Propensity to learning difficulties and developmental problems in university students from the Peruvian Amazon

Propensión a dificultades del aprendizaje y problemas del desarrollo en universitarios de la Amazonía peruana

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Abstract

The study aimed to describe the propensity of Peruvian university students to learning difficulties, developmental problems and other difficulties related to university work. A descriptive investigation was carried out with two samples made up of 119 students belonging to the 2020-I semester and 169 from the 2020-II semester. The DASS-21 scale was used for anxiety, depression and stress; the Pittsburgh Sleep Quality Questionnaire, the Brief CBA Questionnaire, and the Questionnaire to Identify Learning, Sensory, and Motor Difficulties. The results indicate that students were more prone to difficulties related to sleep deprivation, difficulties with mathematics, non-pathological anxiety, difficulties with writing, spelling and reading comprehension and, lastly, visual limitations. Finally, it was concluded that there are learning difficulties, sleep deprivation, adjustment disorder with depressed mood states and permissible alcohol use disorder in university students in the Peruvian Amazon.

Key Words: Reading, math, sensory, deprivation and consumption.

Resumen

El estudio tuvo como objetivo describir la propensión de estudiantes universitarios peruanos a las dificultades de aprendizaje, problemas del desarrollo y otras dificultades relacionadas al quehacer universitario. Se realizó una investigación descriptiva con dos muestras conformas por 119 estudiantes pertenecientes al semestre 2020-I y 169 del semestre 2020-II. Se utilizó la escala DASS-21 para ansiedad, depresión y estrés; el cuestionario de Pittsburg de calidad de sueño, el cuestionario breve CBA y el cuestionario para identificar las dificultades de aprendizaje, sensoriales y motores. Los resultados señalan que los estudiantes presentaron mayor propensión a las dificultades relacionadas con la privación de sueño, dificultades con las matemáticas, ansiedad no patológica, dificultades de la escritura, ortografía y comprensión lectora y, por último, limitaciones visuales. Finalmente, se concluyó que existen dificultades de aprendizaje, privación de sueño, trastorno de adaptación con estados de ánimo deprimido y el permisible trastorno por consumo de alcohol en los estudiantes universitarios de la Amazonía peruana.

Palabras clave: Lectura, matemáticas, sensorial, privación y consumo.

Introduction

Higher education involves a display of skills, abilities and generic competencies that students had to develop and strengthen during the initial, primary and secondary levels. This would help them cope with university life and acquire new specialty skills related to their professional career. The daily educational practice, as well as the contributions of studies in education prove the existence of heterogeneity in the learning of higher education students, this could be due to many factors: socio-emotional, cognitive, motor, field of study, socioeconomic condition, among others. others. It means that students are not homogeneous in their way of learning, rather, there is diversity for the acquisition of knowledge and development of skills.

The admission exams to which Peruvian applicants are submitted allow them to confirm their interest in studying a university career. Likewise, there is no standardized model for the tests that are applied, therefore, many applicants access public or private higher education, however, having entered the university would not represent that the students specifically complete their higher education in the established time, some would do so within the term and others later. This could be due to the fact that they face a miscellany of courses that they must pass: basic, general, specialty, among others, as well as difficulties related to learning that they could entail from secondary education.

It could be considered that learning difficulties, widely studied in primary education, have been overcome at the university level, however, that idea would not be related to reality. There is a percentage of the student population affected by learning difficulties that in many cases reduce the performance of students or would not be what was expected, demonstrating the existence of levels of failure and dropout in the student population[1].

In many cases, these problems are not known to us because the students would have become accustomed to coping with problems related to reading, writing and mathematics in their school years and developmental problems, even without having a specific diagnosis. On the one hand, there would be students whom the evaluation mechanisms have not detected and who do not know that they have difficulties, so they end up accessing university environments without the possibility of adaptation; on the other hand, there would be those who wish to avoid the stigmatizing nature of the same[2].

Therefore, it would be evident that the entrance exam would not represent an instrument to rule out learning and developmental difficulties. This limitation would seriously affect the development of professional skills of students in university life. In a study they found difficulties in reading comprehension of mathematical problems, understanding basic mathematical content, difficulty in interest and motivation for the course, difficulty in reviewing mathematical topics and difficulty in attending tutoring and reinforcement workshops[3].

