Journal of Education and Learning (EduLearn)
Vol. 20, No. 2, May 2026, pp. 1273~1284
ISSN: 2089-9823, DOI: 10.11591/edulearn.v20i2.22114

Teaching and learning style preferences of Bachelor of Science in Criminology students in a state-funded university

Jiether M. Ocampo, Kristelle Ann R. Torres
College of Criminal Justice Education, Laguna State Polytehcnic University, Laguna, Philippines

Article Info

Article history:

Received Apr 14, 2024
Revised Jul 20, 2025
Accepted Sep 30, 2025

Keywords:

BS Criminology
Delegator teaching
Learning style
Student preference
Teaching style

ABSTRACT

The main objective of this study was to determine the learning and teaching style preferences of the Bachelor of Science or BS Criminology students using the descriptive-quantitative, comparative, and cross-sectional research design. The respondents of the study were the 271 BS criminology students during the second semester, academic year 2020-2021. The study utilized the self-constructed questionnaire as data gathering tool. Based on the analysis of the findings, it was concluded that most of the respondents moderately preferred the all-cited learning and teaching style preferences considered in the investigation. The analysis of respondents' preferred learning and teaching styles when grouped according to their profile provided valuable insights into the variations and significance of these preferences across different demographic groups. By recognizing and adapting to these demographic differences, educators can create inclusive and effective learning environments that cater to the specific needs and preferences of students, ultimately enhancing their learning experiences and outcomes. To enhance the educational experience in the College of Criminal Justice Education, it is recommended to implement age-appropriate instructional strategies and create inclusive, gender-sensitive learning environments. This research can also be useful as a valuable resource to guide the future researches and contribute to the existing knowledge in the field.

Corresponding Author:

Kristelle Ann R. Torres
College of Criminal Justice Education, Laguna State Polytechnic University
Brgy. Malinta, Los Baños, Laguna, Philippines
Email: torreskristelleann@gmail.com

1. INTRODUCTION

Every educational institution nowadays has been developing strategies to let students learn in every lesson they take. Consequently, every learner possesses a unique learning style and pace. Each student is unique; on the way they wanted to learn. Hence, the struggle comes along with the question, what teaching and learning style do the students prefer? In which, every educational institution wanted to answer to enable them to provide a better-quality education for the students.

Since education and learning is important for every individual, learning's preferences have been put forward to better understand the dynamic process of learning [1]. Thus, facilitating the learning process is the primary aim of instruction or teaching. According to İlçin *et al.* [2], comprehending students' learning behaviors is regarded an integral component of a process. Moreover, the concept of learning preferences has become a popular topic in recent literature, as its definition provides that learning preferences refers to an individual's preferred way of processing new information for efficient learning [2]. It also describes the unique way developed by students when they are learning new and difficult knowledge. In light of the concept of learning preferences, it is more about the condition of how students learn rather than what they

learn. It is also important to consider that the learning process varies to each individual; students do not all learn at the same level or quality, even in the same educational environment [3].

Also, there are over 70 different learning schemes [4], and most of them are supported by a thriving industry devoted to publishing learning preferences tests and guidebooks and professional development workshops for teaching and educators [5]. A study conducted to the students of physiotherapy showed that using teaching methods that are tailored to each student's unique learning style may be an effective way to boost academic performance [2]. This evidently shows that learning preference has a positive impact on the academic performance of students. Student success in higher education also depends on learning and teaching styles. Awareness of their learning style can assist students improve learning skills so they can meaningfully choose the best learning style from a variety of styles to satisfy task at hand [6]. Hence, students' learning is enhanced when their learning style matches the lecturer's teaching style [7]. Matching teaching styles to students' learning styles does not mean lecturers should adopt the same style for all students [8].

The concept presented as the "Five teaching styles" [9], [10] was used in this study. These techniques are described in terms of the various styles that teachers can use. These are expert, formal authority, personal model, facilitator and delegator. On the other hand, learning styles were based on the model for comprehending various learning styles, the visual, aural, reading or write and kinesthetic (VARK) model. The concept of classifying people according to their preferred learning styles was introduced by Fleming and Baume [11]. The four primary learning modes are referred to by the acronym VARK, which stands for visual, auditory, reading/writing, and kinesthetic.

As a popular framework for comprehending various learning styles is the VARK model. It divides students into four basic learning styles: kinesthetic, visual, auditory, and reading/writing. Each approach reflects a preferred method of information processing. The VARK model puts a lot of emphasis on learners, but the idea of teaching styles is more about how teachers go about giving lessons. While the VARK model largely focuses on the preferences of learners, educators can develop inclusive and effective educational strategies by being aware of the many teaching styles. Teachers can improve the learning experience for a wider range of learners by taking into account the various learning preferences of their pupils and modifying their teaching strategies accordingly. Significantly, the utilization of these theories can effectively aid in the identification and understanding of the specific learning preferences exhibited by Bachelor of Science or BS Criminology students. Researchers and educators can acquire valuable insights into the factors that influence the learning process and align their teaching methodologies accordingly by exploring these theories.

Nevertheless, identifying a student's learning method offers insight into their unique preferences. Comprehending learning styles can facilitate the development, modification, and implementation of more effective educational programs. Therefore, determining learning style is quite valuable in order to achieve more effective learning. Thus, it will be more valuable to students to learn and understand their preferred teaching and learning style for a better delivery of knowledge. So, the aim of this study is to determine the teaching and learning style preference of BS Criminology students which will help them to excel more in their academics and for the institution to provide more efficient education to them.

Despite the wide range of research in learning style preferences of diverse groups of learners [12]–[19] and limited researches on learning styles preferences of criminology students [20]–[22], no research has been conducted to identify the preferred teaching styles of BS criminology students. In fact, there is even a greater limitation in studies conducted that explored how the preferred learning or teaching styles can be used to determine or design lessons, activities, or assessments in criminology. Conducting this study to fill the cited literature gap will serve as the foundation for other researchers.

