

Dual training and its impact on university student learning

La formación dual y su impacto en el aprendizaje del estudiante universitario

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Abstract

The general objective of the article was to relate the sport with the academic performance of the students of the Bachelor of Science, Education, and Humanities and of the Faculty of Engineering of the Autonomous University of Coahuila. It was a quantitative, cross-sectional, and correlational study. 80 subjects answered the survey, by means of a non-probabilistic sample for convenience. The central hypothesis was: There is a relationship between sport and academic performance. The working hypotheses: H1. There are significant differences between gender and the variables to be contrasted. H2. There are significant differences between the faculties and the variables to be contrasted. Statistical analyzes were performed: frequencies and percentages, comparative, correlation, and exploratory factorial. The contribution of the study lies in the fact that when the student body practices sports, it increases their concentration, makes it easier for them to integrate with their peers, improves their academic performance, and their studies, and allows them to prioritize their classes, which generates good evaluations. It can be said that, to the extent that the student community performs physical training, they improve their academic results and face situations positively as well as their emotions.

Sport, Academic Performance, Higher Education

Resumen

La presente investigación pretende conocer la relación que existe entre el modelo de formación dual y el modelo constructivista respecto al aprendizaje de los estudiantes de las maestrías en Ingeniería de Sistemas y Operacionalización y la maestría en Dirección y Gestión Educativa del Instituto Universitario del Norte. Los principales beneficiarios serán los estudiantes y profesores de la de la institución ya mencionada ya que serán quienes, a través de los resultados, procederán a analizar cómo la formación dual es un apoyo para los estudiantes en el ámbito laboral y cómo es que impactan las experiencias laborales en el aprendizaje de los profesionistas. Entre los resultados principales se encontró que cuando el docente aplica la didáctica de una forma creativa y esta es evaluada, los alumnos interactúan con sus compañeros y comprenden los temas haciendo con esto una sistematización en la forma de estudiar. Entre las propuestas de intervención se plantea que las empresas brinden más oportunidades a los estudiantes de maestría para que así tengan un campo laboral más amplio, así como que los estudiantes realicen exposiciones al público en general sobre los trabajos que han realizado a lo largo de su formación profesional para que así promuevan su trabajo.

Formación dual, Constructivismo, Aprendizaje, Maestría

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Introduction

The present research aims to find out the relationship between the dual training model and the constructivist model with respect to the learning of the students of the master's degrees in Systems Engineering and Operationalisation and the master's degree in Educational Management of the Instituto Universitario del Norte. The main beneficiaries will be the students and professors of the aforementioned institution since they will be the ones who, through the results, will proceed to analyse how dual training is a support for students in the workplace and how work experiences impact on the learning of professionals.

Dual training stands out because it serves as a basis for the students when they enter the work environment as they gain experiences, which will be useful for them in the workplace.

General objective

To find out the relationship between dual training and constructivism with the learning of students in the second and fourth trimester of the master's degree in Systems Engineering and Operationalisation and the master's degree in Educational Management of the Instituto Universitario del Norte.

Specific Objectives

- To recognise how students' learning strategies are characterised.
- To identify the relationship between dual training and constructivism with the learning of students in the second and fourth trimester of the master's degree in Systems Engineering and Operationalisation, as well as in the master's degree in Educational Management of the Instituto Universitario del Norte.

Theoretical framework

Dual training aims to develop students' theoretical and practical knowledge so that both can be applied in the labour field they intend to enter. Dual training for (Carolina, 2018) is given through the combination of theory and practice, young people get a solid foundation of skills and knowledge about the whole company.

This helps them so that when they graduate and join a company, they do not arrive at their area of work without prior knowledge, but know how the company works. Dual training and constructivism are linked because students take as a basis for their learning the experiences they acquire in the company and in the classroom, which they put into practice in these areas.

Constructivist theory can be defined as the solution to a problem by means of scaffolding, scaffolding can be defined as the orientations that a person has had throughout his or her life, as these facilitate new learning. According to (EcuRed, 2017), educational constructivism proposes a paradigm where the teaching process is perceived and carried out as a dynamic, participatory and interactive process of the subject, so that knowledge is an authentic construction operated by the person who learns. Constructivism highlights knowledge as a construction that each person creates through experiences in the realities in which they interact, which in turn must also be of interest to the person.