To be competent in learning implies the possibility of learning, assuming and directing one's own learning throughout life, integrating into different cultures and situations, as well as mobilizing diverse cultural knowledge to understand reality[4]. The competences facilitate the development of a true comprehensive education, since they encompass all the dimensions of the human being (knowing, knowing how to do and knowing how to be and be), their acquisition supposes the start-up of a process that leads them to progressively reach higher levels of integration and complexity in the set of elements that make them up[5]. In addition, they represent a great potential for social improvement, to the extent that they consider specific space-time, economic and social references, and a strong orientation so that the recipients can learn to carry out personal, coexistence and professional projects that are viable, useful and relevant[6].

Tébar[7] indicates that education must prevent all problems and failures to which students are exposed, being necessary to know and diagnose the causes of learning difficulties, identifying the way to express themselves in the evolutionary process. Therefore, a wide range of academic abilities, personalities, strong and weak points in students, as well as difficulties, would be found in the classroom.[8]. Table 1 describes these aspects.

Table 1. Difficulties related to learning.

Difficulty in reading	Difficulties with the decoding of written language, so that they have problems with reading.
Difficulty in math	It is related to difficulties with calculation and arithmetic, an aspect that does not fit the level of their global intelligence.
Difficulty in writing	It affects handwriting and the conversion of thoughts into written words.

Source: Hudson[8]

Reading consists of transforming the graphic signs that appear on a paper or screen into sounds (in the case of reading aloud) or meanings (in the case of comprehensive silent reading)[9]. The most common areas implicated in reading difficulty would be: spelling, reading comprehension, number confusion, letter confusion, symbol confusion, short-term memory, attention span, poor organization, get lost in reading and time control[8].

The act of writing is a powerful instrument of reflection, allowing the author to communicate perceptions in relation to the human being and the world[10]. Written language is expressed through signs on paper or on the screen of an electronic device, these graphemes together form words[9]. The difficulty of writing would be related to common areas such as: letter confusion and symbol confusion[8].

Mathematical competence refers to aspects such as: mathematical thinking and approach, calculation, problem solving, model analysis and design, reasoning such as the representation of mathematical objects and situations, communication about and with mathematics[11]. Confusion of numbers, letters, symbols, short-term memory, poor organization, getting lost, and time control would be the most common areas implicated in math difficulty[8].

However, learning difficulties would be just one of the inconveniences that university students could have. To these difficulties would be added problems related to low vision or blindness, hearing limitation (hearing loss) or cophosis (hearing loss), difficulties or limitations with displacement or movement, intellectual limitation, as well as difficulties with attention and socialization, classified as developmental or neurodevelopmental problems.

Fernández[12] considers that the difficulties manifested by the person become a disability when the result of the person's interaction with an environment without support shows their limitations at a functional level. Table 2 describes some developmental and neurodevelopmental problems.

Firts[13] catalogs from the differential diagnosis according to the particular symptoms that university students could have, in this case, in order to understand numerous conditions included in the DSM-V so that they can be explained (Table 3).

Table 2. Difficulties related to learning.

Disability	**Conceptualization**
Auditory sensory	It refers to lack or decreased hearing sensitivity.
Visual sensory	It refers to many types of difficulties and problems, associated with different vision disorders.
Motor coordination problem	It implies some dysfunction in the musculoskeletal system giving rise to certain postural limitations, displacement and coordination of movements.
Neurodevelopmental disorders	**Conceptualization**
Intellectual	From the social model, the person who has difficulty adapting to the social environment and leading an autonomous life.
Autism	It would be related to difficulties in understanding the desires and emotions of others, maintenance of social relationships, deterioration in communication related to the acquisition or incorrect use of language, learning problems, autonomy and motor health.
Attention deficit hyperactivity disorder (TDHA)	It is characterized by hyperactivity or excess of movement and impulsiveness, difficulty sustaining attention and difficulty controlling impulses.