Thus, the main purpose of this study was to determine the teaching and learning style preferences of BS Criminology students in a state-funded University in the Philippines. Specifically, the study determined the demographic profile in terms of sex, age, and year level. The learning style preferences determined in this study were visual learning style, auditory learning style, read-write learning style, and kinesthetic learning style. On the other hand, the teaching style preferences identified in this study delved into expert, formal authority, personal model, facilitator, and delegator. Further, the study aimed to test whether a significant difference existed between the preferred learning and teaching styles of the BS Criminology when grouped according to their profile. More so, the study had an end view of identifying the implication of the findings of the study to the College of Criminal Justice Education.

2. METHOD

This study utilized the descriptive-quantitative, comparative, cross-sectional designs. These were the most appropriate method to determine the teaching style and learning style preference of respondents when grouped according their profile. The respondents of the study were the total enumeration of 271 BS

Criminology students in one campus of the state-funded university in the Philippines who were enrolled during the second semester of academic year 2020-2021.

To obtain the responses among respondents, the research instrument utilized was the content-validated and researcher-made questionnaire which was transferred through Google Form for online dissemination among the respondents via online platform. The content of the questionnaire was composed of four parts. First part included the cover letter which aimed to solicit a participation to respond on the questionnaire and the responses provided will be treated with confidentiality and assured to be utilized for scholarly purposes only. Second part determined the respondents' profile in terms of sex, age, and year level. Third part dealt with the assessment on the preferred teaching styles in terms of visual learning, auditory learning, read-write learning, and kinesthetic learning, with five items each parameter. Last part involved the learning style preferences along expert teaching, formal authority teaching style, personal model, facilitator teaching, and delegator teaching, with five items each parameter. To assess the preferences in teaching and learning style, the following scale were used: 4-highly preferred, 3-moderately preferred, 2-moderately not preferred, and 1-highly not preferred.

Statistical measures were used to analyse and interpret the data and results in the order from which it appeared in the objective of the study. Frequency and percentage were employed to present the distribution of the respondents' profile according to age, sex, and year level. Weighted mean was used to determine the respondents' learning style preferences and teaching style preferences. While, T-test was used to test significant differences in preferred teaching style and learning style of respondents when grouped according to age and sex. Lastly, one way analysis of variance (ANOVA) was utilized to test significant differences in preferred teaching style and learning style of respondents when grouped according to year level.

3. RESULTS AND DISCUSSION

3.1. Profile of the respondents

Table 1 shows the analysis of the respondents' profile. According to the data, the majority of respondents, or 55% of the sample as a whole, were between the ages of 18 and 21. The results indicate that younger people, notably those in their late teens and early twenties, were the survey's main target audience. The information offers useful insights into the respondents' age demographics, enabling a better knowledge of the generational makeup and potentially impacting how the survey results should be interpreted. Also shown on the Table 1 that majority of the respondents, 173 individuals or 64% of the total, were male, while the remaining 98 individuals or 36% were female. These findings suggest that the decision to pursue the criminology course may still be influenced by societal norms and gender roles, as fewer females are motivated to enroll in the course. Consequently, the criminology student population is predominantly male, with females comprising a minority of 36%. In summary, males tend to dominate the criminology course, while females represent a smaller proportion of the overall student body. Lastly, in terms of year level, the respondents fall into one of three-year groups: first year, second year, or third year. This may give an idea that even challenged by Covid-19 pandemic, these second-year students were able to continue their studies even though they are not physically in school during the time of the survey.

Table 1. Profile of the respondents

Profile of respondents	Frequency	Percentage (%)
Age:		
18-21 years old	148	55
22-25 years old	123	45
Sex:		
Male	173	64
Female	98	36
Year level:		
First year	95	34
Second year	97	37
Third year	79	29

3.2. Respondents' learning style preferences

Table 2 shows the respondents' assessment on their learning preferences in terms of visual learning, auditory learning, read-write learning, and kinesthetic learning. The overall mean score of 3.05, falling within the moderate preference range, further confirms the overall preference for visual learning as an efficient learning style among the respondents. This statistical measure provides quantitative evidence to support the qualitative observations made throughout the analysis. It strengthens the argument that visual learning is favored by the respondents as an effective approach to acquiring and processing information.

Table 2. Respondents' preferred learning styles

Preferred learning style	Overall mean	Descriptive interpretation
1. Visual learning	3.05	Moderately preferred
2. Auditory learning	3.00	Moderately preferred
3. Read-write learning	3.13	Moderately preferred
4. Kinesthetic learning	3.09	Moderately preferred

Together, these justifications highlight the significance of visual learning in the respondents' learning preferences. The findings also suggest that incorporating visual elements into instructional methods can enhance their learning outcomes and promote a more effective educational experience. This suggests that the respondents believe that reading a lot of hand-outs enhances their learning experience. This preference aligns with the notion that visual learners tend to process and retain information more effectively when presented in written form. The emphasis on reading as a primary learning method further supports the respondents' inclination towards visual learning and reinforces the significance of written materials in their learning process. As supported by Magulod [23], students learn from courses that provide information in a visual format. Further, creating a visual explanation is an excellent way to learn [24].

Moreover, the overall mean score of 3.00 further supports a moderate preference for auditory learning among the respondents. However, it is important to acknowledge that individual learning styles can vary, and these findings represent the collective assessment of the respondents rather than definitive conclusions about auditory learning styles. It can be concluded that respondents have a moderate preference for auditory learning. This result offers important information about the prevalence of auditory learning preferences in the sample. People may have varied preferences and strengths when it comes to learning, thus it is important to understand the inherent variation in individual learning styles. Because of this, it is important to avoid making firm judgments on auditory learning preferences based only on these results, even though they show that the overall assessment favors auditory learning. Listening abilities are crucial for the academic success of students during their school years and for the career readiness of college students. Language learners can cultivate their listening abilities in a classroom setting and receive precisely tailored instruction, despite the fact that not everyone is particularly adept at listening. The new emphasis on the significance of speaking and listening in the common core of language courses necessitates that instructors employ and implement the requisite strategies and tools that emphasize auditory learning and teaching strategies [25].

