Influence of Methodologies on learning disabilities in university students

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[1,4,5,6,7]First, Third, Room, Fifth, Sixth, and Seventh Author's University César Vallejo, Perú, fhilariof@ucvvirtual.edu.pe, lcaritac@ucvvirtual.edu.pe, lsanabriar@ucvvirtual.edu.pe, rfloresba@ucvvirtual.edu.pe
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Abstract– The methodological strategies of learning assessment of university students are an ongoing problem that always requires a creative proposal that includes the actors of this process. The main objective of the study is to identify and compare methodologies related to the learning problems of university students. For the methodological process of the research, under a quantitative approach, a non-experimental design was carried out, taking as reference the management of educational institutions in which the difficulties that teachers have in applying pedagogical methodologies in teaching to improve learning and academic achievement performance of university students are identified. In the results, there is a predominance of both medium and high levels, as Interaction Social has a high level with a percentage value of 72.2%; on the other hand, social competencies maintain a high level with a value of 57.6%. On the other hand, for the medium level, the Evaluation with a value of 96.0%, and finally, the methodologies learning problem with a value of 57.6%. In conclusion, it was analyzed the strategies obtained through research for autonomous learning will allow better performance in the study, having a way the applied methodology where takes to have a margin on the part of the students; therefore, when having before the implementation of the active method of problem-based learning, it is obtained in a range of low and average after the performance of this methodology that in turn is demonstrated a significant process for percentages of the strategies of learning in that it is fomented in these investigations.

Keywords: Active methodologies, active learning, meaningful learning, collaborative work

I. INTRODUCTION

Universities continue to implement measures to generate consolidation and deepening of student learning, which has a beneficial effect on academic quality, especially academic performance. Several studies identify various risk factors that influence academic performance, including socioeconomic, educational, institutional, and individual [1].

Methodological strategies in research, planning, implementation, and evaluation processes help teachers organize learning according to clear objectives to promote students' participation and dynamic integration, which shapes their learning by approaching educational facts with a critical, scientific, and reflective attitude.

Methodological strategies with a didactic approach become a joint work of teachers, incorporating socio-educational experiences and practical pedagogical elements implemented in interaction, creating a meaningful learning environment emphasizing group integration.

University students face many needs and challenges in different fields, such as economics, health, society, and psychology. These permanent challenges and demands start when students begin their higher education; from that university, students are more responsible because they expect to achieve academic success, learning and passing their subjects at the end of each course [2]

Students must pass every subject, workshop, or curricular experience they are enrolled in; they must satisfactorily complete their assignments, research, support, monographs, essays, and of course, every exam. These activities take place in the university itself, which is a privileged place where students, among other things, need to acquire the academic knowledge and skills of a future professional, including critical thinking [3]

Pedagogy in higher education is in the process of "re-conceptualization" [4], i.e., very simply, a change is being experienced, not only in management, organization, or administration, but mainly in methods, styles, and strategies of teaching and learning.

According to [5], it is necessary to consider three elements of the educational process: a) The structure of knowledge, including the curriculum; b) The correct way of creating academic knowledge; and c) The social framework in which the educational process takes place. The most used methodologies in a university environment are theoretical and lecture-based, but not only that but also problem-based learning, contextual methods, collaborative learning, and others [6].

It is also necessary to involve students in the teaching and learning process to improve it, as we live in the digital transformation era. Therefore, anything that does not focus on new technology is monotonous; this situation creates a lack of motivation in students who take traditional theoretical courses. [7] stated that academic performance depends on the context

in which families and students develop because young people need to realize whether they have a positive or negative family assessment of the support they give them, their expectations for the future, their communication with students, and their concern for them. The student's family environment determines the economic, social, and cultural aspects that limit or benefit the student's personal and educational development, which is why the attitudes that parents themselves transmit to their children towards education, culture, teachers, and schools are important, as they have a significant influence on their learning process [8] [9].

At the national level, the impact of the COVID-19 pandemic has drastically increased university dropout rates, as measured by poverty and totals. In this regard, 42.6% of university students from the non-extreme poor level dropped out of universities, while only 18.1% of the non-poor level dropped out [10][11].

