

Use of Learning Strategies in the University. A Case Study

Empleo de las estrategias de aprendizaje en la universidad. Un estudio de caso

Mitchell Alberto Alarcón Díaz* 

Universidad Nacional de Educación Enrique Guzmán y Valle, Lima, Perú
ORCID: <https://orcid.org/0000-0003-0027-5701>

Noel Alcas Zapata 

Universidad de San Martín de Porres, Lima, Perú
ORCID: <https://orcid.org/0000-0002-2505-6778>

Henry Hugo Alarcón Díaz 

Universidad Nacional de Educación Enrique Guzmán y Valle, Lima, Perú
ORCID: <https://orcid.org/0000-0003-1588-4390>

José Arnin Natividad Arroyo 

Universidad Nacional de Educación Enrique Guzmán y Valle, Lima, Perú
ORCID: <https://orcid.org/0000-0002-1793-7495>

Antonio Rodríguez Fuentes 

Universidad de Granada, Granada, España
ORCID: <https://orcid.org/0000-0002-8036-9902>

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Correspondence:

Email: malarcond@ucv.edu.pe

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Summary

The objective of this study was the characterization of the learning strategies of higher education students of a university in Lima. To achieve this purpose, the focus is qualitative, which allows us to interpret the same practice of the students. The methodology of this research, included direct observation and in-depth interviewing, and was aimed at understanding the reasons for practice in certain strategies. The conclusion of the research is that the metacognitive strategies, the processing of information and the control of the context become the fundamental principles at the moment of learning by students.

Keywords: Strategies; Learning; Case Study; Higher Education.

Resumen

El objetivo de este estudio fue caracterizar las estrategias de aprendizaje utilizadas por los estudiantes de educación superior de una universidad de Lima. Para lograr este propósito, el enfoque es cualitativo, el cual nos permite interpretar la praxis misma de los alumnos. La metodología de esta investigación incluyó la observación directa y la entrevista a profundidad, cuyo propósito fue comprender las razones de la puesta en práctica de determinadas estrategias. La conclusión de la investigación es que las estrategias metacognitivas, el procesamiento de la información y el control del contexto se convierten en las aristas fundamentales al momento de aprender por parte de los estudiantes.

Palabras clave: Estrategias; aprendizaje; estudio de caso; educación superior.

Introduction

Peruvian universities are facing the challenge of developing a competency-based curriculum, and at the same time, they are in the process of institutional licensing and accreditation of their professional training schools. However, in this restructuring process, also in a systematic way, the problem of students' desertion and low academic performance is being addressed. This is due to the fact that Universities and their teachers have not yet ventured deeply into establishing didactic strategies that are consistent with the teaching resources and materials, preferred learning styles, and intrinsic motivation. In this regard, it is necessary to know how university students learn, and what other material and online resources are necessary for the acquisition of knowledge and research. In this context, there is some reference to successful experiences in the European context, known as the "European Higher Education Area (EHEA)" (Rodríguez, 2008), where action research helps to establish and apply inter-institutional strategies, for example, for the formative assessment of university students, they are empowered not only to build their own learning but also their own assessment of it (Gallego & Rodríguez, 2017). Thus, universities apply strategies in networks to develop systems and instruments of formative assessment in university teaching. This allows for the incorporation of teaching methodologies that greatly enhance the autonomous learning of university students (Vallés, Ureña & Ruiz, 2011). This involves enhancing learning strategies. But for this to happen, it is first necessary to know them, identify the difficulties, provide the student with all the tools and didactic resources that are available and help him/her when necessary. Likewise, students must learn to self-regulate their own learning,

socialize it with their peers, and then to apply it in the solution of problems within their environment. This is based on the communicative competence of the university student which has to be proven (Gallego & Rodríguez, 2013, 2015; Rodríguez, Ayllón, Gallego & Gómez, 2017) and the assurance of spaces and resources to materialize the interaction between them (Rodríguez, Rodríguez & Gallego, 2015; Rodríguez & Rodríguez, 2016).

