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Cognitive ability and career choice among graduating senior high school students

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Abstract

This study explored the cognitive ability and career choices of 151 graduating senior high school students enrolled for the 2024-2025 school year in schools under Special Geographic Area, BARMM, Philippines. Personal factors influencing students career decisions were also identified. Student cognitive ability was measured using the Filipino Intelligence Test (F.I.T.). Data collected via standardized test and a researcher-made questionnaire. It was analyzed using Mean, Pearson product- moment correlation, and Spearman's Rho.

Descriptive statistics showed students' cognitive abilities in vocabulary, analogy, and numerical reasoning were generally moderate, indicating adequate but not exceptional proficiency. The most common career choices were teaching (knowledge-based), nursing (skill-based), and business management (entrepreneurial).

Interestingly, no statistically significant correlations were found between knowledge-based careers and any cognitive ability domains. However, students with higher numerical reasoning scores showed a greater inclination toward skill-based professions.

Keywords: Cognitive Ability; Career Choice; Knowledge-Based; Skill-Based; Entrepreneur-Based

1. Introduction

The cognitive ability and career choice plays a significant role in the future of every student. As graduating high school students embark on the threshold of adulthood, the significance of their career choices cannot be understated. Research consistently highlights the pivotal role of career decisions in shaping individuals' lives, affecting their socioeconomic status, job satisfaction, and overall well-being.

With the contemporary job market characterized by rapid technological advancements and shifting industry landscapes, the importance of informed career choices has never been more pronounced (Schneider & Stevenson, 2018). Moreover, the long-term implications of career decisions extend beyond individual success, influencing economic growth and societal progress (Hansen, 2012).

Cognitive abilities, encompassing critical thinking, problem-solving, and decision-making skills, are essential for navigating the complexities of career decision-making (Gottfredson, 1997).

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Many senior high school students across the globe struggle with this aspect, hindering their capacity to make well-informed career decisions. This gap is exacerbated by various factors, including limited access to resources, socio-economic disparities, and inadequate career guidance (OECD, 2017).

Unfortunately, many senior high school students in the Philippines struggle with this aspect, hindering their ability to make effective career decisions. This gap is exacerbated by limited access to resources and guidance necessary for exploring diverse career pathways (Gacuya & Lu, 2020). Consequently, the cognitive ability gap not only restricts individual career prospects but also poses obstacles to the country's socioeconomic development.

Research on how cognitive ability influences career choices among senior high school students is crucial for several reasons: By identifying specific cognitive skills that are associated with successful career decision-making, educators can design interventions to foster these skills among students (Brown, Roebuck, & Dawis, 1978). This understanding can lead to the development of more effective guidance strategies tailored to the cognitive abilities of senior high school students (Fouad & Santana, 2017).

It can help identify areas where students may lack the necessary cognitive skills for their desired career paths. By addressing these gaps early on, educators can better align education and training programs with the demands of the job market, reducing skills mismatches and improving workforce readiness (Robst, 2007). Through understanding how cognitive abilities influence career choices, policymakers can develop strategies to maximize the potential of senior high school students, leading to a more skilled and competitive workforce that drives economic growth (OECD, 2014). Armed with this knowledge, students can make more informed choices about their future paths, leading to greater personal fulfillment and success in their chosen careers (Gacuya & Lu, 2020). Thus, this study was conducted to explore how cognitive ability influences career choices of graduating senior high school students.

2. Methods

2.1. Research Design

This research employed quantitative method to collect data; it indicates that data. This employs a descriptive-correlational approach. The researchers used descriptive design to determine the career choice of graduating senior high school students. Correlational analysis was done to identify the relationship between the variables and their effects (Creswell & Plano Clark, 2011). Also, this research employed a quantitative approach, specifically a Standardized Test and a researcher-made questionnaire, to generate participant data.

2.2. Locale of the Study

The study focused on the cognitive ability and career choice among graduating senior high school students in the Special Geographic Area Municipalities, namely Pahamuddin, Nabalawag, and Malidegao.

The researchers conducted this study in various Municipalities. There are eight (8) schools studied. These schools were Datu Embak Mangansing Memorial High School (Senior), Rajah Muda High School, Gokotan High School, Olandang High School, Simsiman High School, and Datu Daud Rahman High School, Manuangan HS, and Matilac High School.

On November 21, 2019, the eight school was officially transferred to the jurisdiction of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Special Geographic Area (SGA) after the majority of its residents voted to be included in the region during the 2019 Bangsamoro autonomy plebiscite.

2.3. Respondent of the Study

The study has 151 respondents from the three (3) Municipalities of the Special Geographic Area: Malidegao, Nabalawag, and Pahamuddin. The respondents are the graduating senior high school students.

2.4. Sampling Procedure

The researchers used complete enumeration. As stated by Cresswell (2014), a complete enumeration provides the most accurate results, as it includes every member of the population. Also, by including the entire population, there is no risk of sampling error, which can occur when a subset of the population is selected.