University dropouts are a concern; it is caused by many internal and external factors, ranging from personal problems to problems caused by the political and economic situation of the country. Some causes of university desertion are the lack of physical infrastructure, deficiency of student services, familiar financial environment, and even campus security, which resulted in the closure of universities due to political protests [12][13].

Regarding the virtual mode, [14] indicate that many students who choose this mode may experience difficulties with time management, which may be affected by family and work obligations due to financial problems or late entry into university education. In addition, student performance and exit are more influenced by the teacher's instructional design and strategy and the work accompanying it than by the mode itself.

Finally, [15] social legitimacy is that by improving academic performance, students achieve better performance, help improve the classroom and home learning environment, and teacher satisfaction, he claims will contribute to parents and students themselves.

II. LITERATURE REVIEW

Next, related theories were presented to support the research study, dividing ideas of active methodologies, collaborative learning, or learning through IT and methodological strategies.

A. Methodological strategies

Creative methodological strategies are planned processes to achieve meaningful learning for students, and to achieve this; they must be applied in a flexible, dynamic, and adaptive way. In this regard, methodological strategies are reorganized functions according to the needs of the students. Depending on the area in which students work, they aim to achieve the best possible learning experience. In other words, strategies are rules that benefit making the right decisions at certain points in the educational process [16].

Using methodological strategies is related to the impact of the educational process, which becomes important when we try to start from the learners' interests, observing their particularities in teaching. Modern models give learners an important role and place them at the center of the teaching process. They use their method or strategies developed according to particular tastes or preferences when they want to learn something.

The selection of methodical teaching and learning strategies for content development allows motivated students to construct their knowledge, facilitating understanding and retention of the teaching and learning process while remaining interested in what they do not yet know. The main methodological strategies and their definitions are described, and each process is reviewed for better understanding.

B. Project-based learning

Project-based learning is the organization and management of the resources necessary to solve a problem identified in a student environment by creating teams to carry out projects. On the other hand, [17] consider that it is a method of both teaching and learning in which students try to understand their environment to analyze the problems diagnosed in it. Therefore, they prefer to meet in working groups to develop and plan actions that, when applied, solve the identified problem. And teachers should always encourage students to participate. For [18] students complete a project within a given time to solve a real-life problem that helps to organize and direct their activities and a final product or prototype that provides a solution to the problem, all based on the development and application of acquired knowledge and the effective use of resources.

When reality is complex, we cannot pretend to learn simplistically. Projects enable students to approach lessons with meaning and purpose. Democracy is realized because teaching is understood as dialogue. These programs would allow teachers to contribute to students' competence and professional development. Problem-based learning opens up the school environment and integrates multiple materials and information sources. They are working with different types of knowledge and experience. In practice, groups of students learn, design, and communicate processes and products and focus on diversity by integrating it from a cultural and personal perspective [19].

Problem-based learning gives students choice and participation, empowers them, and makes them the protagonists of their learning. But perhaps most important is socialization, which is not an easier method and needs to be taken out of schools. The development of the project allows for richer socialization, as it includes not only classroom activities but also internal (involving substitute experts or the families themselves) and external (introducing the community to content outside the classroom) activities.

According to [20], they agreed that through the use of project-based learning as a teaching strategy, skills and competencies such as teamwork, communication, autonomous learning, critical thinking, problem-solving, research skills, use of technology with neural networks, information retrieval, coordination, planning, organizing, etc. are strengthened. These authors agree with these authors that through this type of learning, students are strengthened and acquire new skills that serve their personal and social development. At the same time, the teaching process becomes more practical and interactive. In this learning process, teachers will act as guides or advisors in the student's activities, cooperating with the students if necessary and creating a more horizontal and dynamic pedagogical communication.

C. Problem-based learning

In an active methodology, problem-based learning is a learner-centered approach to individual and collective engagement where the learner is the protagonist of their learning, based on discovery and guided learning. Problem-based learning is a way that promotes and helps to improve skills, enhance skills, and acquire knowledge, concepts, and understanding of school curricula. Therefore, both educational institutions and universities should focus on real-life situations, solving problems, and satisfying needs. This will be done by using teaching methods and exposing them to real problem situations. In this regard, [21] indicates that the problem-based learning method, in accordance with new pedagogical innovations, is an active tool aimed at strengthening pillars such as learning and thinking.