Learning strategies at university level are student-centered and it involves focusing the entire knowledge foundation process, which, given the maturity of the learner, is much more active and autonomous. In this process, the students regulate their learning and select their strategies. In this regard, Porto, Brenlla, Barca, Almeida, & Peralbo (2012) state that self-regulated learning is oriented to processes in which students direct their operations, tendencies and emotions in a methodical and controlled manner, towards the achievement of their stated goals. Schunk (1998) states that self-regulation is closely linked to motivational variables influencing it, such as, goal setting, self-efficacy, the expectations, the attitude adopted towards the goal, and subsequent academic performance. Likewise, one of the universities' main goals, in general, is for students to be able to control their learning process and acquire competences they can use inside and outside the classroom environment, and the central axis is the autonomous learning that will help them for life (Fernández *et al.*, 2013).

University Professional Education

The university, as an institution for training professionals, has a role that goes beyond the generation and deepening of scientific knowledge and research. Its new role is framed in functions that imply a high level of leadership for the development of other forms of education. This requires the incorporation of different areas of scientific knowledge: interdisciplinary and transdisciplinary, associated with sustainable development, within a framework of preservation of ethical principles. In this line of thought, universities have as a task, entrusted by society in general, to train competent professionals, promote research and generate critical awareness that contributes to the dissemination of knowledge, attitudes and values in the framework of sustainable development (UNESCO, 1998). It is also understood that an appropriate development model must be based on ethics and, fundamentally, on solidarity among all human beings belonging to a particular community, regardless of the time and generation to which they belong (Aznar Minguet, Ull, Piñero, & Martínez-Agut, 2013).

On the other hand, it is necessary to recognize the role that students play as active agents of the university education system. For this reason, universities influence the development of the competency-based curriculum that include skills and attitudes, in relation to the career professional profile. All this with the purpose of covering the needs of social demand and the labor market demand (Blázquez, Chamizo, Cano, & Gutiérrez, 2013). Also, in the education professional process, the assessment of students in the framework of quality systems is taken into account as a way of applying certain standards that set the guidelines to ensure that future professionals acquire the necessary skills to efficiently and effectively perform in the future.

Universities are currently facing a new challenge: university social responsibility (USR) in connection with business and the public sector. In relation to the business, it has to establish strategic alliances to jointly develop technological innovation and research projects. In the public sector, it is expected to meet the social demand by promoting the development and practice of

ethical values, critical thinking, solidarity and sustainable development (Larrán & Andrades, 2015).

The education of university students is possible through the formative education, which in turn implies that the profiles of each career, the vision and mission of the university are taken into account, according to the curriculum inherent to each profession. But this is not enough, the learning processes, which naturally include teaching strategies and learning strategies, require that these processes be addressed in order to develop the four pillars of education, which are: a) learning to know, as a human instrument and goal, whose purpose is the acquisition of knowledge to classify and codify them. This is, in essence, what each person has to learn to know about the world around them and, at the same time, develop their capacities, b) learning to do, which implies, in the case of university students, teaching them how to put what they have learned into practice and which can easily adapt to their future labor market, c) learning to live with others, which in practice has become one of the main purposes of today's education, meaning that the university professional has to develop a set of social skills to be tolerant, supportive, assertive, and able to transmit and foster knowledge to other members of their community, d) learning to be, which means that education must help the person's global development, so that he or she can act in a reflective and critical way, with autonomous thinking and individual responsibility (Delors, 1996).

Learning Strategies at the University Level

Learning strategies are understood to be voluntary and intentional actions taken by the student to achieve a given goal. The use of self-regulating learning strategies often depends, to a large extent, on the capacity perceived by the student, but also on other personal factors such as motivation to learn and, above all, the perception of the effectiveness of the use of learning strategies. In that sense, Bahamón, Vianchá, Alarcón & Bohórquez (2012) state that in the university environment, the institutions and the professors must provide their students with a proximity to information of the complex field, so that they can reach the processing of information and knowledge of better elaborated levels. This also implies the use of various strategies with levels of autonomy that guarantee the successful completion of higher education. The last reforms introduced in the university level education, have simultaneously allowed the use of strategies and methods such as: collaborative work as part of the dynamics of study teams, information technologies, through resources such as the Internet and Web 2.0. (Cabero & Marín, 2013, García, Rodríguez & Gallego, 2011).

