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Student Needs Analysis for Designing an Ethnobotany-Based Ethno-Experiential Learning Model in Human Anatomy

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Abstract: This study aimed to analyze student needs as an empirical basis for designing an ethnobotany-based Ethno-Experiential Learning Model for Human Anatomy education. This preliminary study employed a descriptive quantitative approach supported by qualitative data. Participants were 58 students who had completed a Human Anatomy course. Data were collected using a needs analysis questionnaire comprising 20 closed-ended statements rated on a four-point Likert scale and four open-ended questions. Descriptive statistics were used to analyze four aspects: Human Anatomy learning conditions, health literacy, science process skills (SPS), and needs for learning model development. The findings showed that 94.83% of students wanted more active learning involving direct experiences, while 96.55% reported that anatomical concepts were easier to understand when connected to everyday health issues. Regarding health literacy, 93.10% reported being able to access health information from reliable sources; however, 75.86% still experienced difficulties understanding such information. For SPS, collecting information or data received 87.93% agreement, whereas careful observation of health phenomena received the lowest agreement (70.69%). In addition, 98.28% of students supported connecting Human Anatomy with local medicinal plants and incorporating video or digital media, while 96.55% supported a model integrating health literacy and SPS. Responses to open-ended questions emphasized practical activities, visual representations, interactive media, group discussions, and real-world health contexts. These findings provide an empirical basis for designing an instructional framework that meaningfully connects local ethnobotanical knowledge, concrete experiences, scientific inquiry, digital resources, and anatomical concepts. Further research is needed to develop the model and evaluate its validity, practicality, and effectiveness.

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Introduction

Human anatomy is a crucial subject in biology education, as it provides the foundation for understanding the structure and function of the human body and their relationship to various health related phenomena. Given that the subject matter is rich in

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terminology, structures, and interrelationships between body components, learning anatomy cannot rely solely on the theoretical delivery of information. Students require learning experiences that enable them to meaningfully observe, identify, interrelate, and interpret bodily structures. Choudhury and Gouldsborough (2026) emphasize that anatomy learning can be enhanced through experiential activities involving models, illustrations, imaging, practical sessions, and digital technologies such as 3D modelling, virtual reality, and augmented reality. Experiential learning offers students the opportunity to construct knowledge through concrete experiences, reflection on those experiences, conceptualization, and the application of concepts in new situations. This approach is particularly relevant to the study of Human Anatomy, as students are required not only to memorize bodily structures but also to understand the relationship between structure and function and to relate these to everyday life phenomena. Instruction that incorporates real world experiences and contexts familiar to students has the potential to make anatomical concepts more meaningful. Therefore, it is essential to implement an instructional approach that links Human Anatomy material with the students' environment and experiences, ensuring that learning extends beyond mere conceptual mastery to encompass the ability to observe, investigate, analyze, and apply knowledge.

Instruction that provides concrete experiences and actively engages students is also crucial for developing science process skills. Ummah and Wulandari (2026) demonstrate that inquiry-based learning can facilitate science process skills through activities such as observation, information gathering, analysis, and the communication of results. These findings indicate that structured learning experiences involving inquiry activities provide opportunities for students to develop science process skills more optimally. The research also shows that concrete experiences can support the development of science process skills, although inquiry activities still require appropriate structure and guidance.

One context applicable to this type of learning is ethnobotany specifically, the knowledge and utilization of medicinal plants found within the local community. Ethnobotany provides a local context that enables students to link traditional knowledge with scientific concepts, such as body structure and function and the use of plants in daily life. Integrating ethnobotany and local knowledge into higher education holds the potential to foster learning that is innovative, contextual, and aligned with the community's cultural characteristics (Marsandi *et al.,* 2025). Research by Kusumaningrat *et al.* (2026) further indicates that ethnobotany-based learning can support science process skills through activities involving the exploration and study of biological resources. Thus, ethnobotany offers a potential context for bridging students' real-world experiences with the study of human anatomy while simultaneously providing opportunities for scientific inquiry.

Beyond mastering anatomical concepts, instruction needs to focus on enabling students to acquire, comprehend, evaluate, and utilize health-related information. These capabilities are crucial components of health literacy, as students must be able to apply health information appropriately when addressing various health issues in their daily lives. A systematic review by Rosário *et al.* (2024) indicates that health literacy interventions for university students should be developed using instructional strategies that incorporate interactive activities, practical exercises, technology, and active student engagement. Furthermore, science process skills are essential for enabling students to make observations, identify problems, gather information or data, analyze findings, and communicate the results

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of their investigations. Therefore, Human Anatomy instruction that integrates health and ethnobotanical contexts should provide experiences that simultaneously foster the development of health literacy and science process skills.