Problem-based learning [22] states that it is a didactic strategy that encourages learning by discovery. It mobilizes and promotes the development of scientific and critical thinking, teamwork, and autonomy, among other aspects. In order to design and implementation requires the training of both teachers and students. Learning is generated by revealing the skills and knowledge acquired to find possible solutions and answers to the problem posed by the teacher. Situations are approached according to the educational requirements and interests of the class of students to which they are addressed. In addition, both individual and group work is needed since students acquire knowledge not by passive listening but by enriching their knowledge through self-learning and problem-solving designed to guide the achievement of a particular competence [23].

Group work is a strategy for teaching and learning that focuses on the work of learners working together to solve a problem. This is an important circumstance in the design of products that indicates a level of achievement. On the other hand, this collaboration facilitates an important shift away from the classical teacher-centered model of university education. However, the common practice of paying attention, reading documents, and taking notes still needs to be completely eliminated in shared classes and is associated with active discussion and action in learning, generating an experience. Group or collaborative learning is defined as a structure identical in two dimensions to face-to-face and virtual learning. It integrates three theoretical foundations: socio-cognitive, inter-subjective, and dispersive cognitive conflict. It also applies systematic incorporation of teacher-implemented strategies and academic group techniques [24].

III. MATERIALS AND METHODS

The type of research will be descriptive. [25] stated that descriptive research aims to determine the properties, characteristics, and profiles of the person, group, community, process, object, or another phenomenon under analysis. That is, it measures or collects data to report information on various concepts, variables, aspects, or components of the phenomenon or problem under study. In descriptive research, the researcher selects a series of questions and collects information on each question to represent the research topic [26].

The present research is based on the study of data obtained from different sources with the methodologies and techniques of the quantitative approach, which will facilitate the use of statistical tools to obtain results. Cabezas, Andrade, and [27] pointed out that quantitative research involves the collection of data using tools to analyze the research variables, so it is necessary to define the hypothesis and variables [28] clearly. Furthermore, this study combines the characteristics from the hypothesis statement, the definition of variables conceptually and operationally, and the measurement of indicators through instruments. In general, it allows the collection of data that were obtained using surveys to the study sample to analyze the data collected through statistical procedures [29] [30].

The design for this research was non-experimental. [31] explained that it is non-experimental when there is no manipulation of variables and that it is cross-sectional because the tool is applied at a specific time and place. It is descriptive because it describes and identifies the observed phenomenon; it is also correlational because it seeks to associate variables with each other [32]. On the other hand, the evaluation instrument for this research was the active methodology and learning [33].

IV. RESULTS

The data obtained from the test of methodologies of attention to learning problems, by means of its criteria; the methodologies learning problem had a greater increase in the test: Maximum with a value of 183.0 minimum with 132.0, and its percentiles of 30% with a value of 160.00 and that of 70% in percentile with a value of 171.00. Similarly, consider

the statistical data of the methodologies that have data that are beneficial for the university student with reference to learning problems.

TABLE I. STATISTICS ON METHODOLOGIES FOR DEALING WITH LEARNING DISABILITIES AND THEIR CRITERIA.

		Statistici							
		Interaction Social	Competencies Personal	Evaluation	Methodologies Learning Problem	Learning Conceptual	Learning Procedural	Learning Attitudinal	Learning
N	Valid	99	99	99	99	99	99	99	99
	missing	0	0	0	0	0	0	0	0
Minimum		39	51	34	132	13	13	16	43
Maximun		59	80	45	183	20	20	20	60
Percentiles	30	52.00	68.00	38.00	160.00	17.00	16.00	19.00	53.00
	70	56.00	74.00	42.00	171.00	19.00	18.00	20.00	57.00

TABLE II. CATEGORIES OF LEARNING DISABILITIES METHODOLOGIES AND THEIR DIMENSIONS.