Dual training always goes hand in hand with constructivism and learning, since through these there is a change in the way of thinking of the subjects and they will construct new experiences that will be useful to them when finding a solution to a problem. Learning is constructed through the realities that are observed around oneself.

For Zepeda (2022) the dual training model in Mexico is built on the criteria and values of a reference model, but fails to consider the context in which the students are inserted.

For the continuous improvement of learning in the classroom it is indispensable that the teacher can cooperatively organise any didactic task, of any subject and within the syllabus, since in this way the student's knowledge is not hindered by people in the school. Learning according to (Johnson, 1994) is something that the students do, learning itself cannot be created for the students, so it is of utmost importance that when working in teams, the same objective is set, in order to obtain results that benefit the whole team, since in this way the knowledge is broadened and the student can realise what he/she does not know.

While individualistic learning, in which students work on their own to achieve goals, only manages to create learning that is disconnected from that of other students, so that learning is not meaningful because it is not subjected to comparison with peers in the classroom.

Cooperative learning is the didactic use of small groups in which students work together to maximise their own learning and that of others. The above information will be taken into account for application to master's degree students, the majority of whom are adults.

The students studying for a master's degree are adults, (Academia Mexicana de la Lengua, 2014) explains that, in recent years, the word *maestrando* has begun to be used to designate the master's degree student who has not yet graduated.

Research Design

This is a perimental research of quantitative type, given that only one instrument is applied for data collection. In order to provide a contextualisation, statistical processing of frequencies and percentages, characterisation, comparison and correlation will be carried out. Universe, Population and Sample

All students of the second and fourth trimester of the master's degree in Systems Engineering and Operationalisation and the master's degree in Educational Management of the Instituto Universitario del Norte.

Seventy subjects will be surveyed, of which 35 will be from the first and third trimester of the master's degree in Systems Engineering and Operationalisation and the rest from the master's degree in Educational Management of the Instituto Universitario del Norte.

Results

Frequencies and Percentages

The variable master's degree is characterised by the master's degree in which the respondents study, which are the master's degree in Systems Engineering and Operationalisation and the master's degree in Educational Leadership and Management at the Instituto Universitario del Norte.

Fifty percent of the respondents are in the Master's degree in Systems Engineering and Operationalisation and the remaining 50 percent are studying in the Master's degree in Educational Management and Administration.

Characterisation

It was observed that the relative frequency works with 45 variables and 70 subjects.

In the Z-reading, it is observed that most of the variables that make up the study phenomenon are predictors of the population are greater than ($Z = 1.96$). It is inferred that these variables can be extrapolated to other populations with equal characteristics, since they have the levels of form accepted by science.

With respect to X_x , it is observed that the variables that make up the study phenomenon such as interaction (5.37), process (6.36), didactics (6.34), student (6.31), facilitate (6.33), evaluate (6.84), participate (6.83), understanding (5.67) and study (6.49) are within the mean values (5, 6) and are within the range of normality ($n^-: 4.53$ $X_x: 7.00$ $n^+: 9.47$). It can be inferred that when the teacher applies didactics in a creative way and this is evaluated, the students interact with their classmates and understand the topics, thus making the study process more effective.

Correlation

The correlational analysis presented below was carried out on the basis of parametric statistics consisting of 45 variables, using the Pearson correlation in which the significance of $p = .01$, which corresponds to a correlation of $r = 0.33$.

Correlational behaviour of the Thinking variable

Next, it is observed that a relationship is built on the Thinking and Behaviour ($r = 0.57$) that the students have in the classroom since by means of this it is possible the Application ($r = 0.42$) of different types of activities that the teachers plan, thus giving a positive Feedback ($r = 0.33$) of their classes and a Development ($r = 0.35$) of the knowledge. It should be noted that the way people think and act in the face of the stimuli that surround them, helps them to carry out activities that guarantee learning in a physical and intellectual way.

With respect to the variable Behaviour, it is observed that the students see the teacher as a Facilitator ($r= 0.40$) who guides the Development ($r= 0.43$) of their learning and that of their school Skills ($r= 0.42$), even so, he Evaluates ($r= 0.34$) their knowledge, which is what they see in the teacher. 34) their knowledge, which serves as a Reflection ($r= 0.34$) on the topics they see in class, the facilitator is always willing to give feedback ($r= 0.44$) to his students even if they do not have the necessary Interest ($r= -0.34$) in the class. It is highlighted that teachers are very important in the educational process as they are the ones who support the formation of each student, this is because it motivates them to use their skills and thoughts in relation to education, however, students are not always willing to take advantage of the above mentioned.