Problem-based learning can also serve as an alternative for introducing real world contexts into the learning process. Wulandari *et al.* (2026) demonstrate that problem based learning encourages students to analyze problems, devise solutions, and connect concepts to real life situations. This approach is relevant to the study of human anatomy, as anatomical concepts can be linked to various health issues encountered in daily life. The study also indicates that problem based learning has a positive impact on active engagement, critical thinking skills, and learning outcomes compared to expository learning. Despite the growing interest in experiential learning, ethnobotany-based education, and inquiry-oriented instruction, several aspects remain insufficiently addressed in Human Anatomy education. Existing experiential learning approaches emphasize learning through concrete experiences, reflection, conceptual understanding, and application. However, these approaches do not necessarily incorporate local ethnobotanical knowledge as a systematic instructional context for connecting anatomical concepts with everyday health practices. Similarly, contextual and inquiry-based learning approaches provide opportunities for problem exploration and scientific investigation, but their integration with students' local knowledge, health literacy, and science process skills within a coherent instructional design remains limited.

This gap indicates the need for an instructional framework that does not merely combine different learning activities but systematically connects students' concrete experiences, local ethnobotanical knowledge, scientific inquiry, and the application of anatomical concepts to health-related situations. The proposed Ethno-Experiential Learning model is intended to address this need by positioning ethnobotanical exploration as a contextual starting point for learning, followed by experience-based activities, scientific investigation, interpretation of health information, and the application of scientific understanding. Digital learning resources, including instructional videos and visual representations, are also considered supporting components to facilitate the understanding of complex anatomical structures and functions. From an instructional design perspective, identifying students' learning needs is an essential preliminary step in formulating appropriate learning objectives, instructional strategies, learning resources, and assessment components. Therefore, the development of an Ethno-Experiential Learning model requires empirical information about students' existing learning experiences, perceived difficulties, and expectations regarding Human Anatomy instruction. Such information is particularly important to ensure that the proposed model responds to actual educational needs rather than relying solely on theoretical assumptions.

Accordingly, this study was conducted as a preliminary needs analysis to examine students' perceptions of Human Anatomy instruction, health literacy, science process skills, and their expectations regarding the development of an ethnobotany-based learning model. Specifically, this study addresses the following research question: What are the learning needs and instructional requirements that should inform the initial design of an ethnobotany-based Ethno-Experiential Learning model for Human Anatomy education? The findings are expected to provide an empirical foundation for determining the instructional characteristics, learning activities, learning resources, and supporting components of the proposed model before proceeding to subsequent development, validation, and implementation stages.

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Research Method

This study employed a descriptive quantitative approach supported by qualitative data. It was designed as a preliminary needs analysis to obtain an empirical understanding of students' experiences, perceived difficulties, and expectations regarding Human Anatomy instruction. The quantitative component was used to describe students' responses to the closed-ended questionnaire statements, while the qualitative component was used to explore students' explanations and suggestions through open-ended questions.

The study focused on four aspects: (1) the existing conditions of Human Anatomy instruction, (2) students' perceptions of health literacy, (3) students' perceptions of science process skills (SPS), and (4) students' needs and expectations regarding the development of an instructional model. The findings were intended to identify instructional requirements and inform the initial design of an ethnobotany-based Ethno-Experiential Learning model. This study did not include model validation, implementation, or effectiveness testing, as these activities were intended for subsequent stages of the research.

The participants consisted of 58 students who had previously completed the Human Anatomy course. Participants were selected using purposive sampling because their prior learning experiences enabled them to provide relevant information about the instructional conditions, learning difficulties, perceived competencies, and learning needs associated with Human Anatomy. The selection of these participants was based on their direct experience with the course, which was considered relevant to the objectives of this preliminary needs analysis.

Data were collected using a student needs analysis questionnaire consisting of 24 items, comprising 20 closed-ended statements and four open-ended questions. The closed-ended statements employed a four-point Likert scale: Strongly Agree (SS = 4), Agree (S = 3), Disagree (TS = 2), and Strongly Disagree (STS = 1). The 20 closed-ended statements were organized into four aspects. The first aspect examined the existing conditions of Human Anatomy instruction (items 1–5). The second addressed students' perceptions of health literacy (items 6–10). The third examined students' perceptions of science process skills (items 11–15). The fourth focused on students' needs and expectations regarding the development of an instructional model (items 16–20).

The four open-ended questions explored students' difficulties in learning Human Anatomy, preferred instructional approaches, required learning media, and expectations for future Human Anatomy instruction. These questions were included to obtain additional explanations and contextual information that could not be fully captured through the closed-ended statements.

Data were collected through an online questionnaire distributed to the participants. Before completing the questionnaire, students were informed about the purpose of the study and the procedures for responding to the questions. Participants were instructed to provide responses based on their previous experiences in the Human Anatomy course. The questionnaire included both closed-ended and open-ended questions to obtain quantitative information and qualitative insights into students' learning experiences and expectations. All responses were subsequently compiled and prepared for analysis.

