# Learning Styles and College Readiness of Philippine K-12 Graduates

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## ABSTRACT

Learning styles are crucial in determining students' increased academic achievement. Nevertheless, despite the vast amount of empirical research that has examined how learning styles relate to academic preparation and success, studies still need to be undertaken on how learning styles are linked to the preparedness of Philippine K-12 graduates for college life. Thus, the study determined the K-12 graduates' learning styles, examined their college readiness, and ascertained the significant difference in their college readiness when grouped according to their learning styles. Using descriptive-comparative design and 7,384 first-year students (2925 males, 4459 females) enrolled at a public Philippine university for the Academic Year (AY) 2019–2020, it was found that the Philippine K-12 graduates have a neutral learning style, which reflects their lack of a specific or focused learning style responsive to developing certain learning competencies. Also, the K-12 graduates were college-unready as they fell short of demonstrating acceptable competencies defined by the College Readiness Standards (CRS). Remarkably, the study has established that college readiness significantly varies in terms of learning styles. In particular, the K-12 graduates who are social-conceptual learners are more college ready than those who exhibit independent, neutral, and social learning styles. Lastly, implications to basic and higher education instructional practices were presented based on the study findings.

**Keywords**: college readiness, learning styles, K-12 graduates

## INTRODUCTION

In the educational milieu, scholastic accomplishment is not only attributed to cognitive abilities but also to non-cognitive construct such as learning styles. Literature has pointed out that learning styles strongly relate to establishing one's unique character that may eventually contribute to one's academic success (Akbari-Chermahini et al., 2013). The consistent way in which a student responds to and makes use of stimuli while learning is referred to as their learning style. The way a student perceives, interacts with, and responds to the learning environment is indicated by a variety of distinct cognitive, emotional, and physical traits. (Li et al., 2014).

Notably, educators have long believed that learning styles are crucial in determining students' increased academic achievement. Nevertheless, despite the vast amount of empirical research that has examined how learning styles relate to academic preparation and success, the underlying mechanisms of this link still need to be better understood. This scenario only points to the fact that more research is to be done to uncover this educational phenomenon.

In the Philippines, college readiness has become a critical educational phenomenon because of the graduation of the first batch of the K-12 program in 2018. With this, the Commission on Higher Education (CHED) formulated the College Readiness Standards (CRS) as the overarching framework for assessing K-12 graduates who aspire to pursue tertiary education (Tamayao et al., 2020). College readiness is the ability to participate and succeed in first-year undergraduate courses in higher education institutions (HEIs) without needing remediation (Commission on Higher Education, 2011).

Hence, for K-12 graduates to successfully thrive in tertiary education, they must master competencies that are aligned with the CRS. At the same time, they must develop learning styles that facilitate the acquisition of learning and the establishment of solid study habits. In addition, there is no doubt that pressure comes with the transition from high school to college (Herridge, 2017) since the new educational environment necessitates the relearning of crucial social and psychological aspects relating to the new norms of college life and the impending academic, personal, and social obligations (Iglesias-Benavides et al., 2017).

Anchored on the preceding premises, the study aimed to investigate how learning styles are linked to the preparedness of Philippine K-12 graduates for college life. Indeed, these variables have yet to be examined in the context of the transition from basic to higher education. Thus, the study sought to determine the learning styles of the respondents, examine their college readiness, and ascertain the significant difference in their

college readiness when grouped according to their learning styles. The study findings could guide basic and higher education institutions in developing programmatic actions and instructional interventions that may enhance learning styles and boost the college readiness of K-12 graduates.

## LITERATURE REVIEW
### The Essence of Learning Styles in the Academic Landscape
Learning style is a significant consideration in planning effective and efficient instruction and learning as it has been shown to influence academic performance in previous research (Yadav & Shukla, 2021). Understanding students' learning style preferences can enhance learning for those underperforming in their academic studies, thereby enhancing teaching and learning (Li et al., 2014). According to Akbari-Chermahini et al. (2013), how the students learn, how the teachers teach, and how the two interact with each other are influenced by different learning styles. Each person is born with predispositions toward a specific aesthetic, and these biological traits are shaped by their environment's cultures, experiences, and developments. Every learner has a unique and preferred manner of perceiving the world, organizing information, and remembering it. These learning preferences are benchmarks for how students view, engage with, and react to their learning environments. Each student learns uniquely according to their learning preferences (Pashler et al., 2008).

