

Chapter 8 Online tutoring facing the challenges of education in the digital environment, the case of the Higher Technological Institute of Teposcolula

Capítulo 8 La tutoría en línea ante los retos de la educación en el entorno digital. El caso del Instituto Tecnológico Superior de Teposcolula

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Abstract

Currently, we are immersed in a society influenced by technology and that, especially after the pandemic, is undergoing a radical transformation in all its areas. The educational system, as a reflection of society, cannot remain on the sidelines of these changes, hence the accelerated access to Information and Communication Technologies (ICT). Derived from this, this work collects the results of the Institutional Tutoring Program and its online operation model, during the context of the pandemic at the Teposcolula Higher Technological Institute; where different problems stand out, such as the economic situation of the student population; distance learning teaching processes, lack of access to electronic devices; telephone and internet services; and others are directly related to working conditions, family conditions, and expectations, which are not expressly related to the classroom. The objective is to contribute to a theoretical reflection on the work and incidence scheme of the Institutional Tutoring Program during the COVID - 19 pandemic; being that this online model presented serious limitations and difficulties that conditioned access to quality education: economic condition, family situation, gender, geographic location and access to ICTs; as well as the Digital Divide, which refers to inequality in access to ICTs.

Technology, Tutoring, Education, Pandemic, Context

Resumen

Actualmente estamos inmersos en una sociedad influenciada por la tecnología y que, especialmente tras la pandemia, está sufriendo una transformación radical en todos sus ámbitos. El sistema educativo, como reflejo de la sociedad, no puede permanecer al margen de estos cambios, de ahí el acceso acelerado a las Tecnologías de la Información y la Comunicación (TIC). Derivado de lo anterior, este trabajo recoge los resultados del Programa Institucional de Tutorías y su modelo de operación en línea, durante el contexto de la pandemia en el Instituto Tecnológico Superior de Teposcolula; donde destacan diferentes problemáticas, como la situación económica de la población estudiantil; procesos de enseñanza a distancia, falta de acceso a dispositivos electrónicos; servicios de telefonía e internet; y otras están directamente relacionadas con las condiciones laborales, familiares y expectativas, que no están expresamente relacionadas con el aula. El objetivo es contribuir a una reflexión teórica sobre el esquema de trabajo e incidencia del Programa Institucional de Tutorías durante la pandemia COVID - 19; siendo que este modelo en línea presentó serias limitaciones y dificultades que condicionaron el acceso a una educación de calidad: condición económica, situación familiar, género, ubicación geográfica y acceso a las TICs; así como la Brecha Digital, que se refiere a la desigualdad en el acceso a las TICs.

Tecnología, Tutoría, Educación, Pandemia, Contexto

1. Introduction

In the context of the pandemic, ICTs provided the possibilities to address obstacles in isolating contexts. The need to communicate and continue with distance learning curricula produced an exponential growth of activity in digital environments, consolidating an increase in the use and expansion of the processes of appropriation of digital technologies, but which unfortunately also revealed the evident digital inequality in the educational environment. Oaxaca is one of the states with the largest indigenous population, a sector that today continues to demand attention and inclusion in different areas, such as higher education, which has been a topic of interest for sociological, anthropological and educational approaches, since the level of education of citizens is an important indicator of overcoming marginalisation and backwardness as a way to quality of life.

For the indigenous student population, pursuing a university degree is a great challenge, since most of them, upon leaving a rural environment to join urban spaces, face different problems, such as: gender inequality, discrimination, a language different from their own, as well as remoteness from their place of origin, and economic deprivation, to mention a few. According to the National Institute of Statistics and Geography (2020), in Oaxaca, out of every 100 people aged 15 and over, 59 have basic education; 16 have secondary education; 11 have higher education and 12 have no schooling; the average level of schooling is the first year of secondary education. The Instituto Tecnológico Superior de Teposcolula is located in the Mixtec region, which is made up of 155 municipalities in the state, so that more and more indigenous young people can have access to higher education without having to migrate to urban environments.