Quantitative data obtained from the closed-ended questionnaire were analyzed descriptively by calculating the frequency and percentage of responses for each statement. The percentage was calculated using the following formula:

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$$P = N/f \times 100\%$$

Description:

• P = percentage

• f = frequency/number of respondents who chose a particular category

• N = total number of respondents

• 100% = factor used to convert the proportion into a percentage

For positively worded statements describing students' learning needs, the percentages of Strongly Agree (SS) and Agree (S) responses were combined to determine the overall agreement percentage. For negatively worded statements, the interpretation considered the actual meaning of each statement to avoid misleading conclusions. For example, agreement with statements indicating lecture-dominated instruction or difficulties in understanding health information was interpreted as evidence of an identified learning challenge rather than a positive learning outcome. Qualitative data from the four open-ended questions were analyzed descriptively through a process of identifying responses, grouping similar meanings into categories, identifying recurring themes, and interpreting the resulting patterns. The analysis focused on students' difficulties in learning Human Anatomy, preferred instructional approaches, required learning media, and expectations for future instruction.

Finally, quantitative and qualitative findings were integrated to identify the instructional requirements for the proposed Ethnobotany-based Ethno-Experiential Learning model. The integration focused on identifying the relationships between students' reported learning conditions, perceived competencies, and expectations for learning activities and resources. These findings were used to formulate the initial instructional design requirements for subsequent model development.

Result and Discussion

A needs analysis was conducted involving 58 students who had completed the Human Anatomy course. The analysis covered four aspects: the conditions of Human Anatomy instruction, health literacy, science process skills (SPS), and the need for the development of an instructional model. The instrument consisted of 20 closed-ended statements using a four-point Likert scale and four open-ended questions. The results are presented according to each aspect to provide an overview of student needs, serving as the basis for developing the instructional model.

Conditions of Human Anatomy Instruction

Table 1. Results of Student Needs Analysis

No.	Indicator	SS (%)	S (%)	TS (%)	STS (%)	Agreement (%)
1	Human Anatomy learning is dominated by lecture methods	13.79	63.79	22.41	0.00	77.59

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2	Need for more active learning and direct experience	31.03	63.79	5.17	0.00	94.83
3	Anatomy is easier to understand when linked to everyday health problems	41.38	55.17	3.45	0.00	96.55
4	Current learning does not make much use of the surrounding environment	10.34	74.14	15.52	0.00	84.48
5	Need for learning materials that support independent study	31.03	55.17	13.79	0.00	86.21

Note: SS = Strongly Agree; S = Agree; TS = Disagree; STS = Strongly Disagree.

Table 1 indicates that students require Human Anatomy instruction that is more active, contextual, and supportive of independent learning. A total of 77.59% of students reported that learning was still dominated by lecture-based methods, while 94.83% expressed a need for more active learning that provides direct experiences. Furthermore, 96.55% indicated that anatomical concepts were easier to understand when connected to everyday health problems. In addition, 84.48% reported that the surrounding environment was underutilized as a learning resource, and 86.21% expressed a need for learning materials that support independent study. These findings suggest a gap between existing instructional practices and students' expectations, highlighting the importance of learning experiences that connect anatomical concepts with real-life contexts and provide opportunities for active engagement.

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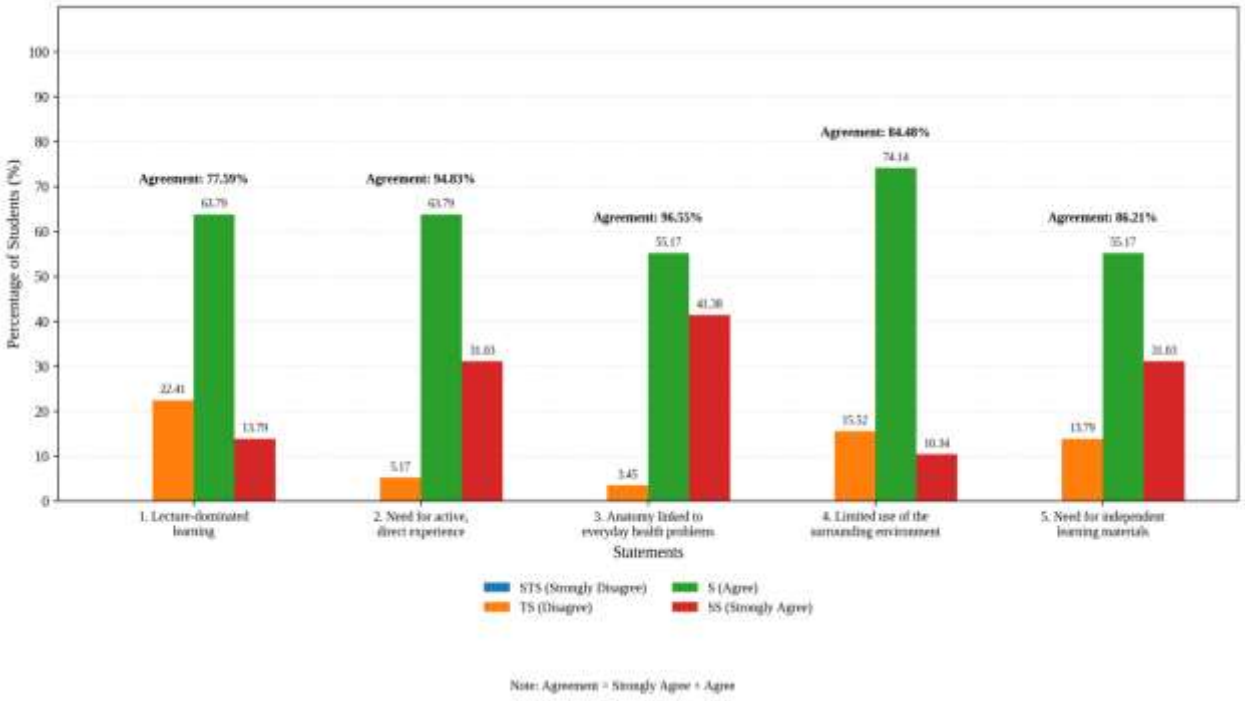