### The College Readiness Construct
Conley (2007) stressed that college readiness consists of key cognitive methods, key subject understanding, academic behavior, and contextual skills and knowledge. These dimensions are closely tied to one another. Key cognitive strategies refer to an individual's skills to think critically, undertake research and problem-solving tasks, and demonstrate systems thinking which helps to learn across disciplines (Tierney & Duncheon, 2015). Notably, according to Conley et al. (2006), the cornerstone of college preparedness is the key cognitive content that facilitates students to learn the essential material and many fields. On the one hand, academic behavior is the capacity to consistently attend classes and adhere to school regulations and norms, which impact how well-prepared students succeed in tertiary education. Last but not least, contextual understanding and skills allow for the application of knowledge in the academic and social context, such as choosing the appropriate program and making a loan or scholarship application (Conley, 2010; Lundell et al., 2015).

### Understanding College Readiness in the Philippine Context
Utilizing a pertinent framework created by CHED, Filipino students' preparation for college must be evaluated. The College Readiness Standards are mentioned in this framework (CRS). It provides standards for identifying the competencies that students need to possess in order to succeed in a variety of subject areas, including science, math, social studies, literature, Filipino, English, and others. The main element of the framework is the articulation of performance and content criteria. The performance standards denote what the students can prove and exhibit using the knowledge they have learned, whereas the content standards refer to the knowledge that they must have. Interestingly, the CRS expressly focuses on enhancing 21st-century skills and competences that are highlighted in the General Education Curriculum (GEC) of higher education (Commission on Higher Education, 2013).

### The Influence of Learning Style on Academic Achievement
Student accomplishment has been demonstrated to be predicted by learning styles, which may also help to understand how pupils pick up knowledge (Ilcin et al., 2018). Knowing students' learning preferences is essential for understanding how they prefer to gather and process information. Different learning strategies result in varying classroom performance and college readiness. The impact of learning preferences on college readiness has not yet been documented. A person's preparation for college life may be influenced by the association between various learning styles and academic achievement, which has been documented by a number of researchers. For instance, learning to remember and comprehend teachings tends to aid students in achieving high academic achievement (Ling et al., 2017).

## METHODOLOGY
### Research Design
The present research employed a descriptive-comparative method to examine the difference in the respondents' college readiness when grouped according to their learning styles. This design effectively describes significant differences between the variables, but they do not show how they cause one another (Sousa et al., 2007).

### Locale of the Study
The study was undertaken at Cagayan State University (CSU), a public university in Luzon Island, Philippines. Eight campuses strategically located around the Cagayan province make up the university. These campuses offer comprehensive curricular programs responsive to the K–12 curriculum.

**Respondents and Sampling Procedures**

The 7,384 first-year students (2925 males, 4459 females) enrolled at CSU were chosen as the study respondents. Their mean age was 18.52 years, and a majority (53%) came from public comprehensive high schools. Since they did not complete the K–12 curriculum, the first-year students who graduated from the Alternative Learning System (ALS) and Revised Basic Education Curriculum (RBEC) were excluded.

**Research Instruments**

The study utilized two principal data-gathering instruments. The first tool utilized was the Learning Styles Inventory (LSI) developed by Canfield (1987). The LSI provides a short assessment of learning preferences. It comprises thirty questions requiring respondents to rank their learning preferences based on their interests, preferred learning modes, and performance requirements. The test scores are interpreted considering the following eight learning styles: social, independent, applied, conceptual, social-applied, social-conceptual, independent-applied, independent-conceptual, and neutral.

The second instrument was the College Readiness Test (CRT). The test consists of two hundred questions measuring the CRS's learning competencies in the following subject areas: English, Filipino, Literature, Mathematics, Science, Social Studies, and Humanities. There are 28 to 30 items for each learning area, with 30% of those measuring content standards (knowledge and understanding) and 70% measuring performance standards (application, analysis, testing assumptions, and evaluation). According to Tamayao et al. (2020), the CRT is a valid instrument as it has a 0.22 discriminating index, a 68.91 percent distractor efficiency, and a difficulty index of 65.64. Its inter-item consistency is also acceptable (r=0.796).

