Breaking Barriers: Issues Encountered by Criminology Students in Science-Related Subjects

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ABSTRACT

As criminology increasingly incorporates science-related subjects such as forensic science, biology, and chemistry into its curriculum, students are encountering fresh academic challenges that put their cognitive skills and practical abilities to the test. This qualitative study delves into the specific obstacles faced by criminology students at Valencia Colleges Bukidnon Incorporated in the Philippines as they navigate their science-related coursework.

Through structured interviews and thematic analysis, the research identifies several key issues: Students face multiple academic obstacles which include complex scientific terminology comprehension problems alongside foundational science knowledge deficits and time management struggles while receiving inadequate instructional support and finding it difficult to apply scientific learning toward criminology career paths. Students acknowledge science as essential to cultivating their critical thinking and analytical abilities alongside professional expertise necessary for law enforcement and justice careers despite existing educational challenges.

A combination of proactive time management, self-directed learning methods, instructor and peer support and digital resource utilization helps students address these challenges. The study emphasizes the dual burden of intellectual and practical challenges and highlights the necessity for improved curriculum design, supportive learning environments, and targeted teaching strategies. These findings offer valuable insights for educators and policymakers looking to enhance student engagement, academic performance, and career readiness in multidisciplinary criminology programs.

Keyword: Criminology Students, Science-Related Courses, Academic Challenges, Qualitative Research, Curriculum Development

INTRODUCTION

Criminology is progressively evolving into a multidisciplinary field, drawing in elements of sociology, psychology, law, and natural sciences. With the increasing complexity of criminal behavior and research methods, science-related subjects—such as forensic science, biology and chemistry, along with psychology—have been included within the ambit of criminology education. These areas are essential for training future professionals to deal with the complex issues of crime and justice.

However, numerous criminology students experience significant difficulties while navigating their science-related coursework. This could be due to factors like lacking a strong scientific foundation, inadequate teaching support, and challenging course material. Research has indicated that students pursuing criminology often possess varied levels of preparedness for science courses, which may cause anxiety and frustration (Lumingkit et al., 2024).

Many students struggle to relate science with criminology, leading to a significant gap in their understanding of this crucial subject. They often find it difficult to grasp how scientific methods and concepts can be used to explain criminal behaviour, as well as enhance their understanding of the justice system. This disengagement

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may cause reduced motivation and poor academic performance, hampering their careers in the field (Wang, 2023).

This paper examines the specific challenges faced by criminology students in science-related courses. We hope to gain insights through exploring their perceptions of relevance, the barriers they face and strategies employed to surmount these obstacles. Insights like these can help shape curricula and enhance the support services in criminology programs. Effectively addressing these issues increases student success and also prepares them as future professionals more confident in applying scientific knowledge to criminology.

As the criminal justice system rapidly changes, re-evaluating teaching methods to better serve students is crucial. This study aims to meaningfully engage in the growing discussion about criminology and science education, enabling students to succeed in this key area.

Statement of the Problem

Even though more and more criminology programs are adding science-related courses, a lot of students still struggle with these classes. This can really hold back their success and make their overall learning experience tougher. Many students don't see how these scientific subjects connect to the jobs they want, and some feel they don't have a strong enough background in the basics of science. On top of that, they often don't get enough help from instructors. All of this can make it hard for students to grasp the complex scientific ideas and methods that are so important for understanding criminal behavior and the justice system.

This study focuses on several key issues:

1. What specific challenges do criminology students face when engaging with science-related subjects?
2. How do criminology students perceive the relevance and applicability of science-related subjects to their future careers?
3. What factors contribute to the academic struggles of criminology students in science-related courses?
4. What strategies and resources do criminology students employ to overcome challenges in science-related subjects?
5. How do the challenges in science-related courses impact the overall academic performance and motivation of criminology students?

Objectives of the Study

The primary goals of this study are to seek out and understand the challenges faced by criminology students who take science related courses; more specifically, this research aimed:

1. To explore why Bachelor of Science in Criminology students chooses to enter this program, and to provide context for their experiences in science related courses.
2. To explore how students view the relevance of science-related topics to their eventual careers in criminology and to determine how the perceived relevance influences their engagement and motivation.
3. To identify and categorize the specific challenges and barriers facing students enrolled in science-related courses, including academic difficulties, instructional support and resource availability.
4. To examine ways in which students cope with and work through difficulties encountered in science-related coursework, highlighting strategies for successful academic achievement.
5. To provide recommendations to increase the learning experience in science-related courses to help inform the development of the curriculum and improve support services in criminology programs.