Figure 1. Learning Conditions of Human Anatomy

The results indicate that 77.59% of students reported that Human Anatomy instruction remains dominated by the lecture method. Conversely, 94.83% of students expressed a need for learning approaches that are more active and provide hands-on experience. A total of 96.55% of students stated that Human Anatomy material is easier to understand when linked to everyday health issues. Furthermore, 84.48% noted that the surrounding environment is underutilized in the learning process, while 86.21% expressed a need for learning materials suitable for independent study. These findings highlight the need for Human Anatomy instruction that is more active, contextual, and experience-based.

Health Literacy

Health literacy was analyzed using five indicators covering the ability to seek, understand, evaluate, and use health information, as well as interest in studying medicinal plants based on scientific evidence. Student responses are presented in Table 2 and Figure 2.

Table 2. Students' Perceived Health Literacy

No.	Indicator	SS (%)	S (%)	TS (%)	STS (%)	Agreement (%)
6	Ability to find health information from trusted sources	22.41	70.69	6.90	0.00	93.10
7	Difficulty understanding health information	12.07	63.79	24.14	0.00	75.86
8	Ability to evaluate the credibility of health information	15.52	68.97	15.52	0.00	84.48
9	Ability to use health information to solve simple health problems	18.97	72.41	8.62	0.00	91.38

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10	Interest in learning about medicinal plants based on scientific evidence	34.48	56.90	8.62	0.00	91.38

