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Psychology

DISPARITY BETWEEN APTITUDES AND THE CHOICE OF CAREER-ORIENTED COURSES AMONG STUDENTS IN IT COURSES

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ABSTRACT The research aimed to find the discrepancy between the Aptitude and interest levels among Engineering Students. It focuses on measuring the skills, potential and cognitive abilities to determine the levels of Aptitude. The research also aspires to evaluate the Interest to get an insight on the vocational interest among the students. This study has applied a descriptive research design and survey method for the data collection among the Engineering students. The Sampling Method used for the research was the Purposive sampling method and a Sample of 50 Engineering students was selected from various Colleges in the District of Erode. Tools: The psychological measures administered were David's Battery of Differential Abilities (DBDA) developed in 2009 by Sanjay Vohra and The Thurstone Interest Schedule (TIS) by L.L. Thurstone (1947). Statistical analysis: The data was analysed by descriptive statistics, in terms of frequencies and percentages. Results: The results were found to be: that there is a discrepancy between the standardized tests of aptitude for the requisite aptitudes for the IT courses versus the aptitude of the students themselves because a significant number of students performed poorly in Numerical, Reasoning, Verbal, and Closure Abilities, it becomes evident that cognitive demands in IT and engineering courses might pose a challenge for many students. Also, the research concludes that there is a significant drop in interest in the fields of Physical science and computations. Students who have low levels of interest in these areas may be less motivated to do well in school and to be happy in their careers.

KEYWORDS : Aptitude, Abilities, Interests, IT students

INTRODUCTION

Students need to make important choices about their careers, and it is necessary to pursue a field according to their strengths and passion. The process of planning a career is where one chooses a career of his/her will that comes for a lifetime. This is possible only if the students go through a process of recognizing aptitudes and interests for a suitable career to be considered. For recognising aptitudes and interests, students are required to go through a process of aptitude assessments. Once the aptitude test is done, the students will be able to know their strengths, which in turn helps them to choose a career that leads to his or her career and social life. The innate skills, cognitive abilities, and skill sets of students play a vital role in deciding their future career objectives.

As Bingham (1942) argues, "Aptitude is a state or range of qualities considered to be indicative of a person's capacity to learn some knowledge, skill to respond, etc." (for example, capacity to learn a language and to make music). Every course requires specific abilities that are an essential requirement for proficiency. For example, Students who like to pursue computer courses need reasoning and numerical skills. Otis Institute diverts students who opt for interest-based courses to career-oriented courses to not meet their potential, and students may be experiencing academic failures, demotivation, and unhappiness in their chosen field. According to further research studies, the vocational interest of the student and its skilful competency plays a vital role in the selection of long-term career-oriented courses for proper growth.

Degree of vocational interests indicates the extent to which people like certain professions and activities This study focuses on the difference between aptitude & the selection of technology-oriented courses by the students in the IT-based streams. The IT sector is expanding and is filled with career possibilities. But it needs certain skills, like numerical skills, reasoning skills, and spatial skills. Moreover, students' motivation toward both computational tasks and concepts such as physical sciences are important factors for students' success and satisfaction with the IT courses.

Review of Literature

Maknun J. (2022) The Effect of Student Achievement on Student Interest and Career Choices. Here, we provide a systematic review of the variables that influence students' interests and career trajectories to quantify the effect that students' performance has on these factors together with the student's achievement. The articles were collected using the keywords "career choice" and "career interest." A total of 10 articles that were published from 2011 to 2021 were reviewed. Journals were categorised by year of publication, journal type and outcome measures obtained. The study's results show that the family aspect is one of the most important factors influencing student choice. Note that you also have the student achievement factor, which greatly impacts their interests and, consequently, their career fields. This study can assist as a useful reference for the following studies by manifesting the research needs on student career choices.

McKenzie S. et al (2017) Informing the career development of IT students by understanding their career aspirations and skill development action plans. This study aims at deeper insights into the career aspirations and expectations of tertiary Information Technology students, from the perspective of ensuring that their beliefs and needs are considered when building support around career development. This study uses mixed methods to analyse the career aspirations of 306 students. Differences emerged among students for their initial aspirations, students lacked a strong understanding of the necessary subsequent measures to realise their career aspirations, indicating challenges in setting realistic goals. The results suggest that undergraduate Information Technology students may require assistance in making their career decisions.

AIM: To measure the Aptitude and Interest level of Engineering Students.