Therefore, the present work is based on the normative framework, which integrates the Educational Model for the 21st Century and the Academic-Administrative Guidelines Manual of the National Technological Institute of Mexico; the referential framework; the contextual framework; and the results of the tutorial work corresponding to the periods August - December 2021 and January - July 2022; together with the lines of tutorial action and the scheme of distance work in the context of the COVID - 19 pandemic. All of this is based on an inclusive model that contemplates equal attention between men and women according to the different contexts of their original communities, mainly in the Mixtec region of Oaxaca.

2. Development

The Institutional Mentoring Programme emerges as the object of this theoretical reflection based on the analysis of the facts of professional experience in the case of the Instituto Tecnológico Superior de Teposcolula located in the Mixtec region of the state of Oaxaca, which from its beginnings in 2009 adopted the approach of education by professional competences, and from this the Institutional Mentoring Programme, which was formalised from August 2012, since previously there was no structure focused on the Guidelines for work and execution of the same.

Currently, the ITS in Teposcolula has five degree programmes: Bachelor's Degree in Gastronomy, Computer Systems Engineering, Administration, Community Development and Logistics Engineering. As a result, this paper focuses on the Institutional Tutoring Programme, since most of the student population comes from rural environments (mainly from the Mixtec region), and has various social, cultural and pedagogical characteristics, such as: introversion (mainly in the first semesters); difficulty in adapting to different study techniques; population from indigenous peoples, generally speakers of Mixtec, Zapotec and Cuicatec, in its different variants; as well as a growing trend of the inclusion of women in higher education.

In addition to the above, it is important to mention that through tutoring we work with attention and prevention of different problems that affect school performance, from internal to external instances; being a priority, as they guide us towards an inclusive education both in terms of gender and the inclusion of the indigenous population.

3. Literature review

Basic conceptual underpinning

Tutoring comprises a set of activities that promote learning situations and support the correct development of the academic, personal and professional process, by guiding and motivating students, so that they in turn advance and effectively conclude their own training process (UNESCO, 1998 in DGEST, 2013).

According to ANUIES (in DGEST, 2013), tutoring is a personal and academic accompaniment throughout the training process to improve academic performance, help students solve their school problems, develop study, work, reflection and social coexistence habits. For its part, UNAM (2012) defines tutoring as a pedagogical activity whose purpose is to guide and support students during their training process. This activity does not replace the tasks of the teacher, through which students are presented with different contents so that they can assimilate, master or recreate them through innovative synthesis.

Normative framework Education Model for the 21st Century

The Educational Model for the 21st Century: *"Training and Development of Professional Competences"* is a document which presents the Educational Model that the National Technological System of Mexico (TecNM) has structured and oriented towards the training and development of professional competences. Governed by the premise of an integral training based on three areas "being, knowing how to be and knowing how to do", this model is structured in three essential dimensions for the educational process: Philosophical, Academic and Organisational:

1. Philosophical dimension. It focuses on the transcendental reflection of the person, reality, knowledge and education; as components that allow human beings - in their academic training stage - to identify themselves as persons, citizens and professionals capable of participating with an ethical attitude in the construction of a democratic, equitable and just society.
2. Academic dimension. It assumes the theoretical references of the construction of knowledge, of meaningful and collaborative learning, of mediation and effective evaluation and of the practice of acquired skills, which are inscribed in two psycho-pedagogical perspectives: sociocultural and structuralist.
3. Organisational dimension: Its essential connectors are the vision and mission of the system, and in this field, process management and educational administration deploy a perspective of excellence based on high performance and transformational leadership.

The academic dimension is fundamental, since it includes the psycho-pedagogical level, which is composed of the learning process, educational content, didactics, teaching strategies and evaluation; the curricular level (study plans and programmes and academies); and the social level, which addresses current contexts and professional competences. Within the didactic relationship between students and teachers, mutual respect, trust, honesty, responsibility and empathy stand out as the basis for creating environments that favour learning processes, for which the ideal conditions must be generated, taking the Institutional Tutoring Programme as a starting point.