Source: Fernández[12]

Table 3. Problems related to university students.

sleep-wake disorders	It is characterized by dissatisfaction with the quantity or quality of sleep, associated with difficulty falling or staying asleep or waking up early.	sleep deprivation	Inappropriate opportunity or circumstance for sleep that is usually transitory, such as academic or work obligations.
Generalized anxiety disorder	It is characterized by excessive anxiety and worry that have a minimum duration of time.	Non-pathological anxiety	Characterized by more controllable concerns or not severe enough to cause clinically significant distress or impairment.
depressive disorders	They are characterized by episodes of depressed moods or decreased interest or pleasure.	Adjustment disorder with depressed mood	They are characterized by depressive symptoms that appear in response to a stressor and do not meet the criteria for a major depressive episode.
Substance-related disorders and addictive disorders	Substance use characterized by a problematic pattern of substance use	alcohol use disorder	It is specified according to the recurrence of consumption in mild, moderate or severe.

Source: Fernández[13]

Currently, the university law in force in the Peruvian State promotes as principles tolerance, inclusion, human dignity, integration into the university community of people with disabilities; however, in one of its articles it conditions enrollment based on academic performance, in which it establishes: if a subject is disapproved for three consecutive times, the university will separate the student for a period of one year; In addition, when resuming his studies, he could only take the subject he failed, but not others, therefore, he would have to pass it to continue with a regular enrollment the following semester or be totally separated from the university if he failed it again.

However, the Law for the inclusion of people with disabilities issued by the Peruvian state has the purpose of adopting measures so that educational institutions at all levels allow acceptance, access, adaptation and provision, as well as plans education are favorable for the development of students with special educational needs.

Every institution of higher education, committed to the social development and quality of life of students, is committed to preventing and intervening in the university community. The actions to be carried out would be constituted in the programming of activities adapted to the need for mediation that each student requires that they set in motion a whole taxonomy of mental operations (skills development), essential to remedy the dysfunction[7]. It is necessary to have previous studies that reflect the reality of the educational problem so that the university can comply with the provisions of the laws.

It must be noted that learning difficulties are related to the problems or limitations that students have in decoding written language, calculating, arithmetic, and converting phonemes to graphemes using the hand[8]. Developmental problems are related to sensory, hearing, visual, or motor problems; neurological neurodevelopmental problems with intellectual disability, autism and ADHD[12]. Likewise, there are other problems that can affect university students such as: sleep deprivation,

non-pathological anxiety, adjustment disorder with depressed mood and alcohol consumption disorder produced by different circumstances, worries, symptoms that appear as a certain response or recurrences[13].

Finally, the objective was to describe the propensity of Peruvian university students to learning difficulties, developmental problems and other difficulties related to university work.

Materials and methods

A descriptive quantitative research was carried out in order to understand the characteristics of the population of university students from two samples, likewise, the study is based on the cross-sectional study because the collection of information was carried out in a single period of time.

As for the population, it was made up of entering students enrolled in the university, in the first semester 172, while in the second semester 301 were enrolled, likewise, through simple random sampling, a sample of 119 participating students was obtained for the study. first semester and 169 for the second semester (table 4).

Table 4. Distribution of enrolled students.

Faculties	2020-I	n	2020-II	n
Education	65	45	120	67
Engineering	54	37	77	43
Ecotourism	53	37	104	58
Total	172	119	301	169

Regarding the environment, the study was carried out considering the incoming students of the three faculties of the Universidad Nacional Amazónica de Madre de Dios, located in the region of Madre de Dios, in Peru.

For the collection of information related to the variables non-pathological anxiety and adjustment disorder with depressed state, the DASS-21 scale was used, elaborated to detect anxiety, depression and stress[14]. It is made up of 21 items with the following scale: (0) it has not happened to me, (1) it has happened to me a little or for part of the time, (2) it has happened to me a lot or for a good part of the time and (3) it has happened to me, it has happened a lot or during or most of the time. The 10-item Pittsburgh Sleep Quality Questionnaire[15] made it possible to collect information about sleep deprivation in college students. The short CBA questionnaire[16], composed of 22 items with a dichotomous response (YES/NO) was used in order to identify the indication of consumption of alcoholic beverages. To identify learning, sensory and motor difficulties, a questionnaire consisting of 40 items was structured. Its metric properties were also determined through the content-based validity and reliability process, and it was found that the scale had an adequate level of content validity (Aiken's V= 0.820) and reliability (α= 0.831).