OBJECTIVES:

- To measure potential and cognitive abilities among engineering students to determine the levels of Aptitude.
- To evaluate the Interest to get an insight into the interest of vocation among the students of Engineering.

METHODOLOGY:

The Study Method used here is a Purposive sampling method & the Sample of 50 Engineering students was selected from various Colleges in Tamil Nadu (Erode District) Also, participants were limited to those students who were willing and gave consent to this study. This study has used a descriptive research design and survey method to collect data from Engineering students.

TOOLS:

Students were provided with a demographic data sheet to gather information about the participants. The two psychological measures used for this study are as follows:

David's Battery of Differential Abilities (DBDA)

David's Battery of Differential Abilities (DBDA) is based on the fact that individuals vary in their performance across domains of human activity, and this was developed in 2009 by Sanjay Vohra. It evaluates eight main mental skills; Reasoning Ability (RA), Closure Ability (CA), Clerical Ability (CL), Mechanical Ability (MA), Verbal Ability (VA), Numerical Ability (NA), Spatial Ability (SA), and Psychomotor Ability (PM) as the eighth. According to the DBDA-R manual, strong reliability coefficients are obtained in all subtests and are consistent internally, generally ranging between 0.70 and 0.90. The DBDA demonstrates construct validity, as seen in its theoretical framework and evidence that the subtests measure distinct cognitive functions.

The Thurstone Interest Schedule (TIS)

Thurstone Interest Schedule (TIS) L.L. Thurstone (1947). A short, easily administered measure of vocational interests in 10 occupational fields. It is a one-sheet form, with 100 occupational choices, and takes approximately 10 minutes to complete and 2-3 minutes to score. The TIS displays adequate reliability, with test-retest coefficients of 0.83 after 15 days and 0.77 after 30 days. Face validity (expert consultation) and criterion-related validity (correlations with other established instruments like Career Preference Records and Vocational Interest Records) have determined the validity.

PROCEDURES:

The authority was contacted in writing before the data was gathered. The researcher contacted the Engineering students and asked for their cooperation in giving the data. The measures were given following building the rapport with the students. A thorough verbal instruction was given to the students to explain the meaning of the items. They were also told to respond to all questions as truthfully as they could. Finally, they were ensured that the researcher would keep the data confidential so it would be used strictly for research purposes. All the research tools were given with the required instructions.

DATA ANALYSIS

Also, the data collected from the DBDA and TIS were analysed to identify the student's aptitudes and interests. Data was analysed as per descriptive statistics, in terms of frequencies and percentages.

RESULTS AND DISCUSSION

Table 1: Displays Percentage of The Core Engineering Abilities.

CORE ENGINEERING ABILITIES			
NUMERICAL ABILITY		N	%
	POOR	36	72.0%
	AVERAGE	14	28.0%
	HIGH	0	0%
REASONING ABILITY	POOR	39	78.0%
	AVERAGE	10	20.0%
	HIGH	1	2.0%

As shown in Table 1, students were analysed based on their performance in the two core engineering abilities Numeral Ability and Reasoning Ability. None (0%) were high; 72.0% of students (n = 36) scored "poor" and 28.0% of students (n = 14) scored "average" in Numerical Ability. This is a serious lack of numeracy skills, which are essential for data analysis, programming, and solving problems in IT and engineering. Likewise, in Reasoning Ability, 78.0% (n = 39) students were classified as "poor," 20.0% (n = 10) as "average," and only 2.0% (n = 1) were "high." The implication is that most students do not possess logical reasoning, which is necessary for troubleshooting, designing algorithms, and decision-making. The results show a significant deficit in key skills required to succeed in engineering and IT, indicating that inputs are needed to develop the numerical and reasoning abilities of students.