The TecNM institutions face multiple social demands in this area, among which stand out: the active participation in the knowledge society at national and international levels; the training and development of professional competences; the creation of common spaces for technological higher education; the recognition of academic programmes; and the certification of processes, to mention a few. It is therefore important to consider the effects on academic performance of family income, family expectations, social and cultural contexts, the characteristics of the school and the role of the teacher, to take into consideration the role of variables associated with the social, psychological, pedagogical, affective and behavioural functioning of the students themselves; the types of learning; and above all, to address the three approaches that the system of professional competences demands: knowing (knowledge), knowing how to be (attitude) and knowing how to do (skills) determined as a result of their interaction with the school, family and social environment.

In the case of the Instituto Tecnológico Superior de Teposcolula, tutoring implies a human relationship of respect and trust between the tutor and the student, involving various values to promote the academic, personal and professional development of the latter; all this as part of the accompaniment that the tutor (teacher) will provide to the student during his or her academic training.

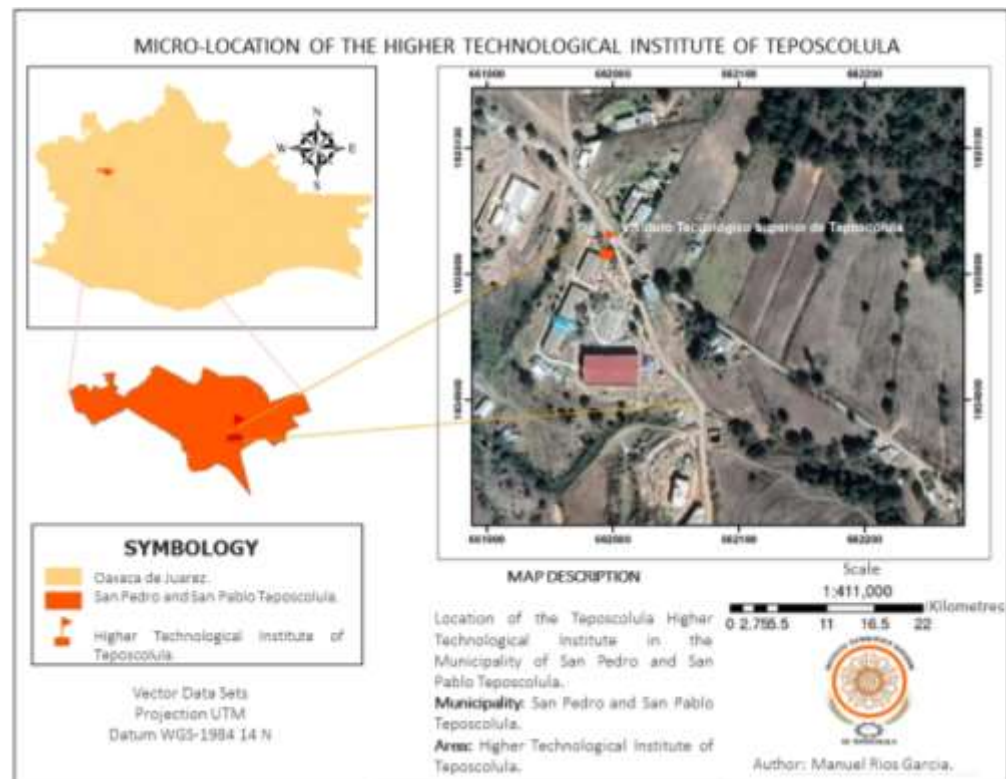
Manual of academic-administrative guidelines of the Tecnológico Nacional de México

In the Academic-Administrative Guidelines Manual of the Tecnológico Nacional de México 2015 - 2016, within the Guidelines for the development of the Institutional Mentoring Programme, it states in point 15.3 Definition and characterisation that: "mentoring is a process of group or individual accompaniment that a tutor provides to the student during his or her stay at the Institute, with the purpose of contributing to his or her integral formation and influencing the institutional goals related to educational quality; raising the terminal efficiency rates; and reducing the failure and drop-out rates". As a strategy that strengthens the integral formation of the student community, based on a humanistic and inclusive vision, academic tutoring complements teaching practice as a factor of change in terms of integral support to the student community in the academic, cultural and human development fields.