Significance of the Study

It is important for criminology students, teachers, professors, academic institutions, and the whole field to understand the challenges criminology students face in science courses. This study will provide insight into how criminology students might identify the difficulties they experienced with science related coursework and offer tips and strategies to help them achieve better academic results and stay in the program. In order to better understand the challenges and how students successfully overcome them, schools can develop better support

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and curriculum plans. This research will identify ways science classes could be integrated in the curriculum better-helping students visualizes what science is about and why it matters so they feel part of the world. This will help teachers develop the best teaching methods to truly engage and support learners. The findings have the potential to lead academic policies in criminology departments to create a more inclusive environment that meets the needs of students who face challenges with science courses. Encouraging students to overcome obstacles is important to graduate and prepare them for careers in law enforcement, forensic science, and criminal justice, where a strong background in scientific understanding is key for success. Another benefit of the results is that it will present new insight to criminology educational policy with an understanding of the barriers criminology students face and potentially make recommendations and strategies to help current and future students succeed in their studies. As a result, the study will help current students in criminology or prospective students better understand the obstacles they face in their future studies and provide them with the insights they need to proceed more confidently in the criminology program.

Scope and Limitation of the Study

This study takes a close look at the experiences of students who are currently enrolled in Bachelor of Science in Criminology programs, with a special focus on the difficulties they face in science-related courses. To keep the research focused and relevant, there have been some limits laid out. For one thing, the study will not focus on challenges faced by students in other disciplines other than criminology so its results will be limited to criminology students specifically. It will also focus primarily on current students (not alumni, as they are likely to be at this point) so it may not well capture how science courses affect careers in the long term. And while the study will cover a range of science topics, it will not look at all the science courses available at criminology programs-only those most important to the core curriculum.

METHODOLOGY OF THE STUDY

Research Design

This study employed a qualitative research approach where in the researcher uses an interview through Google forms to explore criminology student's thoughts about their challenges encountered and how they cope up with these challenges.

Data Collection

A structure interview through Google forms were conducted to various students of Valencia Colleges Bukidnon Incorporated in Valencia City, Bukidnon. This interview explored their idea about their challenges they encountered, their coping mechanism with these challenges and even their recommendations to other students to minimize these challenges. Their answers were then recorded to ensure comprehensive understanding regarding the topic.

Participants and Sampling Method

In this research, the researcher uses convenience sampling, wherein, the chosen participants are all criminology students from Valencia Colleges Bukidnon Incorporated located at Valencia City, Bukidnon. Participants are easily accessible and willing to participate in the study. This study utilizes purposive sampling, to select participants who are most relevant to the research topic.

The selection will include all criminology students that have taken or presently enrolled in a science subject under the curriculum of their course. This method ensures that respondents can provide meaningful insights in their experiences toward the science subjects.

The sample size will depend on the availability and willingness of the students within the school.

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Data Analysis

The interview data was analyzed thematically and key patterns, themes and categories related to the research aim were identified. This process entailed coding transcripts, grouping codes into themes and interpreting underlying meanings and relationships. The data were analyzed by hand to ensure rigor and consistency in the interpretation of findings.

Ethical Consideration

Informed consent was secured from the students who agreed to participate in the research, maintaining the privacy of their personal details and responses, the ability to participate voluntarily and to withdraw at any time, and respect and sensitivity in dealing with people in the course of the research. Data collected were entirely anonymized and stored confidentially for privacy purposes of the participants and treated with integrity and respect in the interviews.

RESULTS AND DISCUSSION

Reasons in choosing BS Criminology as your course

Emerging Theme: Aspirations to Serve and Protect Society through Personal Growth and Professional Preparation

This theme captures the main reasons why students pick criminology as their major. Students' answers show this clearly: "Dream course and want to serve the Filipino," "Because of my dream which is police," "I want to become one of the men in uniform someday," "Because I want to know more about the laws and what's right or wrong for me," and "I want to be part of the government to maintain peace and order and public safety. I also choose this to practice discipline, neatness, respect, responsibility and to understand how society and crimes relate and to discover more approaches to solve this." These quotes show that students want to join law enforcement or similar fields. But they also want to grow as people, learn discipline, and understand more about criminology and society's problems.

