or classroom observations to provide a richer understanding of teachers' perceptions and practices regarding reproductive education.

## Conclusion

This study reveals that prospective elementary school teachers in Gorontalo generally hold cautious, and often rejecting, attitudes toward teaching reproductive topics in science education, largely due to moral and cultural concerns. However, the findings also indicate openness to the substance of the material if delivered in a gradual, age-appropriate, and values-based manner. These results underscore several practical implications. First, reproductive education in elementary schools should be designed with cultural and religious sensitivity, framing biological content within moral-educational narratives that align with local values. Second, teacher training institutions have a critical role in preparing pre-service teachers to handle sensitive topics by equipping them with pedagogical strategies that integrate scientific accuracy and socio-cultural appropriateness. Third, curriculum developers should consider embedding reproductive education within a broader framework of child protection and science literacy, thereby strengthening its legitimacy and acceptance. Beyond its local context, this study contributes to the

broader discourse on sexuality education by demonstrating that resistance is often rooted not in rejection of knowledge itself, but in concerns about method and context. Future research should expand the scope to include larger and more diverse populations, employ longitudinal approaches to track changing perceptions over time, and explore classroom-based practices that effectively balance scientific, cultural, and ethical considerations.

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