4. Frame of reference

As shown in Figure 1, the Instituto Tecnológico Superior de Teposcolula is located in the town of San Pedro y San Pablo Teposcolula, which belongs to the municipality of the same name in the Mixtec region of the State of Oaxaca. The Municipality of San Pedro and San Pablo Teposcolula is located in the northwest of the State of Oaxaca, at an altitude of 2,180 metres above sea level, and its distance from the State Capital is 142 kilometres.

Figure 1 Micro-location of the Instituto Tecnológico Superior de Teposcolula



Source: Ríos García M. 2022

5. Contextual framework

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6. Strategies implemented in response to the crisis situation caused by the pandemic. Tutoring in the face of the pandemic

According to the Tutoring Manual of the Instituto Tecnológico Superior de Teposcolula (2018), among the problems identified in the performance of the students in the institution are those described in the following table:

Tabla 1 Indicadores de Atención Tutorial

Indicador	Criterio de identificación
1. Poca adaptación al medio académico.	a. Poco sentido de pertenencia por el Instituto Tecnológico en los primeros semestres. b. Falta de familiarización con enfoque educativo basado en competencias profesionales. c. Bajo rendimiento académico y dificultad de adaptación al cambio.
2. Problemas de Salud.	a. Problemas visuales, auditivos y motores. b. Enfermedades físicas que no han sido atendidas por desconocimiento o situación económica. c. Enfermedades de transmisión sexual. d. Problemas emocionales derivados de algunas relaciones de pareja o de las diferentes situaciones familiares presentadas. e. Problemas de adicción, principalmente con alcohol.
3. Problemas Vocacionales.	a. Durante el primer semestre expresa escaso interés por los contenidos de algunas asignaturas. b. Presentan inasistencias sin justificación alguna, muchas veces por la influencia negativa de terceras personas. c. La carrera fue elegida como segunda opción y principalmente porque fue a la única a la que pudo acceder por cuestiones económicas. d. Poca motivación para el estudio, falta de metas profesionales, desconocimiento de sus aptitudes y habilidades.
4. Relación docente -estudiante	A su ingreso al Instituto Tecnológico, la comunidad estudiantil expresa haber vivido situaciones en el nivel medio superior: a. Discriminación por su condición étnica. b. Maltrato, acoso, prepotencia o insultos por parte del docente.
5. Relación estudiante – estudiante.	a. Aislamiento. b. Violencia escolar (física o emocional). c. Manifiesta amedrentamiento por parte de los compañeros.
6. Toma de decisiones académicas.	a. Desconocimiento de los Lineamientos Académico – Administrativos y de su Plan de Estudios. b. Cambios de carrera sin un estudio previo.
7. Problemas Afectivos.	a. Aislamiento, poca capacidad de concentración y atención. b. Somnolencia, angustia y tristeza. c. Poca confianza en su persona y baja participación en clase.
8. Perfil de ingreso inadecuado.	a. Bajo puntaje en el examen de nuevo ingreso en determinadas áreas de conocimiento o habilidades. b. Poca comprensión de las temáticas. c. El docente de la asignatura localiza deficiencias en los conocimientos previos.
9. Falta de Hábitos de Estudio.	a. Desconoce técnicas de aprendizaje empleadas en el enfoque de competencias profesionales. b. Poca planificación de las actividades académicas. c. Realiza su estudio en un lugar insalubre, poca ventilación y con ruidos y dedica poco tiempo de estudio en casa. d. No tiene una técnica de estudio definida.
10. Capacidades Sobresalientes	a. Desempeño académico más allá de la media de edad y grado. b. Rapidez en la ejecución.
11. Insuficientes Recursos Económicos	a. Necesidad de trabajar/Ingresos insuficientes. b. Carecen de algún equipo de cómputo. c. Retraso en entrega de trabajos por causas económicas. d. Casado/a y con familia a edad joven. e. Incompatibilidad de horario laboral y escolar. f. Mala alimentación.
12. Dificultades de socialización	a. Introversión y aislamiento. b. Depresión, agresividad indisciplina.
13. Situación de Violencia	a. Se le observa con una pareja violenta. b. Dependencia emocional hacia la pareja.
14. Relaciones de pareja,	a. Aislamiento y distracción. b. Falta de apoyo por la pareja. c. Inasistencias constantes y abandono de sus estudios.

