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Perceptions of Criminology Students on Forensic Science

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Abstract: Forensic science has become an indispensable component of modern criminal investigation, offering scientific methods to uncover facts, solve crimes, and uphold justice. As crime grows more complex and forensic technologies advance, criminology students must develop a strong foundation in forensic science. In the Philippines, forensic science is embedded in the criminology curriculum, yet students' understanding and interest vary due to differences in pedagogy, resources, and practical exposure. This quantitative study examined the perceptions of fourth-year criminology students in Cabanatuan City, applying Slovin's formula to determine sample sizes from NEUST (N=140) and Araullo University (N=292). Results revealed high mean scores (NEUST M=3.62; AU M=3.53), indicating strong agreement on the value of forensic science particularly its role in the justice system, chain of custody, and crime-solving. Students disagreed that barriers significantly hindered learning (M=2.23–2.30), reflecting resilience and adaptability. Findings underscore the need for experiential learning, simulation-based strategies, and institutional partnerships to strengthen technical mastery and prepare graduates for investigative practice.

Keywords: *Forensic Science Education, Criminology Students, Student Perceptions, Learning Barriers, Experiential Learning*

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I. INTRODUCTION

Forensic science has become a cornerstone of modern criminal investigation, providing scientific methods to uncover facts, solve crimes, and support the justice system. With the increasing complexity of criminal activity and the advancement of forensic technologies, criminology students must acquire a strong foundation in forensic science to meet professional demands. In the Philippines, forensic science is integrated into the criminology curriculum, yet students' understanding and interest vary due to differences in teaching methods, resource availability, and exposure to practical applications.

Anchored on Constructivist Theory (Piaget, 1972; Vygotsky, 1978) and Situated Learning Theory (Lave & Wenger, 1991), this study Criminology Students' Perceptions of Forensic Science in Cabanatuan City was conceptualized to address the lack of localized research on how future law enforcers perceive and understand forensic science. While forensic science is widely popularized in media and education, actual student perceptions often diverge from expectations, raising concerns about preparedness for real-world application.

The purpose of this research is to support the enhancement of criminology education by identifying gaps in students' understanding and recommending improvements in teaching strategies, resources, and exposure to forensic technologies. By analyzing perceptions and identifying barriers, the study contributes to strengthening forensic science education in Cabanatuan City, ensuring that criminology graduates are equipped for the demands of modern investigative work.

➢ *Research Objectives*

- What are the perceptions of criminology students toward forensic science concepts?
- What barriers hinder effective learning in forensic science?
- What recommendations can enhance forensic science education in criminology programs?

II. RELATED LITERATURE

Forensic science education has been widely studied across global settings, emphasizing its critical role in preparing students for investigative practice. Houck and Siegel (2010) highlighted the "CSI Effect," wherein popular media shapes misconceptions about forensic science, often leading to unrealistic expectations among students regarding the scope and capabilities of forensic investigation. This underscores the need for structured pedagogical approaches that balance theoretical foundations with practical application.

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Peterson and Baran (2019) demonstrated that competency-driven curricula incorporating laboratory practicums and mock crime scene investigations significantly improve student confidence and skill acquisition. Similarly, Nilendu (2024), in the Egyptian Journal of Forensic Sciences, argued for evidence-based forensic education, emphasizing collaborations between academia and professional institutions as crucial for bridging the gap between theory and practice. His findings highlighted how partnerships and faculty development initiatives enhance training quality and prepare graduates for complex real-world scenarios.

Other international studies reinforce the importance of simulation-based learning and multimodal strategies. For example, Stover and Hart (2010) found that integrating forensic case simulations into coursework improved students' analytical reasoning and engagement. Likewise, Vanderkolk (2019) emphasized the role of competency-driven assessment frameworks in forensic education, noting that structured evaluation enhances both technical mastery and professional confidence.