Finally, to obtain the results of the objective and the hypotheses of the research, descriptive statistics were used, as well as the non-parametric Man Whitney U test.

Results and discussion

Table 5 shows the levels of difficulty in reading, writing and mathematics of university students based on the Learning, Sensory and Motor Difficulties Questionnaire. It is seen that both in the 2020-I semester and in the 2020-II semester, the students had greater difficulty in the reading comprehension indicator, corresponding to the reading dimension, with 35.3% for the first semester and 42% in the following. Regarding the difficulty of writing, both for the first and second semesters, the dimensions that had the highest percentage were cohesion with 40.3% and 43.2%, as well as spelling with 54.6% and 48.5%. Finally, in the difficulty of mathematics, the memorization dimension was the one with the highest percentage with 77.3% and 79.3% respectively. In addition, making the comparison between both semesters, it is seen that the difficulty in mathematics presents high levels, unlike the difficulties in reading and writing with regular levels.

Table 5. Propensity towards learning difficulties.

Semester	Difficulty	Dimension	n	%	Level
2020-I	Reading	Accuracy	37	31.1	Regular
		Fluency	39	32.8	
		Comprehension	42	35.3	
	Writing	Adequacy	43	36.1	Regular
		Coherence	45	37.8	
		Cohesion	48	40.3	
		Orthography	65	54.6	
	Math	Reasoning	29	24.4	High
		Calculation	77	64.7	
		Memorization	92	77.3	
2020-II	Reading	Accuracy	59	34.9	Regular
		Fluency	64	38.5	
		Comprehension	71	42.0	
	Writing	Adequacy	59	34.9	Regular
		Coherence	62	36.7	
		Cohesion	73	43.2	
		Orthography	82	48.5	
	Math	Reasoning	46	27.2	High
		Calculation	92	54.4	
		Memorization	134	79.3	

The results reveal the problems that university students have, corroborating the conclusions made by Pérez[1], both permanence and graduation are the stages that represent the greatest barriers for students at the university, the main requirement being to pass the number of credits necessary to advance the semesters. Therefore, there is a need to strengthen academic performance in math, reading and writing skills so that students consolidate basic skills that allow them to function autonomously in their academic work.

Table 6 shows the results of the comparison between the developmental problems identified during the academic semesters 2020-I and 2020-II based on the Learning, Sensory and Motor Difficulties Questionnaire. The visual problem was

the one with the highest incidence in both groups with 11.8% for the first and 13.6% for the second. No other problems were identified.

Table 6. Developmental problems.

Semester	Problem	n	%
2020-I	Audition	09	7.6
	Visual	14	11.8
	Motor coordination problem	02	1.7
2020-II	Audition	06	3.6
	Visual	23	13.6
	Motor coordination problem	01	0.6

The results obtained are related to the conclusions of a study that reported that 11.68% of the students presented visual acuity deficit, of which moderate visual impairment corresponded to 10.71% in the right eye and in 11.03% in the left eye, while in the category of severe disability the percentage presented was less than 1% in both eyes[17]. It follows that the policy related to university welfare must address the detection of specific visual skills of students in order to intervene and improve the quality of life of the affected population.

Table 7 presents the results comparing the problems that affect university students, who face the different academic activities during the development of the 2020-I and 2020-II semesters. In the first place, there is sleep deprivation, at the serious level, with 80.7% in the first semester and 84% in the second; the second problem that afflicts students is non-pathological anxiety, the first group has 66.4%, while the second 69.8% within the moderate level; Finally, in relation to the tendency to adjustment disorder with a depressed state and alcohol use disorder, according to the cases, their location is considered to be at the mild level.

Table 7. Problems related to university students.