Own elaboration based on the Tutoring Manual at ITSTE 2018

Líneas de acción

Desde 2018 se ha contemplado el esquema de trabajo tutorial fundamentado en los Indicadores de Acción Tutorial (Tabla 1). En marzo 2020, tras el inicio de la Pandemia por COVID - 19, este modelo quedó pausado hasta el término del semestre. Para Agosto de 2021, se reanudaron las tutorías en la modalidad virtual, donde se incluyeron las siguientes áreas: Personal docente, servicio de psicología, servicio de enfermería, jefatura de división y tutores. Ya para 2021, se consolidó nuevamente el esquema de trabajo, con el apoyo de las áreas internas y externas.

Considerando que las instancias de apoyo y atención se refieren a aquellas que prestan un servicio al estudiante, que le permite remediar y/o mejorar su condición académica y/o personal, con lo cual se establecen las condiciones mínimas necesarias para generar el aprendizaje y con ello, que la población estudiantil continúe con su formación profesional; éstas instancias son de índole interna o externa. Dentro de las internas se encuentran las siguientes:

Table 2 Lines of Tutorial Action

Area	Actions
Teaching staff.	Consultancies: a. Personalised attention when the student is absent due to personal problems. b. Regularisation in subjects where comprehension is poor.
Servicio de psicología.	a. Orientation interview. b. Assessment of vocational profile. c. Psychological assessment. d. Preventive Actions. e. Therapeutic Process.
Servicio de Enfermería.	a. First Aid. b. External Referrals: Outpatient Consultation. c. Preventive Actions. d. Review of the validity of the social security number.
Centro de información.	a. Internal and external loan and consultation of general literature. b. Support for the search of bibliography required by the applicant.
Jefatura de división.	a. Assigns academic loads. b. Provides advice on guidelines. c. Promotes procedures for complementary activities, social service and professional residency.
Tutores y tutoras.	a. Identifies problems and generates referrals to different bodies if necessary. b. Accompanies students throughout their academic training.

Own elaboration based on the Tutoring Manual at ITSTE 2018.

External instances refer to public and/or private institutions that offer various services, to which access can be obtained through consultation and/or collaboration agreements. Referrals to external bodies are only carried out by the people in charge of attention in internal bodies, not directly by the tutor (as it is the tutor who carries out referrals to internal bodies). The Instituto Tecnológico has the following support institutions:

1. Municipal Instance for the support of women.
3. State Council for the prevention and control of AIDS (COESDIDA).
4. General Services of Alcoholics Anonymous, Civil Association.
5. State Human Rights Commission.
6. Secretary of Women of Oaxaca (SMO).
7. Civil Society Organisations.

7. Methodology

In accordance with its objectives, the research has a mixed approach. In order to investigate situations prevalent in second semester students, a quantitative approach was used, since a questionnaire of 20 questions was applied through Google Forms, addressed to 62 second semester students of the five study plans, who successfully completed the Tutorials during the periods August - December 2021 and January - July 2022. In the case of qualitative information, a focus group was carried out.

As for the sources of information, both primary and secondary sources were used.

