

Virtual Tutoring and Learning Styles, strategies in the training of Engineering students during the COVID-19 pandemic

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Abstract— The Covid -19 pandemic caused changes in all aspects, including the educational field, which has undergone important transformations. One of them is the transition from face-to-face education to distance education, which has required the implementation of strategies that can collaborate in the permanence of students. At the university level, virtual tutoring has been an effective strategy, taking into account the comprehensive training model, taking into account the different dimensions of the human being; however, it is necessary to implement strategies that facilitate learning; therefore, the knowledge of the learning styles of the students, in this case of engineering, is undoubtedly one of the activities that should be in the first phase of the tutorial work, in order to carry out the orientation, support and implementation of everything that is part of the curriculum.

Keywords—Virtual Tutoring, Learning Styles, strategies, training model, COVID- 19.

I. INTRODUCTION

Based on the model of Comprehensive Training of Walter Peñaloza Ramella and its axes, we understand that tutoring and counseling is a relevant component when the objective is to train a human being in the educational space, as this ensures the knowledge of the student, likewise the accompaniment and being able to see their learning results taking into account all the dimensions passing through the academic, socio-emotional and motivational.

During the COVID -19 pandemic, the educational field has undergone important transformations, one of which is the shift from face-to-face education to distance education at all levels, including university; generating reactions both for and against, this being a reason for discussion but the result always the same, this step has not been a decision or choice, it is simply the strategy to follow in a context in which face-to-face education is impossible for the danger that this could generate.

Faced with this, the different houses of study chose to train teachers and students in educational technologies. In the case of universities, tutoring has been working, although still with certain doubts; however, in a context such as the current one

in which it is required to listen, guide and monitor the student, virtual tutoring has become an effective strategy to fulfill the purpose of collaborating in the process of adaptation of the student to education to distance, always taking him as an integral human being.

Something important that we must mention is that tutoring can be a useful strategy for the knowledge of the student, since it brings us closer to him, even in a context in which the modality is at a distance. At the university where we carried out the study, located north of Lima, in a population area in which most of the inhabitants are from the interior of the country and arrive to achieve objectives of improvement in the quality of life, which involves education, labor and economic mainly; we have students from ten majors, we focus our study on two of them, the first, Systems and Computer Engineering, and the second, Electronic and Telecommunications Engineering. According to the antecedents and initial diagnosis, some of the characteristics shown by the students is a high IQ as well as short and medium term goals. However, it was observed that despite having a high IQ, they have few study strategies and also difficulty in relation to their emotional intelligence (few personal and interpersonal knowledge skills).

In order to guide the students in the academic aspect and for this to be effective, it was decided to carry out a diagnosis to know their learning styles, based on the model of Honey and Alonso, thus according to the reality of each one, to be able to guide them with strategies that are related to their personal characteristics, we focus the study on this. It is important to mention that the orientations are complemented with a positive approach to psychology working on the theme of happiness, resilience, optimism, hope as well as enjoyment, so necessary in this time of pandemic. We must also add that there were differences in the prevailing styles between men and women, as well as in the preferences for the use of educational tools for carrying out academic activities and free time.

The results are presented below in the following tables and figures.

Digital Object Identifier (DOI):
<http://dx.doi.org/10.18687/LACCEI2021.1.1.478>
ISBN: 978-958-52071-8-9 ISSN: 2414-6390

II. METHODOLOGY

The research approach used in this study is the mixed one, combining qualitative and quantitative methods. To determine the learning style, the Honey-Alonso Learning Styles Questionnaire was used, as well as interviews to guide the tools to apply for the optimization of their academic resources, as well as to know the reality in which they began their studies in the virtual mode. The meetings with the students were scheduled within the tutoring space; the follow-up was possible using the platforms to know the academic results (virtual classroom and grading platform) and also the WhatsApp to establish communication. With the first cycle students there were established meetings of 2 pedagogical hours every fifteen days (synchronous) and using materials in the virtual classroom (asynchronous). This study was conducted during the period 2020-I, the first months of the COVID-19 pandemic.

Tutoring, as we mentioned at the beginning, is part of one of the axes of the comprehensive training model of a university in North Lima, so every incoming student has tutoring. In the context of the COVID-19 pandemic, the tutoring reached all students from I to X cycle, using the virtual route. The tutoring must be developed by a trained tutor, preferably with a vocation for service and with skills such as listening skills, empathy, assertiveness, tolerance and with great communication skills, observer, analytical, planning, creative, among others according to the modality of tutoring to work and responding to the comprehensive needs of students.

The virtual tutorial was carried out with 407 students from the Faculty of Sciences and Engineering, 26% from the first cycle and 64% from the II to X cycle, of the Systems Engineering and Electronic Engineering careers, from April to July 2020.