2.5. Research Instrument

To predict the success of senior high school students in their career choice, their cognitive ability was measured using the Filipino Intelligence Test (F.I.T.).

The instrument used by the researchers was adopted from the work of Aurora R. Palacio, EdD, and Vicentita M. Cervera, EdD.

This Filipino Intelligence Test (F.I.T.) is, locally, a truly Filipino instrument developed, and truly Filipino. The development of the Panukat ng Katalinuhang Pilipino (PKP), the original version of the Filipino Intelligence Test, was motivated by the strong need in the country for local instruments that can provide a valid assessment of Filipino Intelligence.

Pulling together these resources resulted in selecting four significant intelligence constructs that can be measured objectively. It consists of three (3) areas. Test 1: Vocabulary, a 6-minute test with 30 items; Test II: Analogy, a 6-minute test with 3o items; and Test III: Numerical Ability, a 20-minute test with 25 items. The Filipino Intelligence Test (F.I.T) is a 32-minute test consisting of 85 problems.

To measure the cognitive level of senior high school students, the CIS or crystallized intelligence score will be based on the combined T-Scores for the verbal subtests: Vocabulary, Analogy, and Numerical Ability or: CIS= VTS + ATS + NATS, where VTS is Vocabulary T-score, ATS is analogy T-score, and NATS is numerical ability T-Score equivalent.

A researchers made survey questionnaire was utilized to determine the career plan, career choice of students, their responses shall be categorized in the following categories:

Table 1 Category with description in determining the career plan and career choice of the students

Category	Description
Knowledge-based career	Knowledge-based career paths allow the person to use the knowledge he/she acquired over time to do his/her job.
Skill-based career	Skill-based professionals understand how a specific job function operates. These are often physical, hands-on, or service skills.
Entrepreneur-based career	An entrepreneur solves a problem or a specific need by selling their product or service. An entrepreneur can work independently or start a company and hire employees.
Freelance career	They are independent contractors that perform a specific job or project.

2.6. Data Collection and Procedure

In the gathering of data needed in the study, the following steps were performed: The researchers prepared a letter of request addressed to the Schools Division Superintendent's office asking for permission to conduct the study entitled" Cognitive Ability and Career Choice among graduating Senior High School Students" in selected schools in the municipalities of Malidegao, Nabalawag, and Pahamuddin. Upon the approval of the request, the researchers furnished copies of the letter, which was sent to the school heads and principals of the identified schools. The researchers then coordinates with the teachers so that their students can be taken as the respondents in the study. The instrument was personally administered to facilitate verifications and clarifications from the respondents.

Orientation. Upon approval, the participants and individuals were oriented about the conduct of the study, its significance, its purpose, and objectives. Each item on the survey questionnaire was explained thoroughly to the respondents. More so, the respondents were asked to sign an Informed Consent Form specifying their voluntary participation in the study. Next, as the researchers, we informed the respondents to protect their confidentiality. Hence, the data gathered were used only for the study. A schedule was set for the administration of the survey questionnaire.

Survey Questionnaire. Part I of the survey questionnaire gathered data on the career choices of graduating senior high school students. Part II asked them "Why Question" to support their career choice. It was administered to the graduating Senior High School students. Results were tallied, computed, and analyzed.

2.7. Data Analysis

The data tallied through a coding sheet was processed, analyzed, and interpreted using tools like mean, Pearson, Product Moment Correlation Coefficient, and Linear Regression with the assistance of statistician.

The researchers used frequency distribution to ascertain the category of career choices of graduating senior high school students and their level of cognitive ability.

2.8. Ethical Considerations

The school administrators and the teacher-respondents sought ethical approval. Each respondent was provided with an information sheet detailing the purpose of the study, the right to choose to or not to participate, and the right to withdraw at any time. Respondents were assured of confidentiality, and anonymity was ensured by avoiding using their names, but instead, the questionnaires were coded. Each consenting respondent was provided with a consent form and requested to sign it as consent.

3. Results and Discussions

3.1. Level of Cognitive Ability of Graduating Senior High School Students

The descriptive results presented in Table 2 indicates that the level of cognitive ability of senior high school students falls within the average range across all three domains. Specifically, the mean scores were as follows: vocabulary (M = 1.92, SD = 0.97), analogy (M = 1.94, SD = 0.96), and numerical ability (M = 1.97, SD = 0.95).

Based on the defined scale, these values are closest to the midpoint of 2 (Average), suggesting that students generally demonstrate adequate but not exceptional proficiency in these cognitive areas.

The consistency across vocabulary, analogy, and numerical reasoning also supports the concept of an underlying general cognitive ability factor (Spearman, 1904), where individuals who perform well in one cognitive domain tend to perform similarly in others. Furthermore, moderate standard deviations in each domain suggest that while most students clustered around the average level, a few may have lower or higher cognitive abilities.