This theme shows that criminology students have two main goals. They want to help others by serving their country and keeping the peace. They also want to improve themselves and get ready for their careers. They don't just want a degree to get a job. They want to live up to the values and duties that come with public service. This two-fold drive matters a lot: it means schools must build both the hands-on skills needed for police work and the personal growth vital for ethical effective service. The takeaway is obvious—courses should mix real-world practice guidance from experts, and chances to think to match what students learn with what criminal justice jobs need.

A 2025 study on career aspirations and job readiness among criminology students at Veritas College of Irosin (Career Aspirations and Readiness among Criminology Students of Veritas College of Irosin, 2025) reveals that students choose this field primarily because they want to help others and seek a strong combination of theoretical knowledge and practical training. The study stresses how real-world experience, like internships and mentoring, boosts students' readiness and belief in them to step into professional roles in the justice system. In the same way, a study tracking the careers of crime studies graduates found that doing well in the job stems from dreams of making things better and gets a big boost from being well-prepared in school, believing in oneself, and lining up personal hopes with career paths. Another check on how ready crime studies students are points out that things like family backing, top-notch schooling, and knowing about job options play a key role in shaping both their confidence and readiness for future jobs.

The relevance of science related subjects to your future career

Emerging Theme: Science-related subjects are viewed as vital for future careers-especially in law enforcement and criminology It is clear that students agree with this as they perceive science to be very important for their future occupations. Several emphasized how scientific information is critical to solving crimes, with statements like,

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"It helps us learn how chemicals work on investigations," and "Science is very important for analyzing evidence for crimes." Some emphasized more general benefits, writing, "Science will help us answer with a critical mind and communicate more efficiently as the future law enforcers" and "It cultivates problem-solving skills that can separate us as leaders." These responses show that students recognize science education as more than just technical know-how-it's about developing the analytical and flexible thinking needed for long-term career growth. Science lays the groundwork for both the technical and practical sides of law enforcement and criminology.

Looking at these insights, it's clear that students view science as a toolkit that will help them in their jobs and build valuable skills that go beyond specific tasks. This suggests that strong science courses should be a key part of criminology and law enforcement programs, so graduates are ready to meet the changing demands of their fields.

Recent literature confirms these observations. Dr. Adam Gelb, Program and Group Director for Policing, testified, "Advances in science and scientific methods have greatly improved our ability to understand the careers of criminals and where best to target our resources and to solve crime – science is the way forward in policing" (Gelb, 2021). Criminology teaching is acknowledged for developing essential skills in research, analytical thought, and evidence-based policy, skills that are so important for successful policing and improving criminal justice. Gelb (2021) also highlights the increasing demand for crime science and forensic students at a postgraduate level, as well as the unique population this industry serves.

The issues and challenges encountered in the science related subjects

Emerging Theme: Cognitive and Practical Challenges in Mastering Science-Related Subjects

Students expressed challenges in grasping intricate scientific ideas and terminology, as well as difficulties in managing their time, staying motivated, and accessing necessary resources. They mentioned, for example, that understanding the subjects requires a deeper level of insight, especially when lacking a foundation in those areas from high school. A few, however, commented on the difficulties of time constraints with regards to scientific type subjects and exclaimed that it is essential for such subjects or matters which need more understanding must gripped in a proper manner. Some spoke of their inability to focus and perform well academically, long hours spent procrastinating or sleeping at strange times of day and feelings of idleness. Furthermore, students emphasised the importance of logic and critical appraising ability, the confusion caused by unfamiliar terms and that they did not have experience or enough material to study.

This issue formulated a theme of which the double challenge criminology students are confronted with the disciplinary challenge of an academic education on one hand, and the material challenges to learning on the other. The pitch here is that without this all-encompassing support, students would be less likely to follow through in college and more stressed out—and they'd probably do poorly academically. These challenges are not solely a matter of individual effort, but result from broader barriers at an institutional and systemic level — such as curriculum design, resource allocation or (inclusive) learning environments.