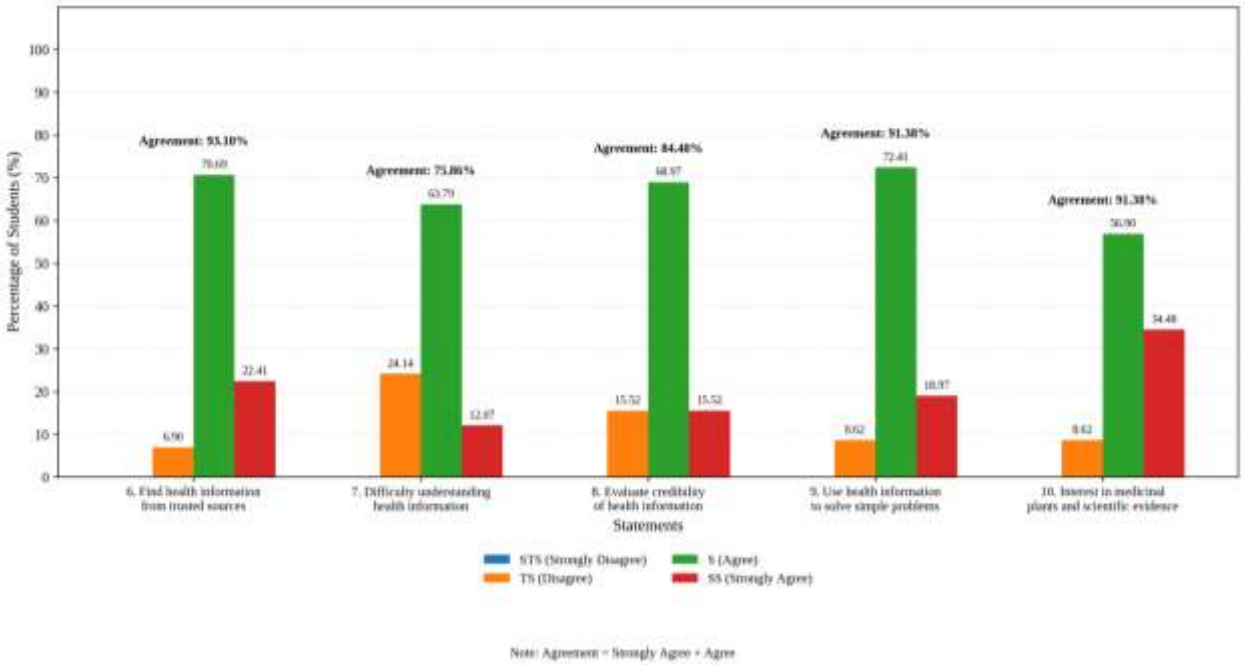


Figure 2. Health Literacy

The results indicate that 93.10% of students reported being able to seek health information from reliable sources, and 91.38% were able to use health information to resolve simple health issues. However, 75.86% of students still reported difficulties in understanding health information. While 84.48% stated they were capable of assessing the reliability of health information, 91.38% expressed interest in learning about the benefits of medicinal plants based on scientific evidence. These findings suggest that instruction needs to strengthen students' abilities to understand, evaluate, and appropriately utilize health information. The difference between students' reported ability to access health information and their difficulties in understanding it reveals an important gap in health literacy. Although most students indicated that they could find and use health information, the proportion reporting difficulties in comprehension suggests that information access alone may not be sufficient to support informed health-related decisions. Therefore, learning activities should provide opportunities for students to interpret health information, examine scientific evidence, and relate the information to anatomical concepts and everyday health issues.

Science Process Skills (SPS)

Science process skills were analyzed based on five indicators: the ability to observe health phenomena, identify problems, gather information or data, analyze observations before drawing conclusions, and communicate the results of discussions or investigations. Student responses are presented in Table 3 and Figure 3.

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Table 3. Students' Perceived Science Process Skills

No.	Indicator	SS (%)	S (%)	TS (%)	STS (%)	Agreement (%)
11	Ability to carefully observe health phenomena	10.34	60.34	29.31	0.00	70.69
12	Ability to identify problems based on observations	18.97	60.34	20.69	0.00	79.31
13	Ability to collect information/data	18.97	68.97	12.07	0.00	87.93
14	Ability to analyze observations before drawing conclusions	15.52	65.52	18.97	0.00	81.03
15	Confidence in communicating discussion/investigation results	24.14	62.07	13.79	0.00	86.21

Note: SS = Strongly Agree; S = Agree; TS = Disagree; STS = Strongly Disagree. The SS+S percentage represents the proportion of respondents selecting Strongly Agree or Agree.

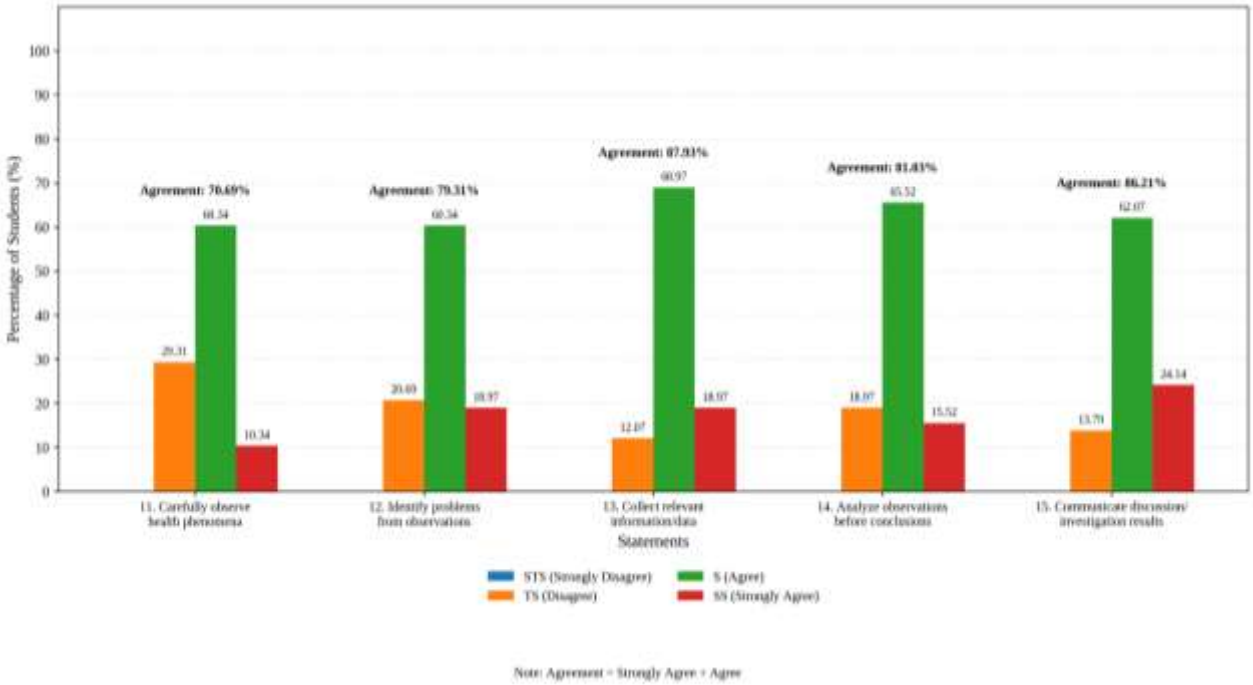


Figure 3. Science Process Skills

The results indicate that the highest levels of agreement were found regarding the ability to gather information or data (87.93%) and to communicate the results of discussions or investigations (86.21%). Conversely, the lowest levels of agreement concerned the ability to carefully observe health-related phenomena (70.69%), followed by the ability to identify