Semester	Problem	n	%	Level
2020-I	Sleep deprivation	96	80.7	Serious
	Non-pathological anxiety	79	66.4	Moderate
	Adjustment disorder with depressed state	30	25.2	Light
	Alcohol use disorder	21	17.6	Light
2020-II	Sleep deprivation	142	84.0	Severe
	Non-pathological anxiety	118	69.8	Moderate
	Adjustment disorder with depressed state	68	40.2	Leve
	Alcohol use disorder	32	18.9	Leve

Table 8 shows that in all the variables the asymptotic significance is lower than the level of significance ($p<0.05$), which means that the distributions do not adjust to normality, therefore, the use of the parametric statistics to compare means and the use of non-parametric statistics was considered as an option.

Table 8. Kolmogorov-Smirnov normality test.

Variable	Semester	Statistical	gl.	Sig.
Learning difficulties	2020-I	.202	119	.000
	2020-II	.098	169	.000
Sleep quality	2020-I	.121	119	.000
	2020-II	.159	169	.000
Non-pathological anxiety	2020-I	.158	119	.000
	2020-II	.190	169	.000
Adjustment disorder with depressed state	2020-I	.136	119	.000
	2020-II	.152	169	.000
Alcohol use disorder	2020-I	.192	119	.000
	2020-II	.198	169	.000

In Table 9, statistical hypothesis tests were performed, which indicated that learning difficulties, sleep deprivation, non-pathological anxiety, possible adjustment disorder with depressed mood, and permissible alcohol use disorder they are the same in Peruvian university students of the academic semesters 2020-I and 2020-II. The Mann Whitney U test was applied as a non-parametric statistical measure in the comparison of the study groups. The result was that the p-value in the comparative contrast is greater than 0.05, accepting the statistical hypotheses of equality of medians in the measurements obtained from the study variables for both semesters. The results allow verifying that the study variables present the same behavior in both semesters.

Table 9. Equality of variables between academic semesters.

Variables	Semester		Z	U	p
	2020-I	2020-II			
	Average Range	Average Range			
Learning difficulties	136.9	149.9	- 1.304	9151	.192
sleep quality	143.9	144.9	-.110	9980	.912
Non-pathological anxiety	150.3	140.3	-1.017	9356	.309
Adjustment disorder with depressed state	143.0	145.5	-.248	9887	.805
alcohol use disorder	142.6	145.9	-.332	9828	.740

* Significant odds

The results are related, in the first place, to what was reported by an investigation carried out in Colombia, where they found that the students of the different undergraduate careers tended to present mild or moderate drowsiness in general; also, the quality of sleep deserved attention and medical treatment[18]. In relation to anxiety, the results confirm the conclusions of a research that indicated that, upon arriving at the university, students feel the need to protect their image and to avoid the possibilities of obtaining negative results, they face unpleasant emotions such as fear and anxiety[19]. These reactions are manifested in order to avoid failure, which would affect learning, asking for help, increasing mistrust and shame. Likewise, the results of an investigation corroborate the prevalence of some level of anxiety 53.2% followed by stress 47.8% and finally some disorder associated with depression 29.0%[20]. Regarding the level of alcohol consumption, the results are close to the findings of another investigation that clearly show the presence of percentages of light consumption in 7.8%, while the entire university community mentioned having a risk consumption, 17.4 % and 52.8% said they have a moderate consumption[21]. Likewise, in a study they considered social pressure and the expectations that students intend to achieve as one of the characteristics of alcohol consumption, so the prevalence of consumption increased[22]. Due to the above, there is a need to carry out prevention from the first semesters of study, even before, from pre-university studies from the university-school articulation; as well as intervene considering socio-emotional aspects from the psychopedagogical area.

Conclusion

The students of the academic semesters 2020-I and 2020-II presented a greater propensity to difficulties related to sleep deprivation, since 80.7% and 84% were at a serious level. In second place, difficulties with mathematics were found, in the formula memorization dimension, with 77.3% and 79.3%. The third place was occupied by non-pathological anxiety with 66.4%, and 69.8% in the moderate level. Fourth place was given to writing difficulties, in the cohesion dimensions with 40.3% and 43.2%, as well as in spelling with 54.6% and 48.5%. The fifth place was occupied by the reading comprehension dimension with 35.3% and 42%. Lastly, visual limitation was the developmental problem that most affected both groups with 11.8% and 13.6%, respectively.

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