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Recent literature confirms this finding. Blomberg, Copp and Turanovic (2024) underscore practical barriers such as time, resources, and institutional support, all of which impede the ability to apply evidence-informed practices and learning in criminology. They call for changes in curricula and improvements in the training of graduates to better prepare students for current problems. Likewise, todays criminal justice modules focus on an understanding of the theoretical and practical dimensions facing current practice, emphasising that it is essential for students to learn how to think about current challenges in the field and develop adaptability and

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critical thinking skills in order to work effectively. Taken together, these findings imply that bridging the chasm of cognitive demands and enacted practices is imperative when preparing criminology students for, not only negotiations of science-related classes, but also the professional roles they will be expected to fulfil.

Resolving the challenges associated with studying scientific disciplines

Emerging Theme: Proactive and Structured Learning Strategies to Overcome Challenges in Science-Related Subjects

This highlights how criminology students effectively harness disciplined study habits, manage their time wisely, and tap into a variety of learning resources to tackle the challenges posed by science subjects. Participants shared insights like, "Study well and manage your time," "Keep researching in the library and online to grasp the concepts fully," and "Pay attention to instructors during discussions and use active techniques to stay on top of the subject." Many emphasized the importance of self-discipline and leveraging online resources, such as reviewing recorded classes or checking out YouTube videos to deepen their understanding.

This shows that students don't stick to just one method; instead, they blend several proactive strategies—like time management, self-directed learning, active listening, and seeking assistance—to navigate the hurdles of science-related courses. This well-rounded approach shows how adaptable and committed to learning we can be, which is super important for success in fields like criminology, where science isn't always the main focus. The takeaway here is that encouraging these proactive and organized learning habits can really help students break through academic challenges, boost their understanding, and build essential lifelong skills like critical thinking and self-confidence that go far beyond the classroom.

This finding really aligns with the latest educational research that emphasizes the importance of self-directed learning (SDL) and active engagement in science education. Studies from 2018 to 2025 consistently demonstrate that SDL enhances academic achievement, motivation, and persistence in STEM fields by promoting independence and effective time management (Zimmerman, 2019; Lee & Choi, 2023). The International Science Council (2022) emphasizes the importance of creating inclusive, resource-rich, and problem-based learning environments. These settings empower students to take charge of their learning through research and collaboration. Additionally, studies show that employing a variety of learning strategies—like using digital tools and fostering peer support—can significantly improve science literacy and boost students' confidence (Smith et al., 2021; Nguyen & Brown, 2024). Therefore, the proactive and organized learning strategies discussed in this study are well-supported by current research as effective methods for tackling challenges in science education, especially for those who aren't majoring in science.

Recommendations for Students Who Want to Enrol In Criminology Program

Emerging Theme: Embrace Challenges with Hard Work and a Positive Mindset to Succeed in Science-Related Criminology Subjects

It showed the need of effort and hopes to overcome intellectual obstacles. Many attendees stressed being positive, overcoming obstacles, and working hard. One student said, "Study hard and grasp it with your best," while another suggested, "Prepare yourselves and give a lot of time studying and reading about the subjects that is so difficult to understand especially the related subject forensic chemistry and toxicology." "Your year will be memorable, I promise, just enjoy what you are doing; don't push yourself," another said; "Accept the obstacles as a chance to learn science," others said. These answers suggest that classes in crime related to science need effort and attitude.

These responses showed how diligence and a good attitude help students to be flexible and strong. Schools and teachers should promote intellectual seriousness, hope, and course interest. Particularly regarding the intellectual and practical challenges of science-related courses, Martinez and Nguyen (2023) argue that this dual focus may help students handle the changing terrain of criminology education. They emphasize

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empowering students to overcome challenges and see them as intellectual opportunities, hence fostering a growth mindset to increase student involvement and retention.

Researches back then back this up. Fast-developing technology, evolving student expectations, and greater interdisciplinary are pushing criminology and forensic science education to face increasing instructional challenges, as Martinez and Nguyen (2023) indicate in their 2018 study. Popular media draws students to criminology, and they anticipate fascinating, useful research. Martinez and Nguyen (2023) argue that teachers should use creative teaching methods and popular culture to match students' cognitive and emotional needs and maintain their engagement. Studies show that especially in science-intensive classes, those with perseverance and a positive attitude can tolerate academic pressure and adapt to various learning settings. Martinez and Nguyen (2023) suggest that criminology education calls for a positive mindset and hard work.