The respondents' overall preference for read-write learning is indicated by the highest overall mean score of 3.13. This implies that the respondents show a great propensity for summarizing the information they encounter, demonstrating a desire for complete information organization. This implies that individuals actively participate in the process of transforming their notes into a format that can be learned. On the other hand, the relatively lower rating for repeatedly writing out words leads one to believe that the respondents may not use this particular technique as frequently. Overall, the composite mean's modest preference for read-write learning emphasizes the significance of written activities for these respondents in their learning process. To improve learning outcomes for students with a read-write learning style, educators and instructional designers can take advantage of this preference by integrating activities that promote taking notes, summarizing knowledge, and organizing information. Through the integration of web-based tools into a task-oriented personal learning environment, educational contexts allow spaces for learners to extend their own formal learning into more informal settings. Individual control over the learning environment affords the customized definition or fusion of tasks and tools. Through the use of technology and engagement guidelines, learners may comprehend and process epistemic signals inside task-specific loops where their particular learning objectives blossom. Students can therefore extend their own educational chances and make contextual sense of their learning where those loops are found inside more expansive, customized contexts [26].

Finally, the respondents have a moderate preference for kinesthetic learning, as indicated by the overall mean of 3.09. This suggests that respondents have a definite preference for learning through experiential activities and practice. It implies that they think applying the information practically and actively engaging with it helps them remember it. The respondents' relatively lower ratings for regularly moving around, fidgeting with pens and pencils, and touching objects while paying attention, however, indicate that these behaviors may be less frequent. Kinesthetic students learn by doing. Students might prefer one, two, or three learning styles. To ensure all students succeed in class, teachers must include exercises for each learning style in their curriculum. We use all our senses to learn, but each has its own preference. As many preferences as possible must be taught to assist all students learn [8]. Therefore, by including interactive exercises and practical applications into their lesson plans, educators and instructional designers can take advantage of students' desire for hands-on learning. To further improve learning results for people with a kinesthetic learning style, they might also think about allowing for movement and tactile sensations.

3.3. Respondents' teaching style preferences

Table 3 reveals several significant indicators of respondents' assessments on their preferred teaching style along with expert teaching, formal authority teaching style, personal model, facilitator teaching, and delegator teaching. The respondents usually respect a teaching method that challenges students to improve, but they also value other parts and features of teaching, as indicated by the overall mean of 3.10, which indicates a somewhat preferred teaching style. The composite mean implies that respondents may have a range of preferences and expectations. In order to effectively address respondents' needs and preferences in the educational context, a balanced approach that incorporates a variety of teaching methodologies may be necessary. A primary critique of VARK learning styles is that classifying learners into certain styles may hinder their drive to enhance their skills. Secondly, while numerous studies demonstrate preferences in learning styles among specific learner groups, there is a lack of substantial evidence indicating that tailoring instruction to an individual's preferred learning style produces favorable outcomes compared to a non-tailored approach [5], [27].

Table 3. Respondents' preferred teaching styles

Preferred teaching style	Overall mean	Descriptive interpretation
1. Expert teaching	3.10	Moderately preferred
2. Formal authority teaching style	2.98	Moderately preferred
3. Personal model	3.11	Moderately preferred
4. Facilitator teaching	3.09	Moderately preferred
5. Delegator teaching	3.22	Moderately preferred

Similarly, the overall mean of 2.98 indicates that the formal authority teaching style is moderately preferred by respondents. This suggests that while the majority of students appreciate the emphasis on note-taking, there is a need for more opportunities for student inquiry and active participation in the learning process. In summary, while the composite mean indicates a moderate preference for the formal authority teaching style, it is important to recognize the potential for improvement in fostering student participation and critical thinking. By incorporating more interactive and engaging teaching strategies, the teacher can enhance the learning experience and better prepare students for success in their academic and professional endeavors. A study by Kazemi and Soleimani [28] on Iranian English as a foreign language or EFL teachers reveals a significant correlation between controlling classroom management approaches (encompassing both behavioral and instructional dimensions) and the predominant use of a formal authority teaching style. The results of this study hold significant significance for practicing educators, teacher trainees, and teacher educators. Practicing educators must evaluate their classroom management strategies and pedagogical styles to determine if these methods facilitate effective language acquisition. The authors added that it is important for teachers to critically assess their classroom management approaches and teaching styles in order to create an optimal learning environment for language acquisition.

Likewise, the overall mean of 3.11, reflecting a moderate preference for the personal model teaching style, suggests that the respondents value an approach that prioritizes the teacher's demonstration and guidance. However, it also implies the need for a stronger emphasis on students emulating positive behavior. While the respondents appreciate the current teaching style, there is an opportunity to further emphasize the importance of students actively adopting and internalizing positive behaviors. This suggests that teachers might improve their methods to encourage students to emulate their good behavior. Personal model teachers promote teaching by example. Students can emulate the teacher's thoughts and actions. They supervise and demonstrate how to handle task and challenges. Additionally, this technique encourages students to observe and emulate approach of the teachers. By following this approach, as described by previous studies [29], [30], students can benefit from the direct guidance and emulate the teacher's effective methods, fostering a culture of learning and growth.

With an overall mean of 3.09, respondents moderately prefer facilitator teaching. This implied that it is usually well-received but might be improved to promote collaborative learning. It may be beneficial for the facilitator to explore strategies and incorporate more opportunities for collaboration, while still maintaining a focus on encouraging students to explore the lesson independently. It was supported by the research conducted by Dilekli and Tezci [31] revealed that the facilitator teaching style was found to have a significant impact on teachers' teaching thinking practices. The study also foundthat teachers' self-efficacy, their confidence in their abilities to teach cognitive skills, influence the instruction. The delegator teaching approach initially affected the model, but self-efficacy reduced it. These data show that teaching style and self-efficacy affect teachers' practices. Facilitator teaching was the most influential among delegator, expert, authority, and personal model approaches, highlighting its importance in teaching thinking skills.

