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Distance Education in the Marginalized Areas of the State of Hidalgo

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Abstract: Currently, there are marginalized places in Mexico without any higher education institutions that allow students to continue their university education. Distance education generates great academic opportunities for students from these areas, providing a life change in society. This research work aimed to identify whether distance education is a factor that positively influences high school students in the Tepehuacán de Guerrero region of the State of Hidalgo to continue with professional training. The novelty of this study was to implement remote locations so that students could continue with their academic training, thereby reducing the literacy gap in marginalized and low-resource areas. This research used a mixed approach, where 135 high school students were considered, and for the qualitative part, a total of 38 people were considered. With the results obtained from this research, the possibility of creating a remote headquarters of the Polytechnic University of Tulancingo was raised, providing higher education in two professional careers.

Keywords: Distance education, marginalized areas, educational offer, zone of proximal development.



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伊达尔戈州边缘地区的远程教育

摘要：目前，墨西哥的一些边缘地区没有任何高等教育机构可以让学生继续接受大学教育。远程教育为这些地区的学生创造了巨大的学术机会，为社会生活带来了变化。这项研究旨在确定远程教育是否是积极影响伊达尔戈州特佩瓦坎德格雷罗地区高中生继续接受专业培训的一个因素。这项研究的新颖之处在于实施偏远地区，以便学生可以继续接受学术培训，从而缩小边缘化和资源匮乏地区的识字差距。这项研究采用了混合方法，其中考虑了 135 名高中生，在定性部分，总共考虑了 38 人。根据这项研究的结果，提出了在图兰辛戈理工大学建立一个远程总部的可能性，为两个专业职业提供高等教育。

关键词：远程教育、边缘化地区、教育机会、近期发展区。

1. Introduction

Education is considered in the world as “the key to development”; However, in Mexico, only 32.8% of the population between 18 and 24 years of age has the possibility of studying for a university degree. And although the current governments, including Mexico, have done a lot for education, this is not enough. Particularly in the State of Hidalgo, there are marginalized areas that still do not have the offer of higher education. This factor means that many of the young people who graduate from high school see their possibilities of continuing with their studies at a higher level reduced [1].

This is why distance education becomes an option to serve these regions and is the reason why it was decided to carry out this research, seeking to analyze whether distance education is a factor that is related to the continuity of education studies. higher level [2], as well as the impact on their lives when studying a career at a professional level; observing the modification that the zone of proximal development of these students suffers, considering the results for the implementation of a low-cost, high-impact distance education project for marginalized areas of the State of Hidalgo.

2. Literature Review

2.1 Distance Education: a Conceptual Approach

Virtual education has been consolidated as an educational modality that allows the training of students through digital platforms, using the Internet as the main tool [3]. Virtual education is a teaching modality in which learning activities occur in digital environments, without the need for students and teachers to share a physical space [4].

“Distance education is an appropriate field to understand the current challenges of educational institutions and new scenarios demanded by society [5]. In distance education, a teaching methodology is used,

which is characterized by mediating forms between teachers and students [6], to transcend the limitations of time and space inherent to direct or face-to-face teaching and thus open the sphere of influence. of education.”

Associated with this, a virtual classroom is the symbolic space for research, study and updating in techniques and methodologies that require virtual teaching to be applied in distance educational proposals [7].

2.2 Features of Distance Education

There are endless characteristics of distance education, among which the following stand out:

1) Temporal and Spatial Flexibility: This emphasizes that students access learning content from anywhere and at any time, facilitating self-managed learning and compatibility with other activities, such as work or family responsibilities;

2) Global Accessibility: Virtual programs offer opportunities to students who would not otherwise have access to certain levels of education due to geographic barriers. Virtual education reduces these barriers by allowing anyone with an internet connection to participate in academic courses and programs;

3) Promotion of Autonomy and Self-Discipline: This modality encourages the development of skills such as self-discipline and time management, since the student's progress depends largely on their ability to organize and stay motivated;

4) Interactivity Through Digital Tools: Virtual education uses multiple communication tools, such as forums, videoconferences, chats and emails, which allow interaction in real time [8].