At the university level, with regard to the development of the competency-based curriculum approach, students are expected to use certain learning strategies, which to some extent are intentional, in order to reinforce autonomous learning and thus improve their academic performance (García & Tejedor, 2017). These processes occur naturally and go through the recovery of previous knowledge and the recovery of information, where all kinds of thoughts, actions, attitudes, motivations that support this process are evidenced.

Furthermore, Herrera & Lorenzo (2009) state that the main focus of university education is the student and, in this context, universities should address the cognitive, socio-affective and motivational components of learning. In order to do so, students have to be provided with all the necessary tools so that they can acquire knowledge and contribute to scientific research as one of the supreme activities of any university education institution. In this line of thought, Pintrich &

García (1993) state, with reference to the learning strategies, that there are three main types: a) Cognitive strategies oriented to the review, elaboration and organization of information, as well as the development of critical thinking, b) Metacognitive strategies, where actions used during the learning process are planned, reviewed, and ordered, and c) resource regulation strategies, which refers to the distribution of time and environment where the student studies, organizes his/her efforts, peer learning is established, and help can be sought if needed.

University's Formative Assessment System

Assessment is one of the pillars of any teaching-learning process. In the university higher education system in particular, the assessment is relevant for making decisions about possible epistemological and even methodological changes, in order to give concrete answers to social demands and labor market needs. Therefore, it is a matter of training competent professionals who can effectively apply their knowledge acquired at the university. In this sense, the new way of perceiving and applying the assessment of students in universities is supported. In this regard, Buscà, Pintor, Martínez, & Peire (2010) state that the new styles, which are being imposed in university teaching, are fundamentally oriented by the assessment of formative and procedural or continuous character. This means that besides the knowledge acquired by the university students, other aspects are also important, such as the person's quality and ethical principles that must be preserved and applied to their profession as well as their daily professional improvement.

It is also worth reflecting on the distinction between assessment and grading. Assessing is a process by which information is collected to be examined, to make a judgment about it and to facilitate possible decision-making. It takes place throughout the teaching-learning process. In contrast, the grading process involves materializing a judgment issued with an alphanumeric grade, which is assigned to a subject. This aspect, which is circumstantial and punctual, is usually implemented at the end. This is why it is said to be summative (Hamodi, Pastor, & Pastor, 2014); while the assessment must be continuous, in the guise of the process followed and not only of the product achieved. On the other hand, one of the problems that arises with the application of formative assessment is, obviously, the conception that some university professors have about the assessment, because traditional evaluative practices persist. Which are, on a large scale, final, and disregard the university student's performance altogether. Therefore, formative assessment has to accompany students through their entire learning process (Rizo, 2013).

The teaching effectiveness is somehow associated with the attitude and expertise of teachers, both to evaluate the learning of their students during the work in the classroom, and to make decisions that promote learning and, above all, that regulate learning according to the students' needs and the social/labor demands. From this perspective, teacher training and orientation in the area of formative assessment can be thought of as one of the most effective instruments for improving the education quality at the university level (Black & Wiliam, 1998, 2009; NRC, 2000, 2011).

Background Information

In Europe, according to the Europe 2020 Strategy framed in the EHEA (European Higher Education Area), all its member countries should promote more interactive learning environments in higher education. Environments that should be focused on the student with an efficient use of Information and Communication Technologies (ICT), where innovation is bet on as part of the

higher education modernization (Gámiz & Gallego, 2016). In this respect, it is the development of the combined methodology (blended learning) that has had favorable results when considering pedagogy with technology, where physical and virtual attendance are shown as a unit.