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problems based on those observations (79.31%). These findings highlight the need for learning activities that provide students with greater opportunities to conduct observations, identify problems, and carry out investigations systematically. The relatively lower percentages for observation and problem identification suggest that students need more structured opportunities to engage in the initial stages of scientific investigation. Although students reported greater confidence in collecting information and communicating findings, these activities should be preceded by systematic observation and the ability to formulate relevant questions. Accordingly, the proposed instructional model should provide guided activities that encourage students to observe health-related phenomena, identify problems, formulate questions, and subsequently collect and analyze relevant information.

Need for Developing a Learning Model

The need for developing a learning model was analyzed based on five indicators: the need to link human anatomy with local medicinal plants; the need for student worksheets (LKM) that guide observation and investigation; the use of videos or digital media; the need to simultaneously develop health literacy and Science Process Skills (SPS); and the willingness to participate in Ethno-Experiential Learning based on ethnobotany. Student responses are presented in Table 4 and Figure 4.

Table 4. Students' Needs for Learning Model Development

No.	Indicator	SS (%)	S (%)	TS (%)	STS (%)	Agreement (%)
16	Need to connect Human Anatomy with local medicinal plants	17.24	81.03	1.72	0.00	98.28
17	Need for learning materials guiding observation, discussion, and investigation	20.69	74.14	5.17	0.00	94.83
18	Video/digital media helps understand Human Anatomy	31.03	67.24	1.72	0.00	98.28
19	Need for a model that develops health literacy and science process skills simultaneously	22.41	74.14	3.45	0.00	96.55
20	Willingness to participate in Ethno-Experiential Learning based on ethnobotany	20.69	68.97	10.34	0.00	89.66

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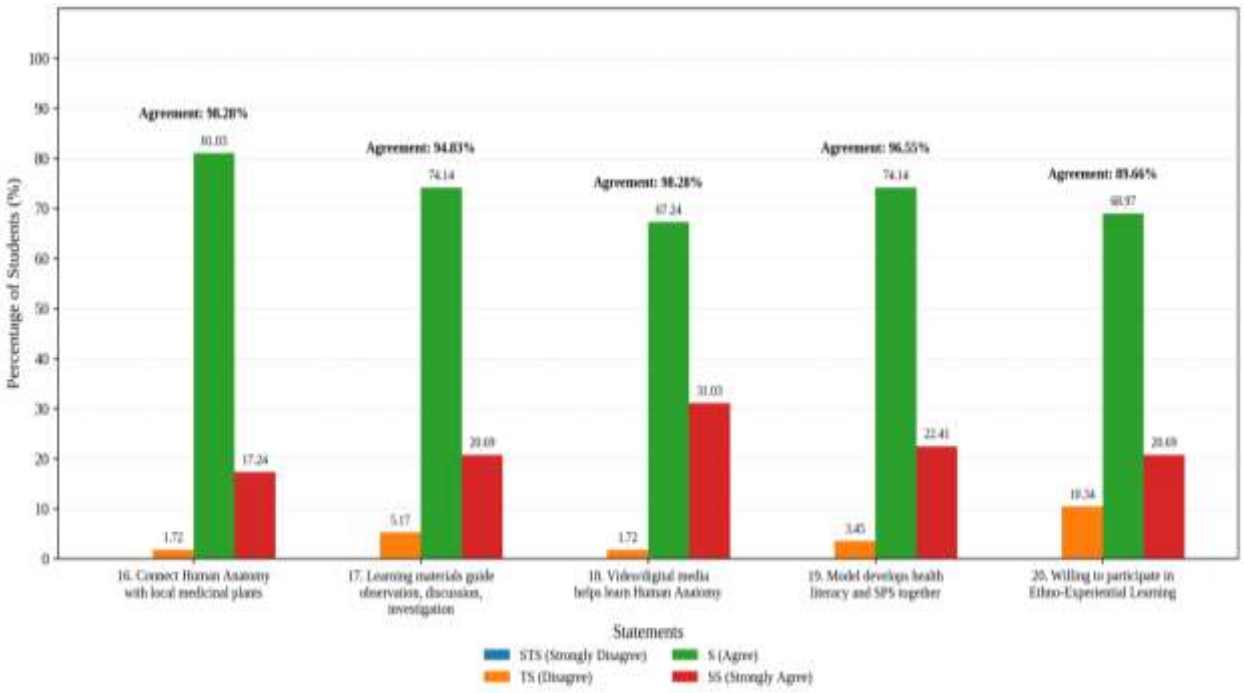


Figure 4. Students' Needs for Learning Model Development

The results indicate a strong student need for specific learning model characteristics. The highest level of agreement (98.28%) was found regarding the need to link Human Anatomy with local medicinal plants and to utilize videos or digital media. Furthermore, 96.55% of students expressed a need for a model that simultaneously develops health literacy and science process skills (SPS), while 94.83% required student worksheets that guide observation, discussion, and inquiry. Additionally, 89.66% of students indicated a willingness to participate in ethnobotany-based Ethno-Experiential Learning.