Based on the above, it can be noted that the benefits of distance education are very applicable in higher education [9]. especially when working with young people who have the desire to study, the approach is a group education model where they can interact, which will save costs and which in some cases is the only way to continue studying precisely for the economic fragility

of the family: another advantage is that the municipal governments will make the investment in the necessary equipment, so the only thing the student will require is the willingness and dedication to pursue a university degree.

2.3 Zone of Proximal Development (ZPD)

The Zone of Proximal Development (ZPD) is a functional interactive system that aims to facilitate conceptual-cognitive change in students [10]. It consists of four stages:

1) Assisted Performance: Assisted Performance: it is defined by the performance that needs to be assisted by another more capable person or people and that indicates the current state of development that the subject presents in relation to the new learning content [11];

2) Self-performance: at this stage the student must self-learn from readings, practices or other situations. The role of the facilitator must be internalized as the internal voice of the student himself, having to try a series of strategies regarding the content, thus generating the transition in the self-regulation of his own skills;

3) Automated Performance: at this stage it assumes that all the elements for the integration that the subject must achieve have been in place, so that a certain distance from social forces that allow them to be purposeful or creative with the knowledge and skills at the level of their intelligent behavior [12]; and

4) Deautomatization: occurs due to the discontinuity of competent behavior over time, noting that the subject will proceed to self-regulation, which will be successful to the extent that the interaction in the ZPD was significant in the use of appropriate means for the promotion of development; Otherwise, the subject's recurrence would be linked to any of the previous stages.

3. Methodology

This research was carried out with a mixed approach [13]. The qualitative orientation was based on grounded theory, using the "Atlas TI" application software for analysis, which is an information analysis tool; In this case, the zone of proximal development of the students who took the remote education modality, which was offered by the Polytechnic University of Tulancingo (UPT), in the facilities of the Municipality of Tepehuacán de Guerrero. The analysis was interpretive and contextual In Situ, this through the experiences of the students. Regarding the quantitative approach, a data measurement instrument was applied, with 12 items with a Likert scale and five response levels

3.1 Participants

For the quantitative part, four higher secondary education institutions were considered, which are those

found in the Municipality of Tepehuacán de Guerrero. Within these schools, the instrument applied was to students from the last semesters. The schools surveyed are shown in Table 1.

Table 1. Higher Secondary Education Institutions of the municipality (compiled by the authors)

Institution	Registration to graduate
Cecyteh Tepehuacán	80
Cobaeh San Juan Ahuehueco	25
Distance Education System Cuatotol	15
Telebachillerato Acoxcatlán	15
Total	135

3.2 Instrument

Being a social research in which attitudes were measured based on behavior regarding the proposal presented for distance education for the continuity of higher level studies, the Likert scaling method is proposed, which consisted of a set of twelve items for the quantitative part presented in the form of statements to which the subjects were asked to select the most appropriate response and thus be able to give a statistical treatment to the values; and 16 questions for the qualitative part.

3.3 Procedure

The research was divided into two substantial parts, the first included the potential high school students in the municipality of Tepehuacán de Guerrero, Hidalgo, and their acceptance of the educational model offered, and the second perceived the modification in their Zone of Proximal Development suffered by the students who are already part of the Polytechnic University of Tulancingo (UPT) at the Tepehuacán headquarters in Guerrero, Hidalgo, under the Mixed Distance Education model (Edmix).

4. Results

In this research, the variables "*distance education*" are used as the independent variable and "*continuity of higher-level studies*" as the dependent variable. The upper secondary education students of Tepehuacán de Guerrero totally agreed to continue their higher-level studies, the category that was repeated the most was totally agree (value 5), on average the subjects were located at 4.5 (between agree and totally agree). Regarding those surveyed, 50% responded that they agree with traditional education; 50% of young people about to graduate from high school "agree" with distance education (use of the Internet and information technologies), while the remaining 50% are below this value. The scores tended to be at high values; The students surveyed agreed to pursue a distance university

degree in their municipality (50%), while the remaining 50% were below that value.