8. Results

Tutorial Action Plan

At the beginning of each semester, the Institutional Tutoring Coordination carries out a diagnosis to identify the main needs of Tutorial Action. Based on the results obtained for the period August - December 2021, the Tutorial Action Plan (TAP) was developed for First Semester students, according to the data shown in Table 3.

Table 3 Lines of tutorial action, August - December 2021

Ordinary Tutorials (First Semester)		
Theme	Hours allocated	Modality
How my school works		
Framing session.	One to two hours.	Group.
School regulations: procedure and formalities.	Two hours.	Group or individual.
Tools for tutorial activity.		
Interview.	One hour.	Individual.
Academic Skills Development.		
Study habits and techniques.	One to two hours	Group
Time management strategies.	One to two hours	Group
Use and importance of digital platforms.	One to two hours	Group
Human Development		
Emotional health: self-esteem, anxiety, depression, stress.	One to two hours.	Group
Addictions.	One to two hours.	Group
Free theme for detecting/addressing needs or problems with students.	4 hours spread over the whole semester	Group or individual.
Theme: Professional Skills		
Life and career plan.	One to two hours.	Group
Analysis of the entry profile, graduation and career field.	One to two hours.	Group
Drawing up the Curriculum Vitae.	One to two hours.	Group
Closing.	One hour.	Group
Follow-up Tutorials (From the Third Semester onwards)		
Theme	Semester	Hours allocated
Academic Monitoring	Tutorials for the semester to which they have been assigned.	Two hours per semester, in a group setting

Own elaboration based on the ITSTE Tutoring Manual

It should be noted that the way in which the activities are carried out is left to the tutor's discretion, based on what is observed in the students. The work is supervised by the Coordination of each Syllabus (who is also a teacher and whose term of office is two years); in collaboration with the Institutional Coordination.

Already for the period January - July 2022, the TAP was implemented with the themes shown in Table 4.

Table 4 Lines of tutorial action, January - July 2022

Ordinary Tutorials (Second Semester)		
Theme	Hours allocated	Modality
How my school works		
Framing session.	One to two hours.	Group.
School regulations: procedure and formalities.	Two hours.	Group or individual.
Academic Skills Development		
Process of adaptation to the virtual modality.	One hour.	Group
Accessible virtual tools.	One to two hours.	Group
Effective communication.	One hour.	Group
Desarrollo Humano		
Self-esteem: Who am I, what I want to improve about myself, what I need to leave behind in order to move forward.	One to two hours.	Group

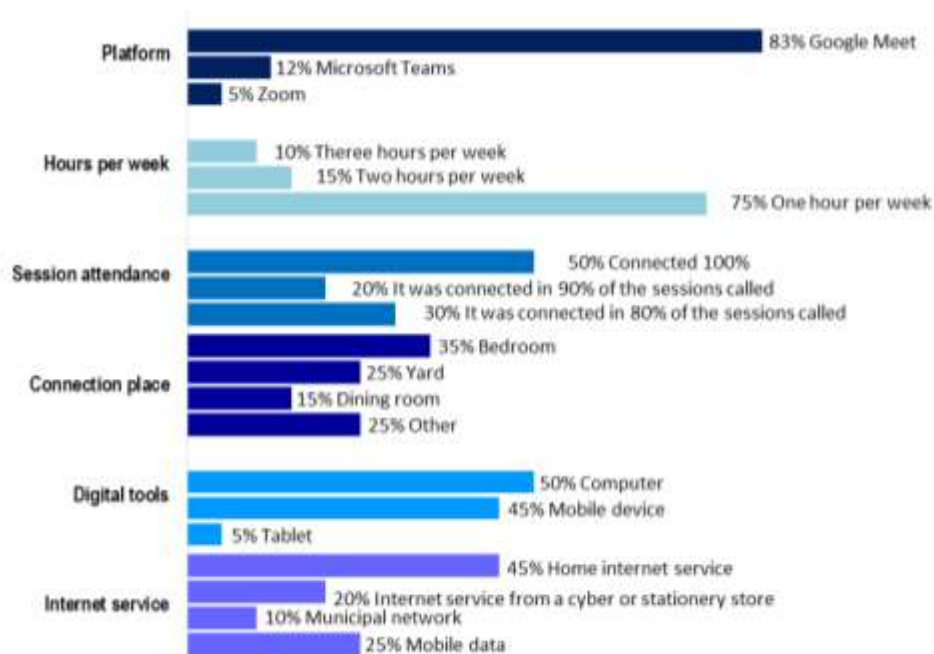
Motivation: Who do I want to be tomorrow, How can I achieve it (personally and professionally).	One to two hours.	Group
Habits: Learning to manage one's time and resources.	One to two hours.	Group
Group activity for the detection of the needs of those being tutored.	Three hours	Group or individual.
Tema: Habilidades Profesionales		
Professional life plan: Emotional intelligence for good decision making.	One to two hours.	Group
Analysis of the profile of entry, graduation and career field.	One to two hours.	Group
Identification of intelligent skills as a strategy for entering the labour market.	One to two hours.	Group
Importance of the curriculum vitae as a business card.	One to two hours.	Group
Closing session.	One hour.	Group
Follow-up Tutorials (From the Third Semester onwards)		
Theme	Semester	Hours allocated
Academic Monitoring	Semester tutorials assigned to you.	Two hours per semester, in a group setting