Responses to Open-Ended Questions

Analysis of the open-ended questions revealed that students still struggle to understand terminology, Latin names, anatomical structures, and the relationships between organs. Students expressed a desire for learning experiences that are more practical, visual, and interactive—specifically through laboratory work, videos, 3D models or visualizations, and group discussions. They also proposed linking the curriculum to real-life health examples and issues. These findings reinforce the results from the closed-ended questionnaire, confirming the need for a Human Anatomy learning approach that is more active, contextual, and experience-based.

Discussion

The needs analysis results indicate that Human Anatomy instruction needs to shift toward learning experiences that are more active, contextual, and meaningful. A total of 77.59% of students reported that instruction is still dominated by lecture-based methods, while 94.83% expressed a need for more active learning that provides hands-on experience.

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Furthermore, 96.55% of students stated that Human Anatomy material is easier to grasp when linked to everyday health issues. These findings reveal a gap between the learning experiences students have historically received and the type of learning they actually require. This situation underscores the importance of an experiential learning approach in anatomy education. Choudhury and Gouldsborough (2026) explain that anatomy is a field well-suited for experiential learning, as understanding can be built through concrete experience, reflection, conceptualization, and application. Consequently, Human Anatomy instruction should provide students with opportunities not merely to receive theoretical information, but also to observe objects or phenomena, gain hands-on experience, reflect on their observations, and connect them to anatomical concepts.

Instruction that provides concrete experiences can also support the development of science process skills. Ummah and Wulandari (2026) demonstrated that the implementation of Inquiry-Based Learning facilitates science process skills, particularly fundamental ones such as observation and hypothesis formulation. These findings reinforce the importance of structured inquiry activities in the learning process. In the context of Human Anatomy, concrete experiences can be fostered through the observation of health-related phenomena, the exploration of local medicinal plants, information gathering, and the analysis of connections between the information obtained and concepts regarding body structure and function.

The need for more contextual learning is further evidenced by the fact that 84.48% of students indicated that the surrounding environment is underutilized in their studies, while 86.21% expressed a need for learning materials suitable for independent study. Responses to open-ended questions further corroborate these findings, as students expressed a desire for more practical activities, the use of videos, 3D models or visualizations, and group discussions. This indicates a need for learning resources and activities that assist students in grasping complex and abstract anatomical concepts. Utilizing diverse forms of learning experiences and media aligns with the nature of anatomy education, which requires visual representations and concrete experiences. Choudhury and Gouldsborough (2026) emphasize that anatomy learning experiences can be enhanced through various modalities, including specimens, imaging, 3D models, and digital technology. Consequently, student requirements for practical sessions, videos, and 3D visualizations serve as crucial considerations when determining the support systems for the initial design of the learning model to be developed.

The need for structured learning materials among students is also supported by research conducted by Yulianti *et al.* (2026). The development of STEAM project-based learning (PjBL) student worksheets demonstrates that systematically designed teaching materials can meet criteria for validity, practicality, and effectiveness, while also serving as innovative and contextual learning media. This indicates that such worksheets can be designed not merely to present information, but to guide students in carrying out learning activities systematically and independently. Regarding health literacy, the majority of students reported being able to seek health information from reliable sources (93.10%), assess the credibility of that information (84.48%), and use health information to resolve simple health issues (91.38%). However, 75.86% of students still reported difficulties in comprehending health information. These findings suggest that the ability to access information is not yet fully matched by the ability to comprehend it optimally. This situation highlights the need for learning activities that go beyond mere information retrieval, offering

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students opportunities to understand, evaluate, and apply health information. A systematic review by Rosário *et al.* (2024) involving higher education students indicates that health literacy interventions incorporating interactive activities, exercises, technology, monitoring, and mentoring are more effective at improving health literacy than the simple delivery of information. Based on these findings, Human Anatomy instruction can be structured to engage students in seeking and evaluating health information related to real-world issues, ensuring that anatomical concepts are not studied in isolation from their health context.