Respondents said they were willing to dedicate 6 hours a day to studying a distance learning degree, having a mode with a value of 4, with a standard deviation of 0.88, as seen in Figure 1.

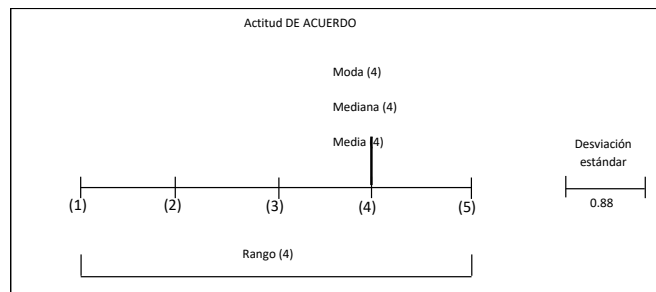


Figure. 1 Study hours (developed by the authors)

The descriptive interpretation, referring to whether students are willing to be more self-taught in the distance modality, 50% responded that they agree, with a value of 4, and the remaining 50% are below this value. On average, the applicants place themselves at 3.9 (agree), and they also deviate from the value 3.9, (on average), 0.73 scale units. No candidate presented the value of totally disagree (there is no “1”), the scores tended to be at high values, as shown in Figure 2.

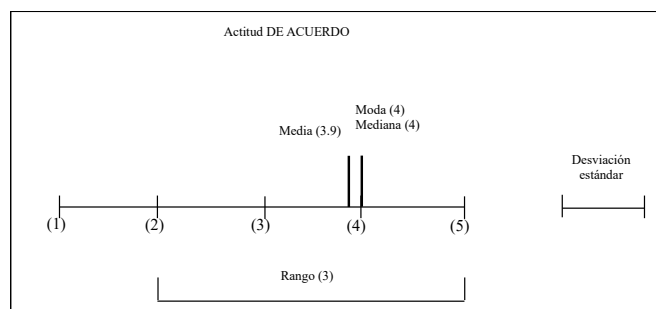


Figure. 2 Self-taught study (developed by the authors)

The applicants reflected that they agree that distance education is an opportunity to continue their studies despite the scarce economic resources. The category that was most repeated was “strongly agree” (value 5), 50% agreed. is below this value, on average the applicants are above “agree” (value 4.2), likewise they deviate from 4.2 (on average), 0.87 scale units. The scores tended to be at high values, as reflected in Figure 3.

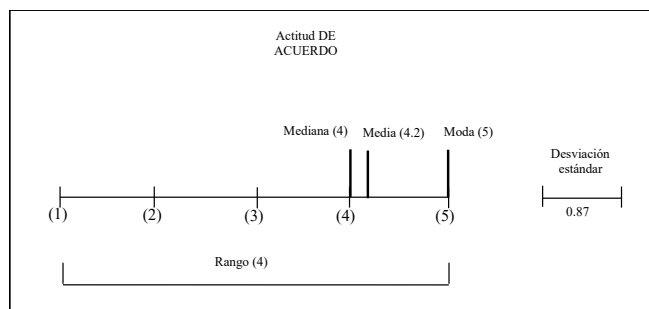


Figure. 3 Economic resources (developed by the authors)

Regarding the qualitative analysis, the coding of the information was carried out in the Atlas Ti system, with the responses the families are created and all the variables that have been identified are associated, to begin with the creation of a conceptual map that is generated by the software, as shown in Figure 4.