Lastly, the overall mean score of 3.22 indicates a moderately preference of the teaching style as a delegator. Although there may be areas for improvement, the teaching approach appears to promote independent learning, active involvement, and self-reliance among respondents. Dilekli and Tezci [31] examined the impact of facilitator and delegator teaching styles on teaching thinking skills. Initially, both styles had an effect on the model. However, when self-efficacy was included as a variable, the delegator teaching style lost its significance. This highlights the crucial role of self-efficacy in shaping teachers' thinking practices. The study found that the facilitator teaching style had a stronger influence compared to other models. It emphasizes the importance of teachers' belief in their own abilities and adopting a facilitator teaching style for effective thinking skills instruction. This research enhances the understanding of the complex relationship between teaching styles, self-efficacy, and the development of thinking skills in education.

3.4. Significant difference between the preferred learning style of the respondents when grouped according to their profile

Table 4 presents the respondents' preferred learning style when grouped according to age, revealing interesting findings. The mean and standard deviation values indicate that the preferred learning style differs between the 18-21 age group and the 22-25 age group. The t-statistic of 3.075 and the associated p-value of 0.002 indicate that this difference is statistically significant at the 0.05 level. Therefore, the null hypothesis is rejected, suggesting that age has a significant influence on the preferred learning style among the respondents. This result is in consonance with the studies of Timisina [32], Alkooheji and Al-Hattami [33] which found that age disparities in learning style preferences were statistically significant. This highlights the importance of considering age-related factors when designing educational strategies and accommodating diverse learning preferences within different age groups to optimize learning outcomes. The rejection of the null hypothesis, indicating that age has a significant influence on preferred learning styles, has important implications for educational practices. It underscores the need for educators and institutions to recognize and address age-related factors when designing instructional strategies. By understanding the distinct learning preferences of different age groups, educators can tailor their teaching methods, materials, and assessments to meet the specific needs and preferences of each age group. This personalized approach can enhance engagement, motivation, and learning outcomes. Moreover, accommodating diverse learning styles within different age groups fosters an inclusive learning environment that values individual differences and promotes effective learning for all students. Ultimately, by considering age-related factors in educational design, institutions can optimize learning experiences and promote positive educational outcomes.

Table 4. Test of significant difference on the respondents' preferred learning style when grouped according to age and sex

Profile		Mean	SD	df	t-stat	p-value	Decision	Remarks
Age	18-21	3.11	0.29	269	3.075	.002	Reject Ho	Significant
	22-25	3.02	0.17					
Sex	Male	3.02	0.06	269	-3.96	.000009	Reject Ho	Significant
	Female	3.14	0.06					

The need for educators and institutions to recognize and address age-related factors when designing instructional strategies has been highlighted in various studies. For example, Segundo-Marcos *et al.* [34] emphasized the significance of considering age-related differences in learning styles and cognitive abilities to create effective instructional approaches. Similarly, Alegre *et al.* [35] conducted a study that emphasized the importance of age-appropriate pedagogical strategies for different age groups in educational settings. These studies underscore the notion that acknowledging and accommodating age-related factors is essential for optimizing instructional strategies and promoting successful learning outcomes. It was clearly demonstrated that learners of varying ages require differing levels of assistance for optimal concept-map formation [36].

Also presented in the Table 4 is the respondents' preferred learning style when grouped according to sex, reveals noteworthy findings. The mean values indicate that males have a preferred learning style with a mean of 3.02, while females have a slightly higher preferred learning style with a mean of 3.14. The t-statistic of -3.96 and the p-value of 0.000009 suggest a significant difference in preferred learning styles between males and females at the 0.05 level of significance. Consequently, the null hypothesis is rejected. However, several researches [37]–[41] disclosed that the learning style was not associated with socio demographic variable in terms of sex. Although, a past study revealed that preferred learning style scores of males were positively correlated with those of females indicating that preferred learning styles of male and female students were essentially the same [42]. However, this research highlights the need to address sex in

educational environments and tailor instructional methods to male and female learning preferences. Educators can establish inclusive learning environments that improve student outcomes and equity by identifying and accommodating gender-based disparities. The rejection of the null hypothesis, which shows a significant gender difference in learning styles, has major implications for education. It stresses the need for educators and institutions to consider gender while constructing teaching methods. Educators must adapt their teaching techniques, resources, and evaluations to create an inclusive learning environment for male and female learning preferences. Thus, instructors can improve student engagement and motivation and promote equal learning. This personalized strategy optimizes educational achievements for both genders and creates a friendly environment where all students can excel.

An inclusive and supportive learning environment depends on educators considering and addressing gender-based inequalities. This method encourages students to attain their greatest potential by respecting their learning styles and preferences. Gender consideration in instructional design ensures that educational procedures are sensitive to students' needs and features. Educators who adopt a gender-inclusive approach give all students a sense of belonging and equal opportunity. This commitment to diversity improves education and helps students succeed academically and personally. A study conducted by Palmén *et al.* [43] supported this, emphasizing the importance of recognizing and addressing gender as a factor when designing instructional approaches. The researchers highlighted the impact of gender differences on learning preferences, cognitive processes, and engagement in the educational setting. They argued that tailoring instructional strategies to accommodate these gender-specific factors can enhance student motivation, participation, and overall learning outcomes. This study underscores the significance of considering gender as a crucial element in educational planning and instructional design.

The Table 5 explores respondents' preferred learning styles when grouped according to year level, reveals interesting findings. The Table 5 presents the source of variation, sums of squares (SS), degrees of freedom (df), mean squares (MS), F-value, p-value, and critical F-value. The F-value of 0.82 and the corresponding p-value of 0.44 indicate that there is no significant difference in preferred learning styles between the different year levels. Consequently, the null hypothesis is accepted, suggesting that the year level does not have a significant influence on the preferred learning style among the respondents. While the variation between groups is not significant, the within-groups variation accounts for a larger proportion of the total sums of squares.