This need is underscored by the high level of student interest in medicinal plants based on scientific evidence (91.38%) and the strong desire to link Human Anatomy studies with local medicinal plants (98.28%). The integration of digital learning media is also relevant to the development of interactive worksheets, as demonstrated by Yunitajayanti et al. (2026) through the use of Liveworksheet-assisted learning materials. In this context, ethnobotany offers an opportunity to serve as a learning framework that bridges local knowledge with scientific concepts. Marsandi *et al.* (2025) demonstrated that integrating ethnobotany and local knowledge into higher education has the potential to foster learning that is relevant to the local context. Similarly, Fajrin *et al.* (2025) identified a student need for learning resources on medicinal plants that incorporate scientific literacy. Problem-based learning can also enhance scientific literacy and student engagement in the learning process (Wulandari *et al.,* 2022). Based on these findings, local medicinal plants need not be treated merely as supplementary material; instead, they can serve as a context for initiating learning through health-related phenomena relevant to students' daily lives. Students can be guided to explore the use of medicinal plants, seek scientific information, evaluate sources, and connect these elements to concepts regarding human body structure and function.

Leveraging local wisdom can also strengthen the learning context. Astuti *et al.* (2026) showed that integrating local wisdom into education can be achieved through contextual learning, culture-based projects, and the development of learning media relevant to the surrounding community. These findings indicate that local contexts can enhance student engagement and make learning more relatable to their lives. In the present study, this principle is applied by utilizing community knowledge regarding local medicinal plants as a context to link students' experiences with scientific concepts in Human Anatomy education. The ethnoscience approach can integrate local wisdom into science learning and support science process skills (Sigian *et al.,* 2023).

Regarding science process skills, students' ability to gather information or data achieved an approval rate of 87.93%, while their ability to communicate the results of discussions or investigations stood at 86.21%. However, the ability to carefully observe health-related phenomena yielded a lower percentage (70.69%), whereas the ability to identify problems based on observations was 79.31%. This pattern indicates that students still require more systematic experience during the initial stages of the scientific process, particularly in observation and problem identification. These findings align with research by Kusumaningrat *et al. (*2026), which demonstrates that ethnobotany-based learning can be directed toward fostering science process skills by utilizing the environment and biodiversity contexts as learning resources. The integration of local potential into digital learning resources can provide meaningful learning contexts and connect scientific concepts with students' cultural and environmental backgrounds (Ulya et al., 2022).

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Findings by Ummah and Wulandari (2026) further reinforce the idea that inquiry activities can provide structured opportunities for observation and investigation. Similar findings regarding the development of science process skills through different learning models were reported by Sembiring and Jahro (2024). Thus, an ethnobotanical context offers objects and phenomena that enable students to conduct direct observations, identify problems, gather information, analyze data, and communicate results. In the instructional design to be developed, these activities can be integrated as a crucial component of the learning experience, ensuring that science process skills are cultivated not merely through practice exercises, but through authentic inquiry activities. Overall, the research results indicate a connection between the need for experiential learning, the strengthening of health literacy, the development of Science Process Skills (SPS), and the utilization of local medicinal plants. A total of 96.55% of students expressed a need for a model capable of simultaneously developing health literacy and SPS, while 94.83% required student worksheets (LKM) to guide observation, discussion, and inquiry. The use of structured student worksheets is also supported by Tanjung et al. (2023), who developed student worksheets to facilitate learning through a Discovery Learning approach. Furthermore, 89.66% of students indicated a willingness to participate in ethnobotany-based Ethno-Experiential Learning. These findings provide an empirical basis for the argument that instructional model development must integrate local contexts, concrete experiences, inquiry activities, learning media, and structured student worksheets.

Consequently, the results of this needs analysis serve as the foundation for formulating the initial design of the Ethnobotany-based Ethno-Experiential Learning Model. The findings provide a foundation for designing the proposed Ethnobotany-Based Ethno-Experiential Learning Model, which is intended to guide students through the exploration of ethnobotanical contexts, concrete learning experiences, reflection, anatomical conceptualization, and health-related inquiry, culminating in the application of scientific concepts.

Conclusion

This study identified the learning needs of 58 students who had completed a Human Anatomy course. The findings revealed a strong demand for more active, contextual, visual, and experience-based instruction. Although students reported the ability to access, evaluate, and use health information, difficulties in comprehending health-related information remained evident. Similarly, students demonstrated varying levels of perceived science process skills, particularly in observation and problem identification. The findings also highlighted strong student demand for integrating local medicinal plants and digital media into Human Anatomy instruction, alongside structured learning materials that support observation, discussion, and investigation. Responses to open-ended questions further emphasized the importance of practical activities, visualizations, and connections with real-world health issues. Overall, these findings provide an empirical foundation for formulating the initial design of an Ethnobotany-Based Ethno-Experiential Learning Model. The proposed model is intended to integrate local ethnobotanical contexts, concrete learning experiences, scientific inquiry, and health-related information within Human Anatomy instruction. Further research is required to develop, validate, and examine the practicality and effectiveness of the model.

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Recommendation

Future instructional model development should integrate local medicinal plants, experiential learning activities, structured student worksheets, and visual or digital learning media. Particular attention should be given to guided observation, problem identification, and the interpretation of health information. Subsequent research should focus on developing the model and examining its validity, practicality, and effectiveness through systematic testing.

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