		Learning Conceptual		Learning Procedural		Learning Attitudinal		Learning	
		f	%	f	%	f	%	f	%
Valid	Low level	0	0.0	0	0.0	0	0.0	0	0.0
	Medium level	34	34.3	62	62.6	19	19.2	25	25.3
	Medium level	65	65.7	37	37.4	80	80.8	74	74.7
	Total	99	100.0	99	100.0	99	100.0	99	100.0

Table II, there is shown a predominance of both medium and high levels, as Social Interaction has a high level with a percentage value of 72.2%; on the other hand, social competencies maintain a high level with a value of 57.6%. On the other hand, for the medium level, the Evaluation (E) with a value of 96.0%, and finally, the methodologies learning problem with a value of 57.6%.

TABLE III. CATEGORIES OF LEARNING DISABILITIES METHODOLOGIES AND THEIR DIMENSIONS.

		Interaction Social		Competencies Personal		Evaluation		Methodologies Learning Problem	
		f	%	f	%	f	%	f	%
Valid	Low level	0	0,0	0	0,0	0	0,0	0	0,0
	Medium level	27	27.3	42	42.4	95	96.0	57	57.6
	Medium level	72	72.7	57	57.6	4	4.0	42	42.4

In Table III, there is a predominance of both medium and high levels, as learning conceptual has a high level with a percentage value of 65.7%; also, learning attitudinal maintains a high level with a determined value of 80.8%, likewise, maintains a high level with a recorded value of 74.4%. Finally, learning procedural maintains a medium level with a value of 62.6% obtained in the results table.

TABLE IV. NORMALITY TEST OF LEARNING DISABILITY ATTENTION METHODOLOGIES AND DIMENSIONS

	Normality tests					
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistici	gl	Sig.	Statistici	gl	Sig.
Interaction Social	,456	99	,000	,556	99	,000
Competencies Personal	,379	99	,000	,628	99	,000
Evaluation	,540	99	,000	,196	99	,000
Methodologies Learning Problem	,379	99	,000	,628	99	,000
Learning Conceptual	,421	99	,000	,600	99	,000
Learning Procedural	,405	99	,000	,613	99	,000
Learning Attitudinal	,494	99	,000	,481	99	,000
Learning	,466	99	,000	,540	99	,000

a. Significance correction of Lilliefors

As we can see in Table 4, some values of the level of significance < 5% indicate that these results are from a non-parametric distribution; as specified, it is necessary to use the Rho Spearman formula in order to find relationships between the variables, dimensions, and indicators focused on the methodologies and their derivatives.

TABLE V. CORRELATION TEST OF LEARNING DISABILITY ATTENTION METHODOLOGIES AND DIMENSIONS

		Correlation			
		Learning Conceptual	Learning Procedural	Learning Attitudinal	Learning
Rho de Spearman	Correlation coefficient	,935**	,760**	,866**	,852**
	Sig. (bilateral)	,000	,000	,000	,000
	N	99	99	99	99

According to Table V, there is a highly significant relationship (Sig. <1%) between the methodologies of attention to learning problems and dimensions: In the learning conceptual (r = 0.935** high correlation); with the learning procedural (r = 0.760** high correlation) and with the learning attitudinal (r = 0.866** high correlation).

Annex: Methodologies Questionnaire

Age:

Gender: Male ☐ Female ☐

Dear student: We ask you to read each statement carefully and mark only one answer, taking into account that they range from 1 to 5. The following scale, indicated by Rensis Likert, applies: (Burneo, 2022)
1: Never
2: Almost never
3: Sometimes
4: Almost always
5: Always

Nº	DIMENSION 1: Social Interaction	1	2	3	4	5
1	Do you look at the situation from the other person's perspective?					
2	Do you know yourself and your general environment?					
3	Do you plan intellectually what you will do immediately, your next steps?					
4	Do you feel restless when you are away from others?					
5	Do you connect with your colleagues without any problems?					
6	Do you express yourself verbally and non-verbally with confidence?					
7	Do you are indulgent toward different conclusions?					
8	Do you find it difficult to work in a meeting?					
9	Do you concentrate on the educator for the whole class?					
10	Do you think that the teacher clearly states the objectives of the lesson?					
11	Do you participate in the exchange with the educator when you consider it important?					
12	Do you accept that the educator is a guide to follow?					
Nº	DIMENSION 2: Personal Competences	1	2	3	4	5
1	You interact with your peers.					
2	Do you listen carefully and try to understand others?					