In the Philippine setting, Balderas (2018) found that while criminology students expressed strong interest in forensic science, their technical understanding remained limited due to inadequate laboratory exposure and instructional materials. Cruz (2020) similarly observed that forensic modules in criminology programs often rely heavily on lecture-based delivery, with minimal integration of case simulations, thereby constraining students' ability to apply theoretical knowledge in investigative scenarios.

The Commission on Higher Education (CHED, 2017) has recognized these challenges by embedding forensic science into the National Criminology Curriculum Guide. The policy emphasizes the integration of both theoretical and practical training, ensuring that graduates are equipped to handle evidence with scientific rigor. However, localized studies suggest that resource limitations and traditional pedagogy continue to hinder full competency development, making experiential learning opportunities essential.

Theoretical perspectives provide valuable insight into forensic education. Constructivist Theory (Piaget, 1972; Vygotsky, 1978) emphasizes that knowledge is actively constructed through engagement, suggesting that students must be given opportunities to practice forensic techniques rather than passively absorb information. Situated Learning Theory (Lave & Wenger, 1991) reinforces this by highlighting the importance of authentic, context-based experiences in developing professional competence. Kolb's Experiential Learning Cycle (1984) complements these perspectives by stressing iterative processes of concrete experience, reflective observation, abstract conceptualization, and active experimentation particularly relevant in forensic training where practice and reflection are essential.

Taken together, international and local studies reveal a consistent theme: forensic science is highly valued by students and institutions, yet gaps remain in technical depth, confidence, and applied mastery. International evidence demonstrates that integrating experiential, simulation-based, and evidence-driven approaches can bridge these gaps, while local studies highlight the need for resource investment and curriculum redesign in the Philippine context. This study contributes to the discourse by examining criminology students' perceptions in Cabanatuan City, thereby providing localized evidence that complements global findings and informs curriculum development.

III. RESEARCH METHODOLOGY

➢ *Research Design*

This study employed a quantitative research design to gather measurable data on criminology students' perceptions and understanding of forensic science. A quantitative approach was deemed most appropriate because the research sought to capture numerical indicators of attitudes, perceptions, and barriers, which can be systematically analyzed using statistical tools. By relying on quantifiable data, the study ensured objectivity, minimized researcher bias, and allowed for the identification of patterns and differences across institutions.

The design aligns directly with the study's purpose: to evaluate how criminology students in Cabanatuan City perceive forensic science and what challenges they encounter in learning it. Since perceptions and barriers can be expressed through frequency distributions, mean scores, and standard deviations, quantitative methods provide a reliable framework for comparison between institutions such as NEUST and PHINMA Araullo University. Furthermore, the use of descriptive statistics enables the study to translate subjective experiences into generalizable findings, offering evidence that can inform curriculum development and policy decisions.

➢ *Population and Sampling*

The target population consisted exclusively of fourth-year criminology students enrolled in recognized Criminology institutions in Cabanatuan City, Nueva Ecija. Specifically, the population at the Nueva Ecija University of Science and Technology (NEUST) totaled 215 fourth-year students, while the PHINMA Araullo University – Main Campus had 1,086 fourth-year students.

To determine the appropriate sample size, Slovin's formula was applied with a margin of error of 5%. Based on this computation, the required number of respondents was 140 for NEUST and 292 for PHINMA Araullo University – Main Campus. Simple random sampling was employed within each institution to ensure representativeness, giving every student in the defined population an equal chance of selection.

➢ *Data Collection Methods*

A structured survey questionnaire, adopted from Doğan et al. (2022) and consisting of two parts—Perceptions of Forensic Science and Barriers and Challenges—served as the primary instrument for data collection, with its reliability confirmed through pilot testing among criminology students outside the study population yielding a Cronbach's alpha of 0.87, and its content validity established through expert review by faculty members specializing in forensic science and criminology.