Table 2 Descriptive Statistics and Interpretation of Students' Cognitive Ability

Cognitive Component	Mean	Std. Deviation	Interpretation
Vocabulary	1.97	0.97	Moderate
Analogy	1.92	0.96	Moderate
Numerical Ability	1.94	0.95	Moderate

Note. Interpretation based on the scale

Range	Description
1.00-1.66	Low
1.67-2.33	Moderate
2.34- 3.00	High

3.2. Most Common Career Choice of Graduating Senior High School Students

Out of 151 total respondents who underwent a survey questionnaire on their career choice, it was found that the most common career choice of graduating senior high school students in terms of knowledge-based career was Teacher with a total of 46 or 30.46 %, Police officer, a total 0f 31 or 20.52%, Social worker a total of 24 or 15.89%, Engineer 7 or 4.63%, Doctor 2 or 1.32%, Psychologist 1 or 0.66%, Lawyer 1 or 0.66% and Veterinarian 1 or 0.66 %. In terms of skill-based careers, the most common career was Nursing, with a total of 24 or 15.89 %; IT/ Web Developers, a total of 5 or 3.31%; Agriculturist, a total of 4 or 2.64%; and Midwifery, a total of 4 or 2.64%, In an entrepreneur-based career, the chosen career was Business Manager, a total of 1 or 0.66%. It was found that no chosen career is under the free-lance-based career category. Career decision-making is a complicated part of the life process of students.

Additionally, Tang (2019) states that a deliberate selection of career and future workplace is directly influenced by an individual's present preferences, shaping their professional identity.

Table 3 Most Common Career Choice of Graduating Senior High School Students

Category	Career Choice	Frequency	%
Knowledge-Based Career	Teacher	46	30.46
	Police	31	20.52
	Social worker	24	15.89
	Engineer	7	4.63
	Doctor	2	1.32
	Psychologist	1	0.66
	Lawyer	1	0.66
	Veterinarian	1	0.66
Skill Based Career	Nursing	24	15.89
	IT/ Web Developers	5	3.31
	Agriculturist	4	2.64
	Midwifery	4	2.64
Entrepreneur Based Career	Business Manager	1	0.66
Free Lance-Based Career			
		151	100

3.3. Relationship between Career Choices and Cognitive Ability of the Students

Table 4 presents Spearman's Rho correlation coefficients examining the relationship between students' cognitive abilities- specifically vocabulary, analogy, numerical ability reasoning- and their preferred career choices, such as knowledge-based, skill-based, and entrepreneurship-based careers.

For knowledge-based careers, results revealed no statistically significant correlations with any of the cognitive ability domains. Specifically, the correlation between knowledge-based career choice and analogy ability was $r = .066$, $p = .514$; numerical ability was r = .126, p= .209' and vocabulary was *r= .068, p=.499.* This suggests that pursuing a knowledge-student's performance may not significantly influence a career in these specific cognitive domains.

In contrast, a significant and moderate positive correlation was found between numerical ability and skilled-based career choices (r=.522, p=.0005), indicating that students who scored higher in numerical reasoning were more inclined toward skilled-based professions. Other correlations for this career category—analogy (r=-.091, p=.721), vocabulary (r= .059, p=.559), and overall cognition (r= .046, p=.646) were not statistically significant.

Most notably, entrepreneurship-based career choices showed substantial and statistically significant positive correlations with numerical (r=.622, p=.006) and vocabulary (r=.622, p=.066) abilities. This indicates that students with higher scores in these domains are more likely to prefer entrepreneurial paths. However, no significant correlation was observed between entrepreneurship choice and analogy ability (r= .010, p=.524).

These findings suggest that cognitive abilities, particularly numerical and vocabulary reasoning, are key in influencing career preferences, especially for skilled and entrepreneurial pathways. The lack of significant correlations for knowledge-based careers may indicate that other non-cognitive factors--- such as interests, exposure, or socioeconomic background ---could be more influential in guiding these choices.

Table 4 Spearman Rho Correlation Matrix Between Career Choice and Cognitive Ability of Students Career Choice

Cognitive ability			Knowledge-based	Skill-based	Entrepreneurship Based
Analogy	Correlation Coefficient Sig. (2-Tailed) N	0.066 0.514 151	0.126 0.209 151	0.068 0.499 151	0.109 0.280 151
Numerical Ability	Correlation Coefficient Sig. (2-Tailed) N	0.091 0.721 151	0.522* 0.005 151	0.059 0.559 151	-0.046 0.646 151
Vocabulary	Correlation Coefficient Sig. (2-Tailed) N	0.010 0.524 151	0.622* 0.006 151	0. 622* 0.006 151	0.112 0.265 151

4. Conclusions

- The level of cognitive ability of senior high school students falls within the average level.
- The most common career choice of graduating senior high school students is a knowledge-based career.
- The career choice and cognitive ability of the students are not significantly correlated.
- Career choices are strongly influenced by external factors such as financial constraints, family expectations, academic performance, and social influences.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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