Own elaboration based on the ITSTE Tutoring Manual.

Characterisation of the Online Tutorial Activity. Period 2021 - 2022

As indicated in the methodology, a 20-question questionnaire was applied through Google Forms, addressed to 62 second semester students from the five study plans, who successfully completed the tutorials during the periods August - December 2021 and January - July 2022. As shown in Figure 2, the majority of the tutoring sessions were conducted through the Google Meet platform (83%), which, according to the students, was more feasible due to the connection problems that could arise. Another important element to highlight is the number of sessions per week, as this depends on the academic load of each teacher-tutor; from which it was identified that most of them worked one hour of tutoring per week (75%). These data are shown in Figure 2.

Figure 2 Characterisation of the Online Tutorial Action



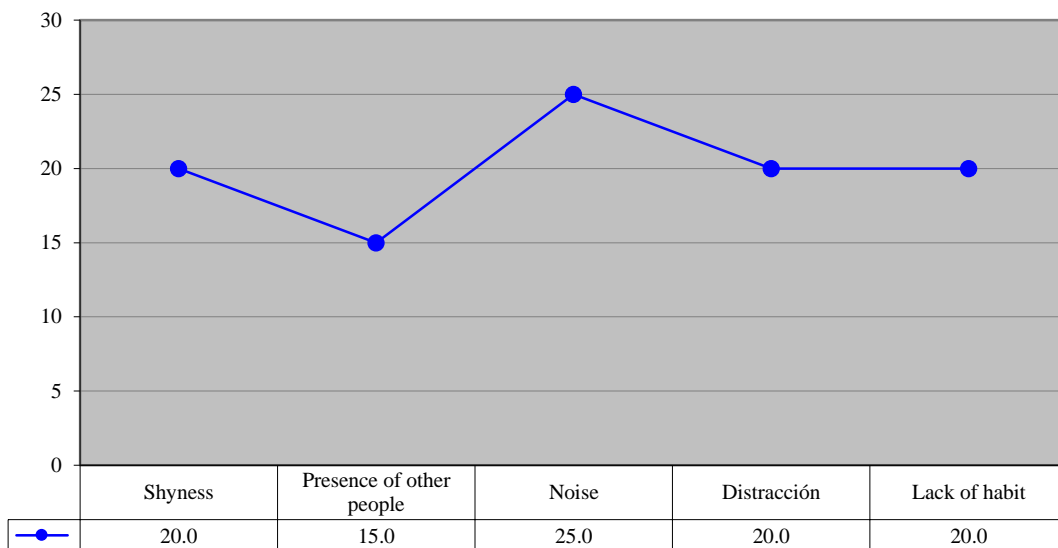
Source: Own Elaboration

Due to the fact that most of the student population lives in remote communities (mainly in the Mixteca Oaxaqueña region), they lack internet service or it is usually deficient, in addition to the lack of a mobile phone network or mobile data. This situation had repercussions on attendance at the tutoring sessions, since due to connection problems only half of the population studied was able to connect to 100 percent of the sessions convened and the rest were distributed between 90 and 80 percent attendance respectively; all of this also depended on the weather situation, as well as the timetable. In this sense, after the pandemic began, they were forced to contract satellite internet service, with costs ranging from \$2300.00 to \$3500.00 pesos, depending on the area.

Another important factor was the area or space available to them to connect via video calls, of which 35 per cent did so from their bedroom, 15 per cent in the dining room, living room or hallway, and in the last case they had to go out to the courtyard to have better reception of the service (25 per cent) or, if necessary, move to the centre of town to get the municipal network or purchase the service by the hour or fraction thereof in a cyber café or stationery shop (if there was one).

On the other hand, we inquired about the characteristics of the online tutorials, which highlighted that most of the students found it difficult to keep the camera on during the sessions, mainly due to the fact that communication between groups was very limited. Hence, factors such as: shyness (20%), external noises: horns from door-to-door sales of sundries, animal sounds, municipal and family members (25%); finally, they referred to other factors such as lack of habit, distraction and the presence of other people, as shown in Figure 3.

Figure 3 Non-verbal communication



Source: Own Elaboration

9. Conclusions