Comparison

Next, a t-test of statistical comparison is presented in which it is shown which are the significant differences between the independent variable and the group of variables, considering as independent variable master's degree, understanding that the master's degrees in Systems Engineering and Operationalisation and the master's degree in Educational Management of the Instituto Universitario del Norte are contrasted, taking as dependent variables those elements whose characteristics have a significance level of $p = .05$ and accepting the null hypothesis.

It is observed that the variable that represents a difference with respect to the mean is Programme, which refers to the fact that it is the teacher who carries out the planning of the activities presented in the class. Likewise, it can be read that the teachers who facilitate the class programme more to the students are from the Masters in Educational Management, since the mean of this is ($X=7.74$) while the mean of the Masters in Systems Engineering and Operationalisation is ($X=6.60$). It is inferred that the teachers of the Master's Degree in Educational Management and Administration present their class planning to the directors, but not to their students, which means that they do not always know what topics they will deal with during the classes.

It can be read that the variable that represents a difference with respect to the mean is Interest, since it is the importance that the students give to their classes. The mean of the Masters in Systems Engineering and Operationalisation is ($X=7.94$), which means that the students of this institution have a better academic performance, while the mean of the Masters in Educational Management is ($X= 6.57$). It can be deduced that the students of the master's degree in Systems Engineering and Operationalisation show interest in learning in the classroom and are also interested in problematic situations that arise in the school.

Integrnacional

An Exploratory Factor Analysis was carried out, consisting of 13 factors, which have been the result of the 45 variables presented in the research. The method of analysis of communalities = multiple R was used, from which the normalised varimax rotation was employed, which will allow us to observe the probability of 0.33 of the study phenomenon.

Interfactorial

The phenomenon is made up of 45 variables which, when used, result in a total of 13 factors where the eigenvalue is 1, giving a total factor load of 7 percent.

The graph below shows the relationships between the factors, which can be read as follows: factor 9, named Teacher Flexibility, is related to factor 6, named Efficient Preparation, by means of the variable courses; factor 6 is related to factor 2, named Education, by means of the variable courses; factor 6 is related to factor 2, which is named Education, by means of the variable courses; factor 6 is related to factor 3, which is named Education, by means of the variable courses; factor 4 is related to factor 5, which is named Education, by means of the variable courses, which is named Education, by means of the variable behaviour, factor 2 relates to factor 5, which is named School Councils, by means of the variable teaching, factor 5 relates to factor 1, named Suitability, by means of the variable company, factor 1 relates to factor 11, which is named Analyse, by means of the speciality variable, factor 11 is related to factor 10, which is named Stimulate Progress, by means of the motivation variable, factor 10 is related to factor 8.

Which is named Enable Analysis, by means of the development variable, factor 8 is related to factor 7, named Attract Interest, by means of the skills variable, and factor 7 is related to factor 4, named Useful Relationship, by means of the application variable, however, there are three factors in which their relationship is null, they are factor 3, entitled Establishing Analogies, factor 12, named Encouragement to Collaborate, and factor 13, named Perseverance.

Conclusions

- People who are interested in further education like engineering and education equally.
- The variables can be extrapolated to other populations with equal characteristics as they have the levels of form accepted by science.
- When the teacher applies the didactics in a creative way and this is evaluated, the students interact with their peers and understand the topics, thus making a study process.
- The way people think and act in response to the stimuli that surround them helps them to carry out activities that ensure that they learn physically and intellectually.
- Teachers are very important in the educational process because they are the ones who support the formation of each student, this is because it motivates them to use their skills and thoughts in relation to education, however, students are not always willing to take advantage of the above.
- The teachers of the MA in Educational Leadership and Management present their lesson plans to the management, but not to their students, which means that the students do not always know what topics they will cover during the lessons.
- The teachers of the Master's degree in Educational Management present their lesson plans to the directors, but not to their students, which means that they do not always know what topics they will be dealing with during the lessons. The students of the master's degree in Systems Engineering and Operationalisation show interest in learning in class and are