**Data Gathering Procedure**

The researcher asked the university administration for help and permission to collect data. For the eight campuses, schedules were established. The CRT and LSI were administered by the researcher with the aid of academic staff, guidance counselors, and psychometricians. Due to the orientation that was conducted before data collection, there was a 100% response rate.

**Ethical Considerations**

Before the study's implementation, the respondents' consent was also obtained. In compliance with research ethics, consent from the school administration and other research collaborators was also requested. Moreover, the researcher was authorized by the Centile Psychological Assessments to utilize the LSI. The protocol and requirements for adhering to test administration standards were then explained to all test administrators. Finally, to ensure the data's validity, the test administration procedures, verification, and scoring were carried out with the professional assistance of psychometricians and guidance counselors.

**Data Analysis**

The frequency, percent, and weighted mean were employed in examining the respondents' learning styles and college readiness. Furthermore, Analysis of Variance (ANOVA) and Tukey Post Hoc Test were utilized to test the difference in the respondents' college readiness when grouped according to their learning styles. Finally, a significance level of 0.05 was used for the analysis.

**RESULTS**
**Learning Styles of the Respondents**

**Table 1: Respondents' learning style**

| Learning Styles | Frequency | Percent |
|---|---|---|
| Social/applied | 116 | 1.6 |
| Applied | 1002 | 13.6 |
| Independent/applied | 183 | 2.5 |
| Social | 398 | 5.4 |
| Neutral preference | 4460 | 60.4 |
| Independent | 753 | 10.2 |
| Social/conceptual | 36 | .5 |
| Conceptual | 372 | 5.0 |
| Independent/conceptual | 64 | .9 |
| Total | | 100 |

Table 1 presents that an overwhelming majority (60.40%) of the respondents have a neutral preference for learning style. This finding signifies that the respondents tend to need more clear areas of solid preference in learning. Further, it suggests that the respondents were not able to master a specific learning style that is aligned with developing learning competencies in the K-12 curriculum.

**College Readiness of the Respondents**

**Table 2: College readiness of the respondents based on the CRT**

| College Readiness | Frequency | Percent |
|---|---|---|
| Unready | 4,556 | 61.7 |
| Ready | 2,828 | 38.3 |
| General Mean score = 93.96 | | |
| Total | 7,384 | 100.0 |

Table 2 shows that more respondents are not prepared for college (4,556 or 61.70%) than those who are (2,828 or 38.30%). The overall mean score was 93.96, which falls short of the required 100. This result implies that only two-fifth of the respondents are college-ready. Significantly, these college-ready individuals tend to show progression and mastery of the entrance competencies identified by the CRS. Also, they are more likely to be accepted into college and have a higher propensity to pass the GEC without needing remedial classes.

**Difference in the Respondents' College Readiness When Grouped according to Learning Styles**

**Table 3: Differentials in the Respondents' College Readiness in Terms of Learning Styles**

| Learning Styles | Mean | Standard Deviation | p-value |
|---|---|---|---|
| Independent | $93.00^A$ | 19.43 | A |
| Neutral preference | $93.47^A$ | 20.04 | A |
| Social | $93.58^A$ | 20.13 | A |
| Social-applied | $94.53^{AB}$ | 21.13 | ab[*] |
| Independent-applied | $95.16^{AB}$ | 20.00 | ab[*] |
| Applied | $95.16^{AB}$ | 20.00 | ab[*] |
| Conceptual | $96.78^{AB}$ | 21.00 | ab[*] |
| Independent-conceptual | $97.44^{AB}$ | 18.80 | ab[*] |
| Social-conceptual | $101.97^B$ | 18.74 | B |

Means of the same letter do not significantly vary at 0.05 significance level; $*p<0.05$

Table 3 shows that with respect to learning styles, the ANOVA results reveal a significant difference in respondents' mean college readiness test scores when grouped according to learner type, $F(8, 7370) = 3.0$, $p=0.002$. In addition, a Tukey post hoc test revealed that respondents with independent, neutral, and social learning types had significantly lower mean college readiness scores compared to those who were social-conceptual learner type. However, other pairwise comparisons are not significantly different. This finding specifically suggests that students who prefer possibilities for interaction with peers and teachers while using highly structured language-oriented materials are typically more prepared for college than their counterparts.