When analyzing some theoretical proposals, we found an increasing appreciation of learning-centered models, where innovative teaching takes hold (cooperative work, problem-based learning, project development, etc.), where students assume their role as actors in their own learning process, and the teacher is the mediator or articulator of the environments and experiences of such learning (Gargallo, Jiménez, Martínez, Giménez y Pérez, 2017). According to this approach, the method used is not only important, but also the students' learning environment.

A result of a study on learning-centered methods, which had the hypothesis that the application of these methods will lead to statistically significant differences, showed that there is an improvement in the students' learning strategies; and that such improvement is greater in the strategies of motivational, metacognitive, search and selection nature as well as processing and use nature, where the teaching and assessment dynamics implemented have a greater positive influence (Gargallo, Garfella, Sahuquillo, Verde y Jiménez, 2015).

In the learning strategies (scales of acquisition, coding, recovery and support), as far as men and women are concerned, gender does influence the choice of these strategies, being the most influential in men and, on the other hand, the total preference of women was inclined towards the scale of coding and support, which resulted in higher ratings. Likewise, in the scale of acquisition the most important strategies were: linear underlining, theoretical exploration, and mental review. As for the coding scale: mnemonic, image processing, self-questioning and paraphrasing were the most important learning strategies for both men and women. In the same vein, it highlighted the recovery scale, where response planning was also the most important. And, finally, in the support scale, they highlighted: self-management, self-knowledge, self-instruction and self-control, followed by intrinsic and extrinsic motivation (Acevedo, Durán & Alvis, 2015).

When analyzing the learning strategies, according to Acevedo (2016), women showed greater strength in the use of metacognitive (planning and reviewing their processes) and motivational strategies. As for men, they used cognitive strategies (memorizing, organizing and elaborating information) more frequently. It should also be noted that the strategies most used by students with the highest academic performance were metacognitive strategies (planning: prior control of the study, and review: implementation of the process at the end of the study). In short, it is about understanding before (goal and resource planning), during (process supervision and monitoring) and after (achievements).

Method

The methodology was based on the application of the qualitative approach with a case study design in which the characterization of the use of learning strategies by a group of higher education students was considered. Strategies, that marked the constant praxis of the students and the conversations made with 13 of them, were identified through direct observation and one-on-one interviews. They had the purpose of deepening the findings coming from observation in order to interpret their action. The scientific rigor of the investigation was delimited by the criteria of

credibility and confirmation expressed in the selection of the participating subjects and the authentic dialogue reflected in the interviews carried out.

Results

The most recurrent learning strategies on the part of the students were identified from the observations made. This was accompanied by the interpretation resulting from the interviews.

Table 1.

Metacognitive strategies

<p>Use of metacognition</p>	<p>When I study I first try to carry out those activities which are easier for me to handle... I leave the difficult activities for later (interviewee 5).</p> <p>I try to improve what I found wrong before... (interviewee 2).</p> <p>It is difficult for me to establish a schedule which allows me to study at home ... work and other occupations prevent me from doing so (interviewee 1).</p> <p>Regarding the techniques... I trust the graphic representation of the ideas... I think it is the most practical way to study for an exam (interviewee 11).</p> <p>I consider that the result of my assessments is good since I prepare for it (interviewee 7).</p>
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Table 2.

Information processing.

<p>About Using Processing Strategies</p>	<p>I try to use resources that I used before to be able to face new assignments (interviewee 10).</p> <p>When studying, the fact of contextualizing my daily life actions helps me many times to solve problems proposed in the courses (interviewee 9).</p> <p>I have the ability to associate what I learn in one course to apply it in other different courses (interviewee 10).</p> <p>Working in a graphic way such as making drawings, tables.... help me a lot at the time of studying (interviewee 8).</p> <p>My specific job makes it difficult for me to work on aid summaries or writings at the time of studying (interviewee 13).</p> <p>One way to have an overview of the topic to be studied is through the subtitles suggested by the teacher (interviewee 4).</p> <p>I find it difficult to understand some documents given to me by the teacher ... the terminology becomes an enormous difficulty (interviewee 5).</p>
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Our teacher is a good one but perhaps because he is not from the specialized area, it is difficult for him to clarify some doubts (interviewee 11).