The findings suggest that educational institutions may not need to develop specific learning interventions solely based on year level, as the preferred learning styles tend to remain relatively consistent across different stages of education. This implies that a one-size-fits-all approach may not be necessary when designing instructional strategies for students at different year levels. However, it is important to recognize and address individual differences within each year level to cater to the diverse learning needs of students.

On the other hand, the study conducted by Languita *et al.* [44] established that out of three learning styles considered in their investigation, only one of them showed a significant difference considering the respondents' year level. On one hand, the research of Mašić *et al*. [45] opposed this finding which highlighted that school level significantly affects the preference for the learning styles. However, the researchers examined the learning style preferences of students from various year levels and found no substantial differences in their preferred learning styles. This finding indicates that the year of study does not necessarily dictate or impact the preferred learning style of students. Instead, other factors such as individual learning preferences and instructional experiences may have a more significant influence. This study provides insights into the complex nature of learning style preferences and highlights the importance of considering multiple factors when designing instructional strategies for students across different year levels.

Table 5. Test of significant difference on the respondents' preferred learning style when grouped according to year level

Source of variation	SS	df	MS	F	p-value	F crit	Decision	Remarks
Between groups	0.10	2	0.05	0.82	0.44	3.03	Accept Ho	Not significant
Within groups	16.08	267	0.06					
Total	16.18	269						

3.5. Significant difference between the preferred teaching style of the respondents when grouped according to their profile

Table 6 reveals significant findings regarding respondents' preferred teaching styles when grouped according to age. The mean values indicate that the preferred teaching style for the 18-21 age group is 3.15, while for the 22-25 age group, it is slightly lower at 3.05. The t-statistic of 3.42 and the corresponding p-value of 0.0006 suggest a significant difference in preferred teaching styles between these age groups at the

0.05 level of significance. Consequently, the null hypothesis is rejected. These results emphasize the importance of considering age as a factor in educational settings and tailoring teaching approaches to accommodate the distinct preferences of different age groups. By recognizing and adapting to these age-related differences, educators can create engaging and effective learning environments that cater to the specific needs and preferences of students, ultimately enhancing their learning experiences and outcomes.

Table 6. Test of significant difference on respondents' preferred teaching style when grouped according to age and sex

Profile		Mean	SD	df	t-stat	p-value	Decision	Remarks
Age	18-21	3.15	0.31	269	3.42	.0006	Reject Ho	Significant
	22-25	3.05	0.14					
Sex	Male	3.09	0.26	269	-1.46	0.15	Accept Ho	Not significant
	Female	3.13	0.23					

The findings from the study suggest a significant difference in preferred teaching styles between the 18-21 and 22-25 age groups. This outcome has important implications for educational practices, emphasizing the need for educators and institutions to recognize and address age as a factor when designing instructional approaches. By tailoring teaching methods, strategies, and materials to align with the distinct preferences of different age groups, educators can create engaging and effective learning environments that optimize learning outcomes. This approach not only promotes student engagement, motivation, and satisfaction but also enhances the overall learning experience for learners in different age brackets.

The study underscores the importance of acknowledging age-related differences and catering to the unique needs of learners across various age groups to foster inclusive and student-centered learning environments. By recognizing that individuals in the 18-21 age group may have different preferences and learning styles compared to those in the 22-25 age group, educators can adapt their instructional approaches to accommodate these differences. This can involve using a variety of teaching methods, incorporating technology and multimedia, providing opportunities for collaborative learning, and offering individualized support. By addressing age-related factors in instructional design, educators contribute to creating an inclusive learning environment that supports the diverse needs and preferences of learners across different age groups, ultimately enhancing the overall educational experience.

On the other hand, respondents' preferred teaching styles when grouped according to sex reveal interesting insights. The mean values for males and females indicate that the preferred teaching style for males is 3.09, while for females it is slightly higher at 3.13. However, the t-statistic of -1.46 and the associated p-value of 0.15 indicate that there is no significant difference in preferred teaching styles between genders at the 0.05 level of significance. Consequently, the null hypothesis is accepted. These results suggest that gender does not strongly influence the respondents' choices in teaching styles. While the mean values show a slight difference, it is not statistically significant. Therefore, when considering instructional approaches, educators may focus more on individual preferences and learning needs rather than relying solely on gender-based differences. Creating inclusive and adaptable teaching strategies that cater to the diverse preferences of all students, regardless of gender, will promote equitable and effective learning experiences.

The acceptance of the null hypothesis, indicating no significant difference in preferred teaching styles between sex, has important implications for educational practices. It suggests that gender does not strongly influence the respondents' choices in teaching styles. While there may be slight variations in mean values, these differences are not statistically significant. Therefore, educators may prioritize individual preferences and learning needs when designing instructional approaches rather than relying solely on gender-based differences. By creating inclusive and adaptable teaching strategies that cater to the diverse preferences of all students, regardless of gender, educators can promote equitable and effective learning experiences. This approach recognizes the uniqueness of each student and fosters an inclusive learning environment that supports all learners in achieving their full potential.

Table 7 shows the respondents' preferred teaching style when grouped according to year level. It reveals that there is no significant difference in preferred teaching styles across different year levels. The F-value of 0.67 and the associated p-value of 0.510 indicate that the variation between groups is not statistically significant at the 0.05 level of significance. Therefore, the null hypothesis is accepted, suggesting that year level does not strongly influence the respondents' choices in teaching styles. This result is somewhat similar with the research made by Languita *et al*. [44] which revealed that two out of three preferred teaching method of students, significant differences were not found considering their year level. These findings imply that when considering instructional approaches, educators should focus more on other factors, such as

individual learning needs and preferences, rather than solely relying on the students' year level. By adopting a student-centered approach and tailoring teaching strategies to address the specific requirements of each student, educators can create an inclusive and effective learning environment that supports the diverse needs of learners across different year levels.