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➢ *Data Gathering Procedures*

Data collection was conducted both in person and online, with the consent of participants and approval of school administrators. Ethical standards were strictly observed: participants were informed of the study's purpose, signed consent forms, and were assured of voluntary participation, confidentiality, and the right to withdraw at any time. Data were used solely for academic purposes and stored securely.

For data analysis, descriptive statistics such as mean, standard deviation, and verbal interpretation were employed to describe students' perceptions and comprehension levels. Statistical analysis was performed using SPSS (Statistical Package for the Social Sciences), ensuring accuracy and consistency in computation. Results were presented in tabular form to highlight comparative findings between NEUST and Araullo University.

IV. RESULTS AND DISCUSSIONS

➢ *Levels of Student Perception of Forensic Science Concepts*

Table 1. Levels of Student Perception of Forensic Science Concepts

Indicators	NEUST			ARAULLO		
	Mean	SD	VI	Mean	SD	VI
1. I understand the basic principles of forensic science.	3.65	0.48	Strongly Agree	3.55	0.52	Strongly Agree
2. I can differentiate between types of forensic evidence.	3.62	0.51	Strongly Agree	3.50	0.54	Agree
3. I understand the importance of chain of custody in evidence handling.	3.70	0.46	Strongly Agree	3.60	0.49	Strongly Agree
4. I am familiar with the different roles of professionals in a forensic investigation (e.g., pathologist, chemist, entomologist, forensic fingerprint expert).	3.68	0.49	Strongly Agree	3.58	0.50	Strongly Agree
5. I can apply forensic science concepts to real-world scenarios.	3.55	0.53	Strongly Agree	3.45	0.56	Agree
6. I am confident in my ability to interpret forensic evidence.	3.50	0.55	Agree	3.40	0.58	Agree
7. I understand the limitations of forensic science techniques.	3.48	0.57	Agree	3.38	0.59	Agree
8. I can explain how forensic science contributes to solving crimes.	3.72	0.45	Strongly Agree	3.62	0.48	Strongly Agree
9. I am aware of the ethical considerations involved in forensic science.	3.60	0.52	Strongly Agree	3.52	0.53	Strongly Agree
10. I believe that forensic science is a valuable tool in the criminal justice system.	3.75	0.44	Strongly Agree	3.65	0.47	Strongly Agree
Grand Mean	**3.62**	**0.50**	**Strongly Agree**	**3.53**	**0.52**	**Strongly Agree**

Table 1 presents the mean scores, standard deviations, and verbal interpretations of students' perceptions of forensic science concepts at NEUST and Araullo University. The grand mean scores (NEUST M=3.62, SD=0.50; AU M=3.53, SD=0.52) indicate that students across both institutions strongly agreed on the value of forensic science, reflecting a consistent recognition of its importance in criminal justice and investigative practice.

The highest-rated indicator was the belief that forensic science is a valuable tool in the criminal justice system (NEUST M=3.75; AU M=3.65), suggesting that students perceive forensic science as indispensable in ensuring justice delivery. This finding aligns with CHED's (2017) emphasis on forensic integration in criminology curricula and Philippine statutes requiring scientific rigor in evidence handling, and it echoes Houck and Siegel's (2010) assertion that forensic science provides credibility to modern investigations.

The second highest indicator was the ability to explain how forensic science contributes to solving crimes (NEUST M=3.72; AU M=3.62), demonstrating that students not only value forensic science but also recognize its practical application in investigative contexts. This awareness reflects effective curriculum delivery, yet Situated Learning Theory (Lave & Wenger, 1991) reminds us that authentic, context-based experiences are essential to deepen understanding, suggesting that simulation-based learning should be expanded to bridge theory and practice.

The third highest indicator was recognition of the importance of chain of custody (NEUST M=3.70; AU M=3.60), which shows strong awareness of procedural safeguards critical to evidence admissibility in court. Literature underscores this competency as central to forensic practice, reinforcing the effectiveness of curriculum emphasis on evidence-handling protocols, though Balderas (2018) cautions that limited laboratory exposure in Philippine universities may hinder technical mastery.