**DISCUSSION**

This present study found that K-12 graduates exhibited neutral learning preferences. However, this learning style only reflects that the K-12 graduates could not master a specific learning preference that fits the development of certain learning competencies. Hence, it may negatively impact their academic performance and success. As Pashler et al. (2008) note, if the learning style is not definite, it impedes academic growth because it determines how people learn best (Vidyakala et al., 2018). Also, it is implied in the finding that the K-12 graduates have yet to develop a learning style that aligns with the academic demand and rigor of tertiary education. This scenario could be explained by the fact that the K-12 graduates were still transitioning from high school to college. Subsequently, this transition may have affected them, especially in finding a good match in any other learning type, as they find it challenging to become entirely involved. Nonetheless, they must try to overcome this situation because succeeding in college requires the development of appropriate and contextualized learning styles.

Moreover, the study revealed that more K–12 graduates were not prepared for college. This scenario suggests that the K–12 graduates fell short of the fundamental CRS's skills outlined. Indubitably, this university situation paints a picture of Philippine K–12 students who fared poorly on large-scale assessments (Balagtas et al., 2019).

In light of the K–12 program's potential, the analysis indicates a particular discrepancy between the claim of the Department of Education and its results. Because education stakeholders are still adjusting and enhancing the procedures to meet its intended aims, this scenario may be linked to the fact that the K–12 program implementation has not yet been perfected (Paat, 2022). Gatdula (2018) supports this allegation by asserting that the K-12 program's first deployment was fraught with issues. These issues may have been made worse by ineffective teachers, a lack of quality study materials, and faulty curriculum. The respondents were also only adjusting to the multiple K-12 program areas that would have affected their preparedness for college because they were part of the second batch of K–12 graduates (Asuncion et al., 2020).

Significantly, the present study unveiled that college readiness significantly differs when grouped according to learning styles. This point only supports previous research claiming that learning styles predict student achievement and may explain how students acquire learning (Ilcin et al., 2018). As such, students' learning styles give vital information about their specific way of collecting and processing data (Ling et al., 2017). In this sense, they affect K–12 graduates' chances of getting into college and passing the GEC without needing to take remedial classes.

Specifically, it has been found that those who are social-conceptual learners are more college-ready than those who are independent, neutral, and social learners. This point could be explained by the fact that social-conceptual learners favor having the chance to communicate with teachers, classmates, or peers while using well-organized language-focused materials. They prefer to learn using graphic organizers coupled with brainstorming or group dynamic sessions with their peers or teachers. Also, they are inclined to learn better when there is a balance of lectures and discussions. Simply put, this learning style is better than its counterparts because it combines the best social and conceptual learning features necessary to develop competencies defined in the CRS. With this preference, K-12 graduates are better able to get into tertiary institutions and pass the foundational courses without needing to take remedial classes.

## CONCLUSION

The study provided evidence that, generally, the Philippine K-12 graduates have a neutral learning style, which reflects the graduates' lack of a specific or focused learning style responsive to developing certain learning competencies. As they transition from SHS to higher education, they have yet to identify and choose the relevant and appropriate learning style that could usher them to thrive in a new academic landscape. Also, the K-12 graduates lacked college readiness as they fell short in demonstrating acceptable competencies defined by the CRS. Considerably, this scenario points out that there is still significant room for improvement in basic education, mainly focusing on the adequate preparation of the students for tertiary learning. Remarkably, the study has established that college readiness significantly varies in terms of learning styles. In particular, the K-12 graduates who are social-conceptual learners are more college ready than those who exhibit independent, neutral, and social learning styles.

## RECOMMENDATIONS

In light of the study findings, the following are suggested:

1. The Philippine basic education may highlight in its teaching praxis the significance of appropriately identifying the students' learning styles for proper instructional advising and guidance that may lead to better preparation for college life. Students are encouraged to develop a social-conceptual learning style, which tends to usher them to be more college ready.
2. The basic education teachers and administrators may craft interventions to ensure that the K-12 graduates are college ready. This move can be made possible by creating a college-going culture, particularly at the SHS level.
3. The higher learning institutions may propose remediation programs for the college-unready students who were admitted. This remediation may be a tutorial, academic counseling, focused instructional advising, or peer mentoring.

## ACKNOWLEDGMENT

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