

## Example of organization that adapts to current economic and social demands

### Un ejemplo de organización que se adapta a las demandas económicas y sociales actuales

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#### Abstract:

Currently, the organizations have to adapt quickly in a forced way to the economic, social, technological and health changes that national and international society demands, especially when it comes to higher education, where those who will be part of the activity in the near economic future, and educational organizations are no exception.

For this reason, the Tecnológico de Monterrey as an educational organization has seen the need to transform its educational model throughout its history, however, the most shocking change it has applied to its educational model has been in 2019 with the application of the Tec21 Model, which is considered unique due to its close relationship with organizations and challenges of working life, as well as being flexible and personalized. The Tec21 Model had to be modified earlier than expected, to adapt to the contingency of COVID-19, as a consequence, its educational management was also affected to develop the model as best as possible, the same situation that happened with all the institutions of higher education nationwide, taking similar strategies for their educational success.

#### Keywords:

*Adaptation, COVID-19, educational model, education management, educational organization*

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#### Resumen:

Hoy en día las organizaciones se tienen que adaptar rápidamente de manera forzosa a los cambios económicos, sociales, tecnológicos y sanitarios que la sociedad nacional e internacional demanda, sobre todo cuando se trata de la educación superior, en donde se encuentran quienes en un futuro cercano formarán parte de la actividad económica, y las organizaciones educativas no son la excepción.

Por esta razón, es que el Tecnológico de Monterrey como organización educativa se ha visto en la necesidad de transformar su modelo educativo a lo largo de su historia, sin embargo, el cambio más impactante que ha aplicado en su modelo educativo ha sido en el 2019 con la aplicación del Modelo Tec21, el cual se considera único por la relación cercana con las organizaciones y retos de la vida laboral, además de ser flexible y personalizado. El Modelo Tec21 tuvo que ser modificado antes de lo esperado, para poder adaptarse a la contingencia del COVID-19, como consecuencia, su gestión educativa también fue afectada en busca de desarrollar el modelo lo mejor posible, misma situación que sucedió con todas las instituciones de educación superior a nivel nacional, tomando estrategias similares para su éxito educativo.

#### Palabras Clave:

*Adaptación, COVID-19, modelo educativo, gestión educativa, organización educativa*

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### Introduction

From a pedagogical analysis, the concreteness of the educational paradigms that an institution promotes and practice, and that also serves as a reference for all the functions it fulfills such as teaching, research, extension, linkage and services, for the purpose of making its educational project a reality is called an educational model; because of them there is a need for an educational model of the institution's history, as in its values, principles, vision,

philosophy, objectives and the reason for being of the institution so that its reason for existence can be fulfilled. consider and focus on both [1].

Therefore, the educational model is defined as the instrument that contributes to the sound decision-making of institutions and their authorities for the main purpose of making progress in building a learning community, for the integral training of students through the quality and relevance that global challenges pose to institutions [2].

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For the educational model to meet its objective, it must go hand in hand with adequate educational management, which is the set of organized processes that enable an institution or an education secretariat to achieve its objectives and goals [3].

### **History of the organization**

Tecnológico de Monterrey, an educational organization known by its short name Tec de Monterrey, had its origins in 1943 thanks to the work of Eugenio Garza Sada together with a group of entrepreneurs, who established the institution of a private, non-profit, independent, and non-partisan nature [4].

Among the most relevant aspects in its history is the establishment of the mission of training professionals with levels of excellence in the area of their specialty in 1986, being able to apply this mission through their educational model [4].

This, with the desire to determine a new evolution in 1995, with a view to the future with 2005 mission, which established the training of people committed to the development of their community, and in parallel to train internationally competitive people in their area of knowledge; as well as, for doing research and extension relevant to the country's development [4].

With the aim of transformation and continuous improvement, 2005 defines a new vision for 2015 accompanied by a mission and the strategies with which it was intended to achieve [4].

A significant moment in the history of Tec de Monterrey is the transformation with the purpose of creating a change of culture and process-based approach, which was defined during the year 2012, at which point the values innovation, global vision, teamwork, human sense and integrity were determined to govern the decision-making of the institution [4].

In the same year, the Tec21 educational model was revealed, in order to develop in the new generations the skills for the leaders of the 21st century, supporting this model on innovative and challenging experiences, spaces for active learning, inspiring teachers and innovative model which premiered its application since August 2019 [4]. However, the transformation of the curriculum has been carried out in a gradual way, considering that the Tec21 model has been implemented since 2014 through the development of Week I, Semester I, and Trajectories [4].

### **New Educational Model: Tec21**

According to Tec de Monterrey (2019) the Tec21 Educational Model has an orientation towards the development of disciplinary and transversal competencies, competencies that are developed through challenges that have links with the real context. For this reason, the first semesters of the Tec21 Model, students can explore various areas of knowledge and then focus on a career and specialize according to their interest [4].

Due to the focus on competencies, the Tec21 Educational Model is directly linked to an assessment throughout the student journey, initiating once the student is admitted has an initial assessment in which an identification of the level at which they begin their academic development based on disciplinary knowledge, transversal competencies and personal attributes that each of the students is developed, with the purpose of forming the basis for students' development plan and for them to begin their evidence portfolio [4].