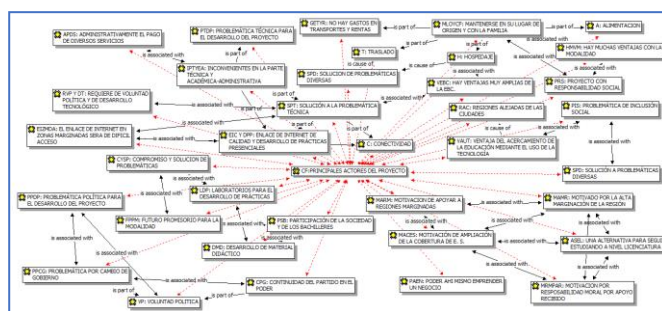


Figure 4. Concept map (developed by the authors)

The first family is that of students who are single mothers, who generally mention that they receive support from their family. This support can be moral, motivational and even economic for the continuity of their studies. They all work and continue studying because they want to improve themselves personally and aim to give a better life to their children. 50% of the students are the first professionals in their family. They consider that the modality has many advantages for them to continue studying, one of these advantages is precisely the proximity to their place of origin, which means that it does not require many economic resources, which allows them to work and study, and it also does not require a large investment. time to get to the class location. Undoubtedly, what is observed with the responses of the students who are single mothers is that their Zone of Proximal Development is being modified, and this precisely will not only impact the students themselves but will also have a positive impact on their children, this is see in Figure 5.

Another family is that which corresponds to the various actors who participated in the structuring and implementation of the project who were interviewed individually and who carried out the same information

On the other hand, within the findings found in those students who are single, they indicate that they continue with their studies due to the motivation of their peers; however, they say that this new modality of study demands time, but despite this it covers their expectations and they identify with the zone of proximal development, this mainly because they will have a better quality of life, which will allow them to be competitive, managing to increase the social impact and economic growth, this because the headquarters will be in Tepehuacán de Guerrero, linked to the educational offer of the Polytechnic University of Tulancingo in its Edmix Modality.

6. Conclusion

The practical value of this research is to implement a mixed distance education headquarters in the Municipality of Tepehuacán de Guerrero. This will contribute to the training of highly competitive professionals, providing clear and concrete guidelines to improve education and ensuring a long-term positive impact. Likewise, in this work, the theoretical elements related to education, distance education, its elements and the factors that influence education were considered.

Derived from the findings obtained in the research work, it is concluded:

1) The Municipality of Tepehuacán de Guerrero has the infrastructure to provide distance education jointly with the Polytechnic University of Tulancingo.

2) Yes, there is demand from students about to graduate from high school in the Municipality of Tepehuacán de Guerrero to take higher level courses remotely (Remote Route), considering the proposed hypothesis proven.

3) The Hypothesis of the zone of proximal development is structured, presenting it not only as an assumption, but after the analysis carried out, it is structured as a positive hypothesis that was proven, remaining as follows:

The mixed distance education offered by the Polytechnic University of Tulancingo constitutes a factor of transformation of the zone of proximal development of the students enrolled in it, located in Tepehuacán de Guerrero, in the State of Hidalgo.

4) Students who study under the mixed distance modality will, in the first instance, obtain knowledge and turn them into professionals and thereby modify their zone of proximal development.

5) It is recommended that, once the mixed distance modality is accepted, this option be replicated in some (s) regions of the state and the country, mainly where students do not have access to higher level education, so that Mexico has with highly competitive professionals.

Declarations

Author Contributions

Conceptualization, L.M.P. and M.D.R.L.T.; methodology, L.M.P.; software, M.O.C.; validation, L.M.P. and M.D.R.L.T.; formal analysis, M.O.C.; investigation, L.M.P.; resources, L.M.P.; data curation, L.M.P.; writing—original draft preparation, all authors contributed equally; writing—review and editing, L.M.P.; visualization, M.O.C.; supervision, L.M.P.; project administration, M.D.R.L.T.. All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

Institutional Review Board Statement

Rigorous ethical guidelines were adhered to throughout the study to ensure participant privacy and data confidentiality, in compliance with institutional and national research standards.

Informed Consent Statement

Participation in the study was voluntary and informed consent was obtained from all participants prior to their involvement.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this manuscript. In addition, ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies, have been completely observed by the authors.

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