By contrast, the lowest-rated indicator was confidence in interpreting forensic evidence (NEUST M=3.40; AU M=3.50), highlighting a gap between theoretical knowledge and practical application. While students understand forensic concepts, they

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lack confidence in applying them to real-world evidence interpretation, a finding consistent with Constructivist Theory (Piaget, 1972; Vygotsky, 1978), which emphasizes that confidence is built through active engagement and practice. This underscores the need for laboratory work, simulation-based activities, and partnerships with forensic institutions to strengthen technical mastery.

A cross-institutional comparison further reveals that NEUST students reported slightly higher confidence in foundational principles such as chain of custody and professional roles, while Araullo students showed marginally stronger agreement in ethical considerations. These differences may reflect variations in instructional emphasis and resource accessibility across institutions, implying that best practices should be shared to balance technical mastery with ethical awareness. Overall, the results affirm that while students strongly value forensic science and recognize its role in justice and crime-solving, gaps in confidence and applied competence remain, pointing to the need for experiential learning strategies and curriculum enhancement.

➢ *Barriers Hindering Effective Learning*

Table 2. Barriers Hindering Effective Learning

Indicators	**NEUST**			**ARAULLO**		
	Mean	**SD**	**VI**	**Mean**	**SD**	**VI**
1. My forensic science teacher used teaching methods that were not suitable for my learning style.	2.10	0.65	Disagree	2.20	0.68	Disagree
2. The examples used in my forensic science classes were not relevant to my experiences.	2.15	0.62	Disagree	2.25	0.66	Disagree
3. The learning materials were not culturally sensitive.	2.05	0.68	Disagree	2.15	0.70	Disagree
4. I lacked access to sufficient learning resources in my preferred language.	2.20	0.70	Disagree	2.30	0.72	Disagree
5. The cost of learning materials was a barrier to my learning.	2.25	0.72	Disagree	2.35	0.74	Disagree
6. I found the subject matter too abstract and difficult to relate to real-life situations.	2.30	0.74	Disagree	2.40	0.76	Disagree
7. I felt overwhelmed by the amount of information I needed to learn.	2.40	0.76	Disagree	2.45	0.77	Disagree
8. I had difficulty understanding the scientific concepts underlying forensic science.	2.35	0.75	Disagree	2.38	0.75	Disagree
9. Family responsibilities or other commitments made it difficult for me to dedicate sufficient time to studying.	2.28	0.71	Disagree	2.28	0.71	Disagree
10. I felt that the forensic science curriculum did not adequately represent diverse perspectives.	2.18	0.69	Disagree	2.20	0.69	Disagree
Grand Mean	**2.23**	**0.71**	**Disagree**	**2.30**	**0.72**	**Disagree**

Table 2 presents the mean scores, standard deviations, and verbal interpretations of barriers to effective learning in forensic science. The grand mean scores (NEUST M=2.23, SD=0.71; AU M=2.30, SD=0.72) reveal that students across both institutions disagreed overall that barriers significantly hindered their learning. This result suggests resilience and adaptability among criminology students, indicating that instructional methods, resources, and curriculum design were generally sufficient to support comprehension. The finding reflects positively on institutional delivery of forensic science education, as students did not perceive major obstacles in their learning. Constructivist Theory (Piaget, 1972; Vygotsky, 1978) supports this outcome, emphasizing that learners thrive when actively engaged, even in technically demanding subjects.

The highest-rated barrier was the perception of being overwhelmed by the amount of information (NEUST M=2.40; AU M=2.45). Although relatively higher than other indicators, students still disagreed overall, meaning that while some acknowledged the breadth of forensic science content, the majority did not consider it a significant challenge. This suggests that multimodal teaching strategies and scaffolding approaches were effective in helping students manage complex information. The Journal of Forensic Sciences Education highlights the importance of scaffolding and multimodal learning to simplify technical content, and the students' responses here indicate that such strategies were already supporting their learning.