Table 7. Test of significant difference on the respondents' preferred teaching style when grouped according to year level

Source of variation	SS	df	MS	F	p-value	F crit	Decision	Remarks
Between groups	0.046	2	0.023	0.67	0.510	3.03	Accept Ho	Not significant
Within groups	16.08	267	0.06					
Total	16.18	269						

3.6. Implication of the findings of the study to the College of Criminal Justice Education

The teaching style preferences and the learning style preference are both moderately preferred; these findings mean that they are always prepared for the tests that will take place. The impact of studying in the College of Criminal Justice Education will help to achieve their goal. With these, there are several implications for the College.

3.6.1. Preparation for tests

The fact that students are always prepared for tests indicates that the teaching methods and learning experiences in the college are effective in equipping students with the necessary knowledge and skills. The college department may continue to maintain and enhance the quality of instruction to ensure students' readiness for assessments.

3.6.2. Career preparation

As the College focuses on training students for careers in criminal justice, it is crucial to understand the potential impact of criminal justice activities on educated individuals. The college may continuously update the curriculum to align with industry needs and ensure students' desires and aspirations in their chosen careers are acknowledged and supported.

3.6.3. Learning and development

The students' agreement that the statements related to the learning style and teaching style help them develop their learning further and make their courses easier implies that the college department may consider incorporating various teaching approaches and strategies that cater to different learning styles. Providing diverse instructional methods and resources will facilitate student engagement, understanding, and overall success in their studies.

3.6.4. Experiential learning

The students' survey responses highlight the importance of real-world experience in criminal justice and social service agencies. The college may continue strengthening and expanding internship programs and practical training opportunities for students. Exposure to the actual world will enhance their learning and help them bridge the gap between being a student and entering the workforce.

This positively contributes to their overall academic success and satisfaction. Moreover, the study emphasizes the significance of career preparation in the field of criminal justice, as students' agreement with the teaching and learning styles demonstrates that they are equipped with the necessary knowledge and skills for their future careers. This prepares them to enter the workforce with confidence and competence. Additionally, recognizing students' preferred learning styles highlights the importance of individualized learning, emphasizing the need to cater to diverse learning styles in the classroom. By creating an inclusive learning environment that accommodates each student's unique needs and preferences, the college can foster a more personalized and practical learning experience.

The study's findings have significant implications for the academe, particularly regarding curriculum development, instructional strategies, and continuous improvement. In terms of curriculum development, the results highlight the importance of aligning the curriculum with industry needs and integrating diverse teaching approaches that cater to various learning styles. This holistic approach can contribute to a more comprehensive and well-rounded educational program. Furthermore, the study underscores the significance of effective instructional strategies in promoting student learning and engagement. The college can use the insights gained to refine its teaching methods and ensure that they align with students' preferences, ultimately leading to improved learning outcomes. Additionally, the study

emphasizes the need for continuous improvement in the teaching and learning practices of the college. By regularly assessing and addressing the needs and preferences of students, the academe can adapt and evolve, providing an ever-evolving educational experience that meets the highest standards. By considering these implications, the college may enhance the educational experience of their students, better prepare them for their chosen careers, and ensure their overall success in the criminal justice field.

4. CONCLUSION

This research concluded that by understanding the moderate preference for cited learning styles, educators can tailor their instructional strategies to accommodate diverse learning needs. A combination of strategies can effectively engage students and promote their learning. Age and gender also affect learning and teaching preferences, underlining the need for age-appropriate and gender-sensitive education. More so, the College of Criminal Justice students believe their degree prepares them for law enforcement and other human services careers. Thus, the College of Criminal Justice Education may consider the age-appropriate instructional methodologies to account for age-related learning and teaching preferences. This entails adapting education to different age groups' preferences, developmental stages, interests, and learning styles. This includes providing equal chances and diverse instructional methods to meet male and female students' needs and learning styles.

Criminal justice educators may also adapt their instructional strategies to cater to the diverse learning needs of students. By leveraging these insights and implementing appropriate teaching methods, educators can create more engaging and effective learning environments that optimize student learning and promote academic success. Further, educational institutions offering Criminal Justice Education may continue to prioritize and enhance internship programs as part of their curriculum. These internship opportunities provide students with valuable real-world experiences that complement their academic learning and prepare them for future criminal justice careers. By collaborating with relevant organizations and agencies, educational institutions can offer students the chance to apply their knowledge and skills in practical settings, gaining hands-on experience and developing essential professional competencies.

FUNDING INFORMATION

This research received no external funding and was fully self-funded by the authors.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Jiether M. Ocampo	✓	✓		✓	✓	✓		✓	✓					✓
Kristelle Ann R. Torres	✓	✓				✓		✓		✓	✓	✓	✓	✓

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [KART], upon reasonable request.

REFERENCES

[1] S. Aker and M. K. Şahin, "Relationship of learning styles and attitudes toward problem-based learning with academic achievement in preclinical medical students," *Journal of Medical Education*, vol. 20, no. 2, 2021, doi: 10.5812/jme.115154.

[2] N. İlçin, M. Tomruk, S. S. Yeşilyaprak, D. Karadibak, and S. Savcı, "The relationship between learning styles and academic performance in Turkish physiotherapy students," *BMC Medical Education*, vol. 18, no. 1, 2018, doi: 10.1186/s12909-018-1400-2.

[3] R. M. Brown and T. W. Mazzarol, "The importance of institutional image to student satisfaction and loyalty within higher education," *Higher Education*, vol. 58, no. 1, pp. 81–95, Jul. 2009, doi: 10.1007/s10734-008-9183-8.

[4] F. Coffield, S. Edward, I. Finlay, A. Hodgson, K. Spours, and R. Steer, *Improving learning, skills and inclusion: the impact of policy on post-compulsory education*. 1st ed., London: Routledge, 2008, doi: 10.4324/9780203928998.

[5] H. Pashler, M. McDaniel, D. Rohrer, and R. Bjork, "Learning styles concepts and evidence," *Psychological Science in the Public Interest, Supplement*, vol. 9, no. 3, pp. 105–119, 2008, doi: 10.1111/j.1539-6053.2009.01038.x.

[6] N. P. Mkonto, "Students' voice in learning style assessment: the innovative learning experiences tool (ILE)," *Journal of Studies in Education*, vol. 6, no. 2, p. 180, 2016, doi: 10.5296/jse.v6i2.8700.