Fig. 1: Survey related to the study methodologies.

A survey, shown in Fig 1, was elaborated based on the dimensions of the research variables to give relevant information about how these methodologies are applied and what results were obtained.

V. DISCUSSION

With regard to the methodology of attention to study learning problems, essential similarities have been found in its concept and rationale since most authors start from the learning approach of university students. For its conceptualization, it has been found in the study by [12] highlighting the problem-based learning application method since it is classified from medium to high in terms of acquired skills, thus having the traditional methodologies. Likewise, there is a similarity in the research of [8] developed the skills of the problem-based learning methodology that is used for the best teaching results for the development of academic competencies through the method used.

On the other hand, [10] developed their learning method based on traditional methodologies that were implemented for better impact through growing study strategies. Therefore, in the study of [16], I highlight that it is much better since it implements a double diamond methodology for the three-dimensional design course of the specialty, thus having more existence that can cope with adversities that allows improving with effective teaching and learning of students.

From another area, [24] carried out the methodological procedure to develop the research of students and teachers, where they will be able to achieve demonstrate their skills effectively and autonomously to have a wide potential in their emotional development that leads to self-esteem, self-confidence, and perception of self-efficacy. Also, there is diversity in the study of [6], where it is worth noting that its active methodology is different from the other research study, so the quality of teaching at the university was applied to improve learning performance and contain the effects of the processes of teachers for students.

VI. CONCLUSIONS

Social interaction in university students is necessary because, for professional aspects, they are and will be involved with other people such as students, their colleagues, parents, and authorities, so if we say that the future student educator has not developed social interaction skills it is necessary to carry out research and investigations to make proposals for improvement because it is worrying as their nature demands it.

In short, personal competence needs to take into account the changes implemented in the context in which it is developed professionally; in this case, it must focus on the development of competencies that will facilitate the student's professional and social performance. Nevertheless, for the development of a quality teaching-learning process, it is crucial to consider the students' evaluations, as they are the main educational agents, creators of significant knowledge, and generators of lifelong learning.

The use of problem-based learning is useful for university students, allowing them to solve academic problems that arise. Likewise, the strategies were developed by means of the authors pronounced within the investigation containing good results through the applied methodologies, where one has the strategy of autonomous learning for the students.

This investigation it was analyzed the strategies obtained by means of research for autonomous learning that will allow better performance in the study, having a way the applied methodology where takes to have a margin on the part of the students; therefore, when having before the implementation of the active methodology of problem-based learning, it is obtained in a range of low and average after the implementation of this methodology that in turn is demonstrated a significant process for percentages of the

strategies of learning in that it is fomented in these investigations.

It is important to use methodical strategies together with the teacher to generate pedagogical innovations that can be practiced as needed, allow the teacher to learn by doing, and involve them in peer or team collaboration. The corresponding didactic units have didactic plans adapted to learners with special educational needs, using traditional methodological strategies, work lacking creativity and incompleteness, and information divided by groups.

Finally, it is demonstrated that the use of the active methodology problem-based learning is very important to apply in the cases of university students, allowing them to obtain great necessary competencies in progressing and exercising good techniques and useful strategies in the future with a certain profession. On the other hand, there is also the double diamond methodology which is very important to help develop great strategic teaching processes.

VII. RESEARCH GAP AND FUTURE WORKS

From the extensive analysis of traditional works that consider project-based learning and problem-based learning, significant and common gaps have been identified that require collaborative methodologies with the application of technology to be considered in the future.

A further study as future work with the use of collaborative methodologies will improve the knowledge about teacher-student communication in a bidirectional way, where interaction and technology are essential.

Implementing educational programs promoting emotional intelligence to motivate the rational formation of students will help those responsible for higher education to make decisions that will improve the country's educational system.
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