Numerical assignments make an assessment of the level of mastery of disciplinary and transversal competencies in the training units, which can be block, subject, week, and semester Tec; it is important to highlight the need for continuous feedback to each of the students on how they are advancing [4].

The third phase of evaluation in the Tec21 Model takes place in Tec 18 week, which is the opportunity for the student to receive feedback focused on the results of the evaluations obtained in the training units of the six-monthly period taken, this in order to ensure compliance with the student's development plan [4].

Stage evaluation is another way of evaluating, which focuses on providing feedback based on the level of domain achieved in terms of the discipline and transversal competencies set as the target for the corresponding stage (exploration, focus, and specialization); after this stage, goes the graduation of the student wherein order to get it is necessary to obtain at least B2 English level, compliance with competency prof domain levels and approval of the training units of the curriculum, which must be available in the student's portfolio [4].

There was a significant change in the way the pre-Tec21 model of the 2019 plan was evaluated, and this was due to several factors, such as:

- The change in diagnostic evaluation is that the Tec21 Educational Model evaluates knowledge with an initial assessment, where transversal competencies and personality attributes are also evaluated, which is linked to

a flexible leveling scheme and an individual development plan for each student; in the previous model, placement tests were conducted according to disciplines, which if the student did not meet had to wear mandatory remedial subjects [5].

-Previously only a numerical scale from 1 to 100 was used, in the Tec21 Model a numerical scale of 1 to 100 was applied but this is complemented by the assessment of the domain level of the sub-competencies (A, B, C) [5].

-The integration of Tec 18 Week, which today is the opportunity for students to reflect and explore their future goals, as well as to receive feedback on the progress of the sub competence they developed, was once a week of final exams [5].

- The stage evaluation is given in the Tec21 Model in three stages, in other words; the exploration stage, the focus stage and the specialization stage of the curriculum plan, being a graduation requirement; while in the previous plan the curriculum was evaluated in a single stage [5].

-In the model prior to the Tec21 Model, there was a collegiate evaluation by way of an exception which was commonly done in week I and semester I. In the Tec21 Model, the collegiate evaluation is done in the blocks, and stages of focus and specialization with the possibility of incorporating the participation of training partners in the evaluation [5].

-As for the competencies mapped in the curriculum, each of the students is evaluated according to the competencies defined in their program to be developed throughout the curriculum, while in the model prior to Tec21, an assessment of the students known as "student learning outcomes" was made as to the opportunity to give feedback to the program in search of a continuous improvement [6].

Transversal sub-skills, which are competencies that apply in the world of business, professional and personal life, can also be identified in the following table.

Transversal competencies	Sub competence 1	Sub competence 2	Sub competence 3	Sub competence 4
<b>C1 Self-knowledge and self-management</b>	Self-knowledge	Wellness and autoregulation		
<b>C2 Innovative entrepreneurship</b>	Innovation	Conscious entrepreneurship		
<b>C3 Social intelligence</b>	Diversity	Collaboration	Effectiveness in trading	
<b>C4 Ethical commitment and citizen</b>	Recognition and empathy	Ethical argumentation	Integrity	Citizen commitment to social transformation
<b>C5 Reasoning to complexity</b>	Systematic thinking	Scientific thinking	Critical thinking	
<b>C6 Communication</b>	Oral language	Written language	Understanding other codes	Dialogical communication
<b>C7 Digital transformation</b>	Digital culture	Cutting-edge technologies		

Figure 1. Table of competencies and transversal sub competences of tec21 model of Tec de Monterrey [6]

In models prior to the Tec21 Educational Model as graduation regulations the student could graduate if he accredited with a minimum grade of 70 all the subjects of his curriculum, in the Tec21 Educational Model it is also necessary to approve the training units (the subjects), however, it is also necessary to demonstrate the level of mastery of the competencies that were established in the academic program [6].

Not only did the way of evaluating have had a significant change, but also the feedback given to the student which in pre-Tec21 models was made periodically through final grade reports of the partial and six-month periods, which has been transformed into continuous feedback to the student, so that each student's progress in the training units and the achievement of the expected competencies [4] becomes noticeable.

### Educational management in the Tec21 Model

Educational management as can be seen from the information presented in the previous paragraphs has also had to adapt and modify, likewise, the role of the teacher who previously focused only on preparing and teaching each of his courses, as well as evaluating his students; in the Tec21 Model the role of the teacher goes beyond that, but also has the role of challenge coordinator and evaluator, so he has to work in a collegiate way with other teachers involved in Tec blocks or weeks, be clear about

the importance of quality feedback and be in constant training in order to provide adequate feedback [4].

Part of the educational management of the teacher in the Tec21 Educational Model is to ensure that they have knowledge of what the Tec21 Model entails in terms of challenges, problem situations, learning sequences, activities, domain levels, in the same way; the teacher should be able to teach by skills, which would apply when working or running an organization [4].