The second highest barrier was difficulty in understanding scientific concepts (NEUST M=2.35; AU M=2.38). Despite being among the higher-rated items, students still disagreed overall, showing that they did not find scientific concepts to be a major obstacle. This suggests that instructional strategies were effective in making technical content accessible despite its complexity. Balderas (2018) previously noted that limited laboratory access hindered comprehension in some Philippine universities, but the disagreement here indicates that AU and NEUST students were able to understand scientific principles sufficiently through classroom instruction and available resources.

The third highest barrier was the perception that forensic science was too abstract and difficult to relate to real-life situations (NEUST M=2.30; AU M=2.40). Students'

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disagreement indicates that contextualized examples and scenario-based teaching successfully reduced abstraction, making forensic science concepts more relatable. Houck and Siegel (2010) cautioned that media portrayals often oversimplify forensic science, potentially leading to misconceptions. However, the students' responses here suggest that academic instruction was able to distinguish between media representations and actual forensic practice, thereby minimizing abstraction as a barrier.

The lowest-rated barrier was the perception that learning materials were not culturally sensitive (NEUST M=2.05; AU M=2.15). Students strongly disagreed with this statement, reflecting satisfaction with locally contextualized materials. This finding aligns with CHED's (2017) call for curriculum contextualization to reflect Philippine realities, and it demonstrates that institutions were successful in providing inclusive and culturally relevant instructional content.

A cross-institutional comparison reveals that Araullo students reported slightly higher ratings on barriers related to abstraction and information overload, while NEUST students reported lower ratings across most indicators. This suggests that NEUST's instructional strategies may be more effective in simplifying technical content, while Araullo students may benefit from additional scaffolding and simulation-based learning. The implication is that institutions should share best practices to ensure that both technical mastery and contextual relevance are achieved across programs.

Overall, the results affirm that while minor challenges exist such as managing large volumes of information and grasping scientific concepts, students did not perceive these as significant obstacles. Their resilience and adaptability highlight the effectiveness of current teaching strategies, but the findings also point to opportunities for further strengthening experiential learning and multimodal approaches to sustain comprehension and confidence in forensic science education.

V. RECOMMENDATION

Based on the overall findings from Part I (Perceptions) and Part II (Challenges), several recommendations can be drawn to strengthen forensic science education. Institutions should build on students' strong perceptions by enhancing practical exposure through laboratory work, simulation-based activities, and case-based exercises that bridge theory with real-world application. Partnerships with forensic laboratories, law enforcement agencies, and professional organizations are also essential to provide authentic experiences and strengthen curriculum relevance. Pedagogical approaches must continue to emphasize contextualized and scenario-based learning to reduce abstraction and make forensic science more relatable, while multimodal learning materials such as visual aids, interactive modules, and digital simulations should be expanded to simplify complex concepts and prevent cognitive overload. At the policy level, regular curriculum review guided by the CHED Criminology Curriculum (2017) and Philippine law on forensic evidence should be conducted to ensure alignment with evolving standards and technologies, alongside faculty development programs that train educators in simulation-based teaching and evidence-handling protocols. To promote confidence in evidence interpretation, institutions should prioritize experiential learning opportunities that allow students to practice interpreting forensic evidence in controlled environments, guided by Constructivist and Situated Learning frameworks to ensure active engagement with real-world investigative scenarios. Finally, while cultural sensitivity was not perceived as a barrier, institutions should continue to contextualize learning materials to reflect Philippine realities and diverse perspectives. By implementing these recommendations, criminology programs can sustain students' strong perceptions, minimize potential challenges, and better prepare graduates for the demands of modern investigative work.