Table 2: Displays Percentage of The Supportive Engineering Abilities

SUPPORTIVE ENGINEERING ABILITIES			
PSYCHO-MOTOR ABILITY		N	%
	POOR	20	40.0%
	AVERAGE	21	42.0%
	HIGH	9	18.0%
VERBAL ABILITY	POOR	50	100.0%
	AVERAGE	0	0%
	HIGH	0	0%
CLOSURE ABILITY	POOR	42	84.0%
	AVERAGE	8	16.0%
	HIGH	0	0%
SPATIAL ABILITY	POOR	27	54.0%
	AVERAGE	22	44.0%
	HIGH	1	2.0%
CLERICAL ABILITY	POOR	15	30.0%
	AVERAGE	29	58.0%
	HIGH	6	12.0%

The distribution of the students on supportive engineering abilities is shown in (Table 2) where the five supportive engineering abilities, Psycho-Motor Ability, Verbal Ability, Closure Ability, Spatial Ability and Clerical Ability are displayed. In Psycho-Motor Ability, 40.0% of students classified as "poor" students (n = 20), 42.0% classified as "average" students (n = 21) while 18.0% classified as "high" students (n = 9) showing a moderate level of ability in the performance of physical coordination tasks. The biggest concern, however, is Verbal Ability, with 100.0% of students (n = 50) scoring "poor," indicating the importance of communication skills when working with other people or documenting what has worked and not worked at a given time. Most students (n = 42, 84.0%) were classified as "poor" in Closure Ability which indicates problems with pattern recognition and solving problems. In Spatial Ability, 54.0% of students (n = 27) performed "poor," 44.0% (n = 22) "average," and only 2.0% (n = 1) "high," suggesting difficulties in tasks that require visualization and spatial manipulation. Compared to Clerical Ability that has better results, where only 30.0% of students (n = 15) were "poor," 58.0% (n = 29) "average," and 12.0% (n = 6) "high," which indicates excellent ability in the organizational and administrative aspects. These findings highlight significant gaps in supportive abilities, especially in verbal and closure skills, which are imperative for success in IT and engineering fields, emphasizing the need for targeted interventions to address these deficiencies.

Table 3: Displays Percentage of The Interest

INTEREST			
PHYSICAL SCIENCE		N	%
	POOR	28	56.0%
	AVERAGE	21	42.0%
	HIGH	1	2.0%
COMPUTATIONAL	POOR	21	42.0%
	AVERAGE	27	54.0%
	HIGH	2	4.0%

Table 3 shows 56% of students have displayed poor interest in Physical Science, crucial as Physical Science is used as the foundation for IT and engineering Table 3 Their interest in mathematics may also result from an apparent discrepancy between what the course requires and their career aspirations, lack of exposure to compelling applications of mathematics or other external factors which shape their course selection. Although 42% of respondents indicate average interest, meaning that they might care a bit, only 2% indicate a high interest, suggesting that very few students are passionate about this field. Such a gap can delay educational innovations or even impact students' performance - raising the need for quality teaching methods and career counselling at an early age to ensure that the students do not deviate too much from their interests and end up choosing fields that may eventually bring stress.

In computational tasks, only 42% of students show a poor interest level, which is problematic, as computational skill sets are pivotal to IT careers. This lack of ambition could lead to limited engagement and a scarcity of skills in fundamental fields such as programming and data analysis. Moreover, 54% of students have shown average interest, implying moderate engagement, while only 4% have stated high interest, showing that most of the students were not very passionate about the computational work. Results indicate a potential misalignment between students' interests and the requirements of IT jobs, highlighting the necessity to optimise the course of study, encouraging practical experience and career development activity to enhance interest and better align with computational professions.

CONCLUSION

An aptitude gap: The research shows a discrepancy between the standardized tests of aptitude for the requisite aptitudes for the IT courses versus the aptitude of the students themselves. Because a significant number of students performed poorly in Numerical, Reasoning, Verbal, and Closure Abilities, it becomes evident that cognitive demands in IT and engineering courses might pose a challenge for many students.

Interest Gap: Physical science and computational fields are also facing a significant drop in interest. Students who have low levels of interest in these areas may be less motivated to do well in school and to be happy in their careers.

IMPLICATIONS:

These results indicate a possible disconnect between the interests and aptitudes of students and the expectations of IT courses. Such deficiencies may result in difficulties in academic success, professional preparedness and workplace fulfilment.

RECOMMENDATIONS

Aptitude Development: Institutions need to provide workshops for students to develop advanced numerical, reasoning, and verbal skills.

Career Counselling: Students must take career counselling so that their interests can match with their field. They could help their career path choices make more informed decisions.

Curriculum Adjustments: The curriculum could be adjusted to engage more relevant activities which may be built into the curriculum, transforming it to an extra engaging, realistic format of activities inside, matched to scholar streams of interest in inexperienced questions, academically computational and bodily sciences.

Early Assessment: assessing aptitude and interest tools could help identify students who may struggle with the demands of IT courses and provide them with the necessary support.

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