The Tec21 Model uses CANVAS as an LMS educational platform, hand in hand with eLumen to be able to evaluate sub competences, when BlackBoard had been used for years as a single platform in Tec de Monterrey [4].

It is important that the Tec21 Model teacher participates in training unit transfer sessions offered by Tec de Monterrey, and is trained in essential aspects of the evaluation model such as:

- competency assessment techniques,
- development of evaluation instruments,
- model and practice of feedback,
- use of Canvas and eLumen [4].

The duration of the Tec21 Model curriculum is also different from previous plans, something that could indirectly affect educational management, is that the 2019 Tec21 Model plans consider a duration of 1 year with 4 academic cycles composed of 2 semesters, 1 summer and 1 winter, when in previous plans each academic year was made up of 2 semesters and a summer [4].

According to Tec de Monterrey, the design of educational spaces in the Tec21 Model have been created with spaces in mind that offer conditions to be able to meet the needs that the model entails, that is; spaces that are flexible, versatile, technology-oriented and learning-oriented, with areas that could meet space for presentations, collaboration, linkage, concentration, creation, mentoring and feedback, so space of three types was created:

- classrooms for subjects designed to present and collaborate, which are classrooms of 2.5 m<sup>2</sup> per student.
- classrooms for blocks designed to carry out collaboration and creation in spaces of 4 m<sup>2</sup> per student and that have great flexibility.
- laboratories created essentially for creation and collaboration [6].

When talking about flexibility in the spaces of the Tec21 Model, reference is made to the possibility of accommodating students, furniture and technology can

cover various experiences in the classroom and the mixed use of spaces [4].

In addition to the classrooms mentioned above, they are also available as spaces for the Tec21 Model classrooms with emerging technologies for remote interaction on each campus; where you can connect between at least 2 campuses using web conference technology and advanced technology that provides experiences supported by emerging technologies integrated within the classroom such as holograms, virtual reality, i 360 [4].

### **COVIDS-19 effect on Tec21 Model**

It was in March 2020 that it was announced that face-to-face classes would be cancelled, so the educational spaces planned for the application of the Tec21 Model had to be modified from that date, due to the situation of the pandemic caused by COVID-19, so the classrooms and laboratories have had to be transformed into virtual zoom classrooms, where the presentations have had to be virtual, the collaboration spaces have been created by zoom rooms and creation spaces in the homes of the students. This same context, which is lived internationally, has also resulted in the cancellation of Tec Weeks since March 2020.

The Tec21 model has had to be transformed into a model called by Tec de Monterrey "Flexible Digital Model", which is defined by the Observatory of Educational Innovation as "a learning model that integrates innovative teaching strategies and cutting-edge technologies", this with the aim of ensuring academic continuity of students combining teaching components such as content, interaction, learning activities, technological and evaluation tools [7].

To achieve the Digital Flexible Model required to continue quality education for COVID-19 reasons, Tec de Monterrey teachers were trained in topics of active learning in digital context, videoconferencing, interaction and communication classes, audiovisual content, evaluation strategies, and use of the platform; together with a continuous availability of pedagogical counseling and educational technology [7].

For this migration from face-to-face classrooms to digital classrooms, the training of the total number of Tec de Monterrey teachers (more than 10,000 teachers) was an indispensable requirement [8].

However, Tec de Monterrey as an organization is aware that face-to-face return will not be the same, so it has been prepared for the return to face-to-face classes where the Tec21 Model is planned to be developed in a Hyflex Hybrid

model in search of the combination of face-to-face sessions on campus with real-time web conference sessions with defined schedules, so that each session in parallel will have students face-to-face and the rest connected remotely [7].

### Final comments and conclusions

Organizations must adapt to the changes demanded by current situations so that they continue to have positive development, and when it comes to educational organizations that adaptation is even more important, as it will bear fruit to those who will govern the economy and have to be up-to-date.

The educational model and educational management of an institution must undoubtedly be coordinated towards the achievement of the objectives and mission of the organization, especially when factors outside the institution require a rapid adaptation to the changes in order to meet those objectives.

The planning of an educational model takes place years prior to its implementation, as is the example of the Tec21 Model, based on the extraordinary situation presented with COVID-19, now these educational model plans and their designs should also consider environmental and health contingencies, so that the educational model is ready to face unexpected challenges.

The Tec21 Model caused a transformation in the educational management of all its teachers, so that they had to change practices and ways of teaching that had been taking place for many years, as well as training in a short time for the technological tools to be used and teaching strategies that facilitate the teaching-learning process; a model that, while intended for a face-to-face picture since challenges, contact with companies and contact with close reality is an essential part of the model, it had to find a way through technology not to lose such contact, however, certain parts of the model had to be canceled.

In such a way that educational management also had to migrate to be totally digital, in parallel with the Tec21 Model, having both the management and the model a rapid adaptation and evolution in a very short time in reaction to economic, social, organizational, but above all global needs.

These latest changes at the international level have provided a broader view of how educational models and their management can be carried out without losing quality and productivity, is the opportunity to take risks with

technology support, and as teachers to have presented the need to innovate in the way we develop, as well as learning about new tools that have emerged and will emerge to meet educational and organizational global needs.

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