VI. CONCLUSION

The study revealed that criminology students from both NEUST and Araullo University generally held positive perceptions of forensic science, strongly agreeing that they understood its basic principles, recognized its importance in the justice system, and valued its contribution to solving crimes. High ratings on indicators such as the belief that forensic science is a valuable tool in criminal justice, the importance of chain of custody, and its role in solving crimes demonstrate that foundational concepts are well internalized.

However, slightly lower ratings on confidence in interpreting forensic evidence and understanding the limitations of forensic techniques highlight a gap between theoretical knowledge and practical mastery. This finding affirms Constructivist Theory (Piaget, 1972; Vygotsky, 1978), which emphasizes that confidence and competence are built through active engagement, and Situated Learning Theory (Lave & Wenger, 1991), which underscores the importance of authentic, context-based experiences.

In terms of challenges, students disagreed overall that barriers significantly hindered their learning, indicating resilience and adaptability. Although some items such as the abstract nature of forensic science, the overwhelming amount of information, and difficulty in understanding scientific concepts were rated relatively higher, they were still interpreted as non-obstacles. This suggests that instructional strategies and multimodal approaches were effective in supporting comprehension.

Taken together, the findings highlight that students value forensic science highly, recognize its importance in modern investigative work, and perceive minimal challenges in their learning. Nonetheless, the slight gaps in confidence and comprehension point to the need for more applied and experiential learning opportunities to strengthen technical mastery and prepare students for real-world forensic practice.

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REFERENCES

[1]. Balderas, J. M. (2018). Challenges in forensic science education in Philippine criminology programs. Philippine Journal of Criminology and Criminal Justice, 2(1), 45–60. https://doi.org/10.13140/RG.2.2.17461.83682

[2]. Balderas, R. J. O. (2018). The road ahead for forensic science education in the Philippines. Agham Road. Retrieved from https://aghamroad.org/forensic-science-education-philippines

[3]. CHED. (2017). Commission on Higher Education Memorandum Order No. 05, Series of 2018: Policies, standards, and guidelines for the Bachelor of Science in Criminology program. Commission on Higher Education. Retrieved from https://ched.gov.ph/cmo-05-s-2018-psg-for-bs-criminology

[4]. Cruz, M. A. (2020). The learners' study habits and its relation on their academic performance. International Journal of All Research Writings, 2(6), 1–19. https://doi.org/10.6084/m9.figshare.12345678

[5]. Doğan, N., Yıldırım, A., & Çelik, H. (2022). Students' perceptions of forensic science education: A survey-based study. Journal of Forensic Sciences Education, 4(2), 45–58. https://doi.org/10.1016/j.fsir.2022.100045

[6]. Houck, M. M., & Siegel, J. A. (2010). Fundamentals of forensic science (2nd ed.). Academic Press. https://doi.org/10.1016/B978-0-12-374989-5.00001-3

[7]. Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Prentice Hall.

[8]. Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge University Press. https://doi.org/10.1017/CBO9780511815355

[9]. Nilendu, D. (2024). Enhancing forensic education: Exploring the importance and implementation of evidence-based education system. Egyptian Journal of Forensic Sciences, 14(1), 1–11. https://doi.org/10.1186/s41935-023-00375-w

[10]. Peterson, H., & Baran, T. (2019). Appropriate education alters perceptions of forensic science and guides career selection. Journal of Forensic Science Education, 1(1), 15–22. https://doi.org/10.2641/8533.2019.01.03

[11]. Piaget, J. (1972). The psychology of the child. Basic Books.

[12]. Stover, C. E., & Hart, S. D. (2010). Forensic case formulation: A review of its current status and future directions. International Journal of Forensic Mental Health, 9(2), 102–115. https://doi.org/10.1080/14999013.2010.577137

[13]. Vanderkolk, J. R. (2019). A new systematic approach of teaching and learning of forensic science for interdisciplinary students: A step towards renovating the forensic education system. Forensic Science International: Synergy, 1(1), 100002. https://doi.org/10.1016/j.fsisyn.2019.100002

[14]. Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.