[7] G. De Vita, "Learning styles, culture and inclusive instruction in the multicultural classroom: a business and management perspective," *Innovations in Education and Teaching International*, vol. 38, no. 2, pp. 165–174, 2001.

[8] A. Pourhosein Gilakjani, "Visual, auditory, kinaesthetic learning styles and their impacts on English language teaching," *Journal of Studies in Education*, vol. 2, no. 1, Dec. 2011, doi: 10.5296/jse.v2i1.1007.

[9] A. F. Grasha, "Introduction: personalizing teaching: enhancing learning and building effective student-faculty relationships," *College Teaching*, vol. 50, no. 4, p. 122, 2002, doi: 10.1080/87567550209595891.

[10] S. W. Riechmann and A. F. Grasha, "A rational approach to developing and assessing the construct validity of a student learning style scales instrument," *Journal of Psychology: Interdisciplinary and Applied*, vol. 87, no. 2, pp. 213–223, 1974, doi: 10.1080/00223980.1974.9915693.

[11] N. Fleming and D. Baume, "Learning styles again: VARKing up the right tree!" Educational Developments, SEDA Ltd, no. 7.4, 2006.

[12] R. D. Coffey, "Learning styles of undergraduate construction management students and their impact on best practices for online education," theses, Clemson University, 2020.

[13] M. E. R. Abante, B. C. Almendral, J. E. Manansala, and J. Manibo, "Learning styles and factors affecting the learning of general engineering students," *International Journal of Academic Research in Progressive Education and Development*, vol. 3, no. 1, 2014, doi: 10.6007/ijarped/v3-i1/500.

[14] N. Banafi, "Nursing students' self-motivation, attitude toward communicative language teaching, and learning style preferences concerning medical English language skills," *Theory and Practice in Language Studies*, vol. 13, no. 5, pp. 1287–1294, 2023, doi: 10.17507/tpls.1305.24.

[15] J. C. Moneva, J. S. Arnado, and I. N. Buot, "Students' learning styles and self-motivation," *International Journal of Social Science Research*, vol. 8, no. 2, p. 16, 2020, doi: 10.5296/ijssr.v8i2.16733.

[16] G. Abdullah, A. Arifin, M. Saro'i, and S. Uhai, "Assessing the influence of learning styles, instructional strategies, and assessment methods on student engagement in college-level science courses," *International Education Trend Issues*, vol. 2, no. 2, pp. 142–150, 2024, doi: 10.56442/ieti.v2i2.466.

[17] M. S. Ami and N. L. Yanti, "Identifying learning styles of biology education students," *APPLICATION: Applied Science in Learning Research*, vol. 4, no. 1, pp. 40–44, 2024, doi: 10.32764/application.v4i1.4494.

[18] S. Ahmed, K. W. Khan, S. S. Imran, M. Ramzan, S. R. M. Rizvi, and H. Saeed, "Assessment of preferred learning styles of medical students at Wah Medical College using VARK questionnaire," *Journal of Bahria University Medical and Dental College*, vol. 14, no. 03, pp. 207–211, Jul. 2024, doi: 10.51985/JBUMDC2024336.

[19] R. Navarro, V. Vega, H. Bayona, V. Bernal, and A. Garcia, "The relationship between perceived learning, academic performance and academic engagement in virtual education for university students," *Journal of Education and e-Learning Research*, vol. 11, no. 1, pp. 174–180, 2024, doi: 10.20448/jeelr.v11i1.5404.

[20] I. Tudy and R. Tudy, "Preferred learning styles of criminology students," *Slongan*, vol. 2, pp. 25–42, 2014.

[21] J. Ciasha and A. Dela Cerna, "Level of English proficiency of freshman criminology students in the University of Eastern Philippines," *SSRG International Journal of Economics and Management Studies*, vol. 6, pp. 113–119, 2019, doi: 10.14445/23939125/IJEMS-V6I2P113.

[22] K. C. Arazo, J. Hidalgo, C. G. Manabat, R. A. B. Mandawe, and J. S. Manuta, "Learning styles of BS Criminology students in Liceo de Cagayan University," *Asian Scientific Journals*, vol. 4, no. 1, 2014, doi: 10.7828/acjr.v4i1.513.

[23] G. C. Magulod, "Learning styles, study habits and academic performance of Filipino university students in applied science courses: Implications for instruction," *Journal of Technology and Science Education*, vol. 9, no. 2, pp. 184–198, 2019, doi: 10.3926/jotse.504.

[24] E. Bobek and B. Tversky, "Creating visual explanations improves learning," *Cognitive Research: Principles and Implications*, vol. 1, no. 1, Dec. 2016, doi: 10.1186/s41235-016-0031-6.

[25] F. Kayalar and F. Kayalar, "The effects of auditory learning strategy on learning skills of language learners (students' views)," *IOSR Journal of Humanities and Social Science*, vol. 22, no. 10, pp. 4–10, 2017, [Online]. Available: www.iosrjournals.org

[26] K. A. Hall, "Undocumented black students and hermeneutical injustice: higher education's role in leaving them out of the undocumented conversation," *Journal of First-Generation Student Success*, vol. 2, no. 3, pp. 143–160, 2022, doi: 10.1080/26906015.2022.2115327.

[27] E. A. Mayer, "Gut feelings: the emerging biology of gut–brain communication," *Nature Reviews Neuroscience*, vol. 12, no. 8, pp. 453–466, Aug. 2011, doi: 10.1038/nrn3071.

[28] A. Kazemi and N. Soleimani, "On the relationship between EFL teachers' classroom management approaches and the dominant teaching style: A mixed method study," *Iranian Journal of Language Teaching Research*, vol. 4, no. 2, pp. 87–103, 2016.

[29] M. Johnson and O. Liber, "The Personal Learning Environment and the human condition: from theory to teaching practice," *Interactive Learning Environments*, vol. 16, no. 1, pp. 3–15, 2008, doi: 10.1080/10494820701772652.