III. RESULTS

TABLE I. GENERAL STUDENT DATA

Variable		
Sex	Women: 66	Males: 341
Age Group	16-24 years: 298	25-34 years: 109
Civil Status	Singles: 272	Cohabiting or married: 135
District of residence	North Lima: 326	Other district: 81

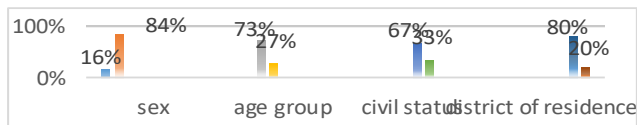


Fig. 1 General Student Data

TABLE II. VARIABLES EXPLORED IN THE INITIAL EVALUATION (PSYCHOPEDAGOGICAL CARD)

Variable	N° Items	Variable	N° Items
Virtual education experience	4	Socialization	5
Technological tools/ internet	2/2=4	Learning style	80
Vocation-enjoyment	4	Motivation	4
Emotional well-being	13	Cognitive level	9

TABLE III. VARIABLES EXPLORED IN THE INITIAL INTERVIEW

Areas explored	Life project	Collaborative work
	Potential	Intellectual level
	Threats and opportunities	Coping strategies/ Learning style
	Psychological well-being	Wellness

In tables II and III, the variables explored in the initial evaluation and initial interview. The results of the initial diagnosis are presented in the figures shown below.

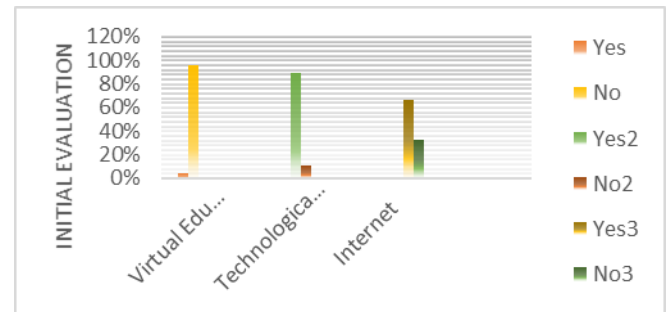


Fig. 2. The percentage of students who have had virtual educational experiences as well as whether or not they have technological tools and the internet to access the virtual modality is observed.

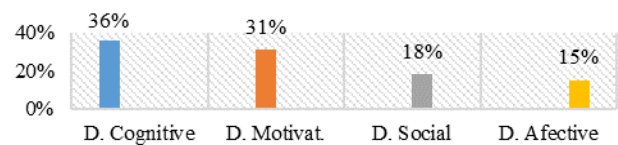


Fig. 3. It is observed that the affective and social dimensions are the lowest. The potential dimensions are cognitive and motivational.

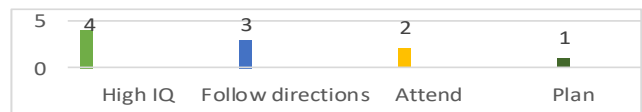


Fig. 4. Strengths of first-cycle students

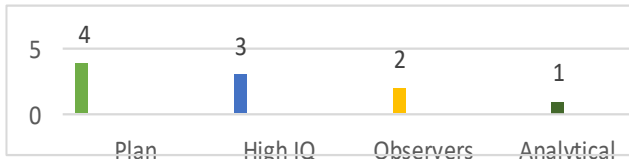


Fig. 5. Strengths of students from II to X cycle of studies

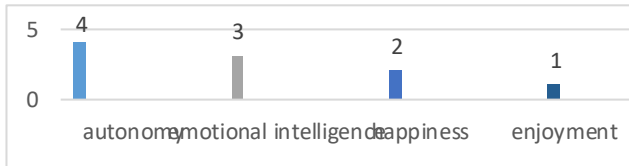


Fig. 6 Weaknesses of first cycle student

REFERENCES

- [1] D. Espejo, "Emotional difficulties in young university students of engineering careers", *UIGV Psychology Magazine*, vol. 28, no. 2, pp. 35-41, 2016.
- [2] W. Peñaloza. *The Comprehensive Curriculum*. Lima: UNMSM, 2005
- [3] K. Chirinos, "Socio-emotional characteristics of the students of the Faculty of Science and Engineering and intervention from the Perspective of Positive Psychology", in *IX Meeting of Psychopedagogical Services*, Lima, 2019, pp. 12-15.
- [4] L. Vygotsky. *Selected Works*. Spain: Antonio Machado, 2013
- [5] M. Seligman. *Authentic Happiness*. Barcelona: Editions B. S.A., 2017.
- [6] M. Csikszentmihalyi. *Flow: A Psychology of optimal experience*. Barcelona: Kairós, 1990.
- [7] M. Saravia-Bartra, P. Cazorla-Saravia, and L. Cedillo-Ramirez, "Anxiety level of first-year medicine students at a private university in Peru in times of covid-19", *Rev. Fac. Med. Hum*, vol. 20, no. 4, pp. 568-573, 2020.
- [8] S. Lyubomirsky, L. King, and E. Diener, "The benefits of frequent positive affect: Does happiness lead to success?" *APA Psychological Bulletin*, vol. 131, no. 6, pp 803-855, 2005.
- [9] B. Mesurado, "Factor Validity and Reliability of the Optimal Experience Questionnaire (Flow) for children and adolescents", *Magazine Iberoamerican Diagnostic and Psychological Evaluation*. vol. 25, no. 1, pp. 159-178, 2008.
- [10] L. Neglia, K. Chirinos, J. Vasquez, and M. Cabana, "The presence of Woman in the Engineering Programs of the University of Sciences and Humanities. Motivations, permanence and monitoring", in *EDUNINE Conference*, 2020.