Table 3.

About the context

About context control strategies

If I did not work, I would achieve better academic results (interviewee 6).
 Those encouraging results make me suppose that I can do things much better (interviewee 9).
 When a teacher recognizes my effort, it encourages me to continue and keep improving (interviewee 11).
 Some of my classmates tell me that they have an exclusive physical space at home for studying ...
 That doesn't happen in my case... I think it would help me to have my things in order (interviewee 9).
 When we work as a group I feel that I can perform better academically (interviewee 2).

Discussion

Based on our findings, we assume that although the referential theoretical framework leads to the existence of a whole range of learning strategies, in this case, qualitatively studied, coexisting strategies are summarized in metacognitive, information processing and context strategies. In this way, we can assume that students' successful experiences of how to overcome academic learning difficulties become benchmarks for how to act from then on. Taking action based on the success achieved becomes a *modus operandi*.

Another important finding is the tendency towards learning through graphic expression. It seems that the context and the particularities of the group of students, who study and work at the same time, make it difficult to have pre-established times to study; and, on the other hand, that the learning strategies are applied in a very short way, without long periods of reading time. All this leads to the fact that the students' interest is focused on the synthesis of information included in a graph. It is also emphasized that students think that it would be a different scenario if they had more time to dedicate to their studies. The fact of not having an exclusive physical space at home to study is identified as an obstacle, but not in a serious or pronounced way. Perhaps it is also important to highlight the students' experience, who take advantage of the resources or actions that were previously useful to them and apply them in successive cases, not because this is the most appropriate procedure strategically, but rather a matter of effectiveness. It would also be important to mention that the extra academically daily experience is used by the students to link what they have learned with the new topics or tasks they have to face.

A recurrent factor when talking to students is their predisposition to study through a bird's-eye flight (quick review of titles, subtitles, images, etc.) contained in the texts. The fact is that the students' time available to study is short and keeps them, in most of them, away from the possibility of a patient, calm and profound reading. In very few cases, negativism towards the

teacher's capacity is observed. Only in certain cases, students make an observation about the teachers' difficulty with regard to the subject. The use of collaborative work in the classroom is recognized as another learning motivation. The teachers' motivational aspect towards the students' achievement is also highlighted, which is much appreciated.

From this qualitative intervention, a number of particularities could be observed in relation to the most recurrent learning strategies in a group of higher education students. Direct observation and face-to-face interviews helped to understand the subject matter addressed.

In principle, it is considered the use of metacognitive strategies which translate into what the student once did and was effective. This becomes a constant resource that is applied to as many circumstances as possible (for reasons of casuistry effectiveness).

Another aspect to highlight is the information processing, which is reflected, among other things, in the linkage of what is known as part of the experience with the different academic tasks. Another relevant point is the predilection for graphic information, which is an abbreviated form of being able to assimilate the contents proposed in the subjects.

Finally, the context becomes, from what has been observed and discussed, a coexisting characteristic in this human group. The fact of studying and working, the teacher's motivation when faced with the progress of the students' achievements, the techniques or dynamics applied by the teacher are highlighted and understood by the students as positive drivers when learning.

In conclusion, this qualitative approach to the object of study on the learning strategies of university students, has tried to draw a varied, autonomous and directed learning methodology pattern. This is a line that, although it has been developed in other contexts, has been productive in the context implemented, in order to improve the learning strategies not only by changing teaching strategies and resources, but also the assessment methods and nature. All of them are commendable purposes, which suggest to continue exploring the topic of this research, and perpetuating the efforts undertaken to achieve epistemological advances in the theoretical corpus and translating them into real improvements in the praxis of the university didactic act.

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