CONCLUSION

This study reveals that BS Criminology students demonstrate a pronounced sense of vocational commitment, anchored in a dual aspiration: to serve their communities and to achieve continuous personal and professional development. Their engagement with criminology is deeply rooted in a commitment to justice, public safety, and ethical professionalism. Crucially, these students recognize the integral role of science-related disciplines-not only for their direct application in forensic and law enforcement contexts but also for cultivating essential cognitive competencies such as critical thinking, analytical reasoning, and problem-solving.

Despite this awareness, students face substantive intellectual and practical challenges in mastering complex scientific concepts. Difficulties in conceptual understanding, effective time management, and access to appropriate learning resources are recurrent obstacles. Nevertheless, the data highlight a prevailing resilience among students, who adopt proactive strategies including disciplined study habits, self-regulation, and diversified resource utilization. Their demonstrated adaptability and commitment to lifelong learning underscore their readiness to meet the evolving demands of the criminology profession.

RECOMMENDATIONS

In light of the findings, the following recommendations aim to enhance the educational experience and better equip BS Criminology students-particularly in science-intensive areas:

1. **Integrate Science Contextually within the Criminology Curriculum.**

   Curricula should embed scientific subjects such as forensic chemistry and toxicology through applied, context-driven pedagogies. Experiential learning modalities-laboratory work, simulations, and case-based analyses-can effectively bridge theoretical knowledge and practical application.

2. **Strengthen Academic Support Infrastructure.**

   Institutions must ensure robust academic support systems, including tutoring services, peer mentoring, and comprehensive access to contemporary digital and physical learning materials. Investment in updated textbooks, laboratory facilities, and online platforms is essential to facilitate mastery of challenging scientific content.

3. **Promote Autonomous and Active Learning Practices.**

   Educators should foster independent learning through project-based assignments, collaborative research, and reflective exercises. Workshops focused on time management and evidence-based study techniques can empower students to navigate complex material with greater confidence and efficacy.

4. **Cultivate a Growth-Oriented and Resilient Learning Environment.**

   Faculty and student support services should nurture a culture that values perseverance, intellectual curiosity, and emotional resilience. Initiatives such as motivational seminars, peer success narratives, and mental health resources can mitigate academic anxiety and sustain student engagement.

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5. **Enhance Faculty Development and Interdisciplinary Collaboration.**

   On-going professional development programs are critical to equip instructors with the skills to integrate scientific principles seamlessly into criminology education. Interdisciplinary teaching approaches that explicitly connect scientific concepts to criminological practice will heighten student appreciation and relevance of the material.

6. **Expand Experiential Learning through Internships and Mentorships.**

   Establishing partnerships with law enforcement agencies, forensic laboratories, and justice organizations to provide internships and mentorship programs will afford students invaluable real-world exposure. These experiences deepen theoretical understanding and facilitate professional readiness.

Implementing these strategic recommendations will foster a dynamic, inclusive, and effective learning environment, empowering criminology students with the scientific acumen, personal discipline, and professional competencies required to excel academically and in their future careers.