[30] A. van Leeuwen and J. Janssen, "A systematic review of teacher guidance during collaborative learning in primary and secondary education," *Educational Research Review*, vol. 27, pp. 71–89, 2019, doi: 10.1016/j.edurev.2019.02.001.

[31] Y. Dilekli and E. Tezci, "The relationship among teachers' classroom practices for teaching thinking skills, teachers' self-efficacy towards teaching thinking skills and teachers' teaching styles," *Thinking Skills and Creativity*, vol. 21, pp. 144–151, 2016, doi: 10.1016/j.tsc.2016.06.001.

[32] P. P. Timisina *et al.*, "Preferred learning style of students of Nangkor Central School, Bhutan," *Journal of the International Society for Teacher Education*, vol. 25, no. 1, pp. 35–47, 2021, doi: 10.26522/jiste.v25i1.3659.

[33] L. Alkooheji and A. Al-Hattami, "Learning style preferences among college students," *International Education Studies*, vol. 11, no. 10, p. 50, 2018, doi: 10.5539/ies.v11n10p50.
[34] R. Segundo-Marcos, A. M. Carrillo, V. L. Fernández, and M. T. Daza González, "Age-related changes in creative thinking during late childhood: The contribution of cooperative learning," *Thinking Skills and Creativity*, vol. 49, 2023, doi: 10.1016/j.tsc.2023.101331.
[35] F. Alegre, L. Moliner, A. Maroto, and G. Lorenzo-Valentin, "Academic Achievement and peer tutoring in mathematics: a comparison between primary and secondary education," *SAGE Open*, vol. 10, no. 2, 2020, doi: 10.1177/2158244020929295.
[36] G. Brod, "Generative learning: which strategies for what age?" *Educational Psychology Review*, vol. 33, no. 4, pp. 1295–1318, Dec. 2021, doi: 10.1007/s10648-020-09571-9.
[37] T. Muniyapillai *et al.*, "Learning styles and their relationship with preferred teaching methodologies and academic achievement among medical students in teaching medical college, Tamil Nadu," *Journal of Education and Health Promotion*, vol. 12, no. 1, p. 256, 2023, doi: 10.4103/jehp.jehp_185_23.
[38] H. A. Alharbi, A. F. Almutairi, E. M. Alhelih, and A. S. Alshehry, "The learning preferences among nursing students in the King Saud University in Saudi Arabia: a cross-sectional survey," *Nursing Research and Practice*, vol. 2017, pp. 1–7, 2017, doi: 10.1155/2017/3090387.
[39] D. A. Yousef, "Learning style preferences of undergraduate students: the case of the American University of Ras Al Khaimah, the United Arab Emirates," *Education and Training*, vol. 60, no. 9, pp. 971–991, 2018, doi: 10.1108/ET-08-2017-0126.
[40] R. A. Cabual, "Learning styles and preferred learning modalities in the new normal," *OALib*, vol. 08, no. 04, pp. 1–14, 2021, doi: 10.4236/oalib.1107305.
[41] J. Nikoopour and M. S. Khoshroudi, "EFL learners' learning styles and self-regulated learning: do gender and proficiency level matter?" *Journal of Language Teaching and Research*, vol. 12, no. 4, pp. 616–623, 2021, doi: 10.17507/jltr.1204.13.
[42] J. L. Espinoza-Poves, W. A. Miranda-Vílchez, and R. Chafloque-Céspedes, "The VARK learning styles among university students of business schools," *Propósitos y representaciones*, vol. 7, no. 2, pp. 384–414, 2019.
[43] R. Palmén, L. Arroyo, J. Müller, S. Reidl, M. Caprile, and M. Unger, "Integrating the gender dimension in teaching, research content & knowledge and technology transfer: validating the EFFORTI evaluation framework through three case studies in Europe," *Evaluation and Program Planning*, vol. 79, 2020, doi: 10.1016/j.evalprogplan.2019.101751.
[44] J. M. S. Languita, J. B. Ligtas, D. C. Baron, and T. J. A. Diquito, "Preferred style of teaching and learning by college students in the new normal," *American Journal of Multidisciplinary Research and Innovation*, vol. 2, no. 1, pp. 74–82, 2023, doi: 10.54536/ajmri.v2i1.1209.
[45] A. Mašić, E. Polz, and S. Bećirović, "The relationship between learning styles, GPA, school level and gender," *European Researcher*, vol. 11, no. 1, Mar. 2020, doi: 10.13187/er.2020.1.51.

BIOGRAPHIES OF AUTHORS

Jiether M. Ocampo is a graduate of Bachelor of Science in Criminolgy at Laguna State Polytechnic University-Los Baños Campus, Los Baños, Laguna, Philippines. His research interests involve criminology and criminal justice areas. He can be contacted at email: ocampojiether@gmail.com.

Kristelle Ann R. Torres is an assistant professor and associate dean of the College of Criminal Justice Education of Laguna State Polytechnic University-Los Baños Campus, Los Baños, Laguna, Philippines. She is a registered criminologist and serves as provincial chancellor of Professional Criminologist Association of the Philippines (PCAP)-Laguna Chapter and member of the Philippine Society for Industrial Security, Inc. (PSIS). She is an Associate Member of the National Research Council of the Philippines (NRCP) and a member of the Regional Quality Assurance Team (RQAT) of the Commission on Higher Education Region IV (CHEDRO IV) for Criminology and other allied programs. She is an alumna of Batangas State University-JPLPC Malvar Campus where she completed her Bachelor's degree in Criminology. She also earned units for the teaching proficiency at National Teachers College-Batangas. She also completed her Master of Science in Criminal Justice with specialization in Criminology, with academic distinction at De La Salle University-Dasmariñas, and Doctor of Philosophy degree in Criminal Justice with specialization in Criminology at Lyceum of Philippines University-Batangas, with academic excellence award. She serves as an Internal Quality Auditor (IQA) for the University since 2018 up to present. Her research interests involve criminology and criminal justice areas. She can be contacted at email: torreskristelleann@gmail.com.