Mentoring has been considered a basic and fundamental component of the new student-centred methodology, a necessity for guiding and effectively monitoring autonomous work, either individually or in groups. However, there are still shortcomings and difficulties in the models to develop them, because although teachers identify the various types of tutoring, functions and guidelines, as well as peer tutoring within some educational systems, decisions are taken unilaterally by superiors, which often limits the incidence or impact of tutoring on the students themselves, and therefore on the objectives themselves. The main difficulties encountered in implementing new approaches to tutoring, providing it with content, are to be found in the lack of space, the excess of students that teachers have to deal with and the prevailing mentality in the institutional culture, which requires more teacher interaction. In this sense, it is important to consider the following questions in order to generate real changes in the way it works: is individual guidance necessary for all students; should tutoring be compulsory; what personal characteristics should a good tutor have; and how useful are information technologies?

By virtue of the results, and in accordance with the needs and challenges presented by the COVID - 19 pandemic, at the Instituto Tecnológico Superior de Teposcolula, with the application of some technological tools, we continued working on the teaching-learning processes, as well as on the tutoring model, because integrating ICT into these processes is not just a matter of knowing and using the tools; it is also necessary to be willing to integrate them into our academic activity as another didactic tool.

To recapitulate, among the findings presented here, it was found that living in municipalities without access to telephone and internet services; deficient internet services; as well as the lack of computer equipment or a mobile device; caused constant absences from virtual tutorials by some students; In other cases, students had to enter the labour market in order to earn an income and thus overcome this problem, which involved high costs.

Without a doubt, it is evident that this change of online work has modified the lives of many people, as well as adapting to include technology in the academic area, communication, virtual classes, to mention a few. It should be noted that the Instituto Tecnológico Superior de Teposcolula as an institution of higher education is the interface for the coverage of activities such as the training of empowered professionals, so from this it is necessary to work on the professionalization of the tutorial action, with theoretical and methodological foundations from the own work experiences of the tutors during the last years.

Based on the above and on what has been identified in this work, it is suggested to separate two types of processes for tutorial work: the first focused on the face-to-face modality and the second based on online work, as one of the mistakes was to use the same process in both modalities. Similarly, it is important to train the teaching staff who act as tutors, in order to provide them with new tools for the use and management of ICT, as well as for the approach and execution of the subjects in both modalities, as it is clear that not all subjects can be worked on in the same way. Finally, it is also important to unify an institutional platform for tutorial work.

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