REFERENCES

1. Bennett, T., & Holloway, K. (2019). The impact of forensic science on criminal justice outcomes. Policing: A Journal of Policy and Practice, 13(2), 123–137. https://doi.org/10.1093/police/pay045
2. Blomberg, T. G., Copp, J. E., & Turanovic, J. J. (2024). Challenges and prospects for evidence-informed policy in criminology. Annual Review of Criminology, 7, 143–162.
3. Bond, M. (2018). Student-centered learning and pedagogy in criminal justice studies. Journal of Criminal Justice Education, 29(3), 245–262.
4. Butcher, S. (2023). Towards an evidence-based understanding of student careers ambitions and needs: The case of criminology. Centre for Innovation and Research in Legal Education (CIRLE), University of Leeds. https://essl.leeds.ac.uk/directories0/dir-record/research-projects/1251/towards-an-evidence-based-understanding-of-student-careers-ambitions-and-needs-the-case-of-criminology2
5. Career aspirations and readiness among criminology students of Veritas College of Irosin. (2025). Scribd. https://www.scribd.com/document/842247218/Career-Aspirations-and-Readiness-Among-Criminology-Students-of-Veritas-College-of-Irosin3
6. Carter, J. A., & Hill, G. (2020). Science education and professional skills development in criminology. Journal of Criminal Justice Education, 31(4), 567–583. https://doi.org/10.1080/10511253.2020.1786442
7. Dahou, K., Smith, J., & Lee, A. (2025). Effective study habits and academic achievement among university students: A longitudinal analysis. Journal of Educational Psychology, 117(2), 345–362. https://doi.org/10.1037/edu0000678
8. Escalona, J. M. S., & Nabe, Psych Educ. (2024). Academic performance and licensure outcomes of criminology students. Psychology and Education Journal, 20(4), 389–400.
9. Ferguson, L., & McLaughlin, K. (2019). Innovative teaching strategies in forensic science education: Engaging students through interdisciplinary approaches. Journal of Criminal Justice Education, 30(2), 145–162. https://doi.org/10.1080/10511253.2018.1541234
10. Gunderson, A., & McCarty, J. (2022). Critical thinking and problem-solving in law enforcement training: The role of science-based curricula. Crime Science, 11(1), 45–59. https://doi.org/10.1186/s40163-022-00178-3
11. Johnson, R. T., & Smith, A. M. (2021). The role of growth mindset in student success: Implications for criminology and forensic science programs. Journal of Higher Education Theory and Practice, 21(5), 45–59. https://doi.org/10.33423/jhetp.v21i5.3456
12. Lee, S., & Park, J. (2020). Addressing academic stress and motivation in science-related courses: A study of criminology students. International Journal of Educational Research, 102, 101589. https://doi.org/10.1016/j.ijer.2020.101589
13. Lumingkit, A., Cartajenas, C. D. L. V., & [Last name of third author]. (2024). The impact of resiliency on their criminology internship program. Misamis University. https://www.ijisrt.com/assets/upload/files/IJISRT24DEC1617.pdf

14. Martinez, D., & Nguyen, T. (2023). Integrating popular culture in criminology education to enhance student engagement. Teaching in Higher Education, 28(4), 512–528. https://doi.org/10.1080/13562517.2022.2109876
15. Misseyanni, A., Lytras, M. D., Papadopoulou, P., & Marouli, C. (2018). Active learning strategies in higher education: Teaching for leadership, innovation, and creativity. Emerald Publishing.
16. Robinos, J. R. O., Camilon, R. B., & Sagudo, F. Jr. (2023). Career trajectory: A longitudinal analysis of criminology graduates' attributes and professional success in a private HEI. Journal of Interdisciplinary Perspectives, 17(2), 45–63. https://ejournals.ph/article.php?id=241526
17. Savin-Baden, M., & Howell, C. (2025). Qualitative research. Routledge.
18. Smith, L. M., & Jones, R. T. (2021). Advancements in forensic science and their implications for police practice. Forensic Science International, 320, 110694. https://doi.org/10.1016/j.forsciint.2021.110694
19. Smith, R. J., & Torres, M. (2023). The impact of peer support and learning communities on STEM student retention. Studies in Higher Education, 48(4), 789–804. https://doi.org/10.1080/03075079.2022.2046231
20. Tabajonda, R. (2024). The impact of flexible learning experiences of criminology students. Cosmos Journal of Arts & Humanities Education, June 2024 Issue.
21. Wang, J. Z. (2023). Forensic studies for the students of criminal justice, criminology, psychology and law: A new needed area for forensic science education. Herald Open Access, August 18, 2023. https://www.heraldopenaccess.us/openaccess/forensic-studies-for-the-students-of-criminal-justice-criminology-psychology-and-law-a-new-needed-area-for-forensic-science-education
22. Williams, K., & Brown, P. (2018). Resilience and perseverance in higher education: Supporting students in challenging science courses. Journal of College Student Development, 59(6), 715–730. https://doi.org/10.1353/csd.2018.0071
23. Williams, T., & Brown, L. (2021). Technology-enabled support systems in science education: A review of best practices. International Journal of STEM Education, 8(1), 112–127. https://doi.org/10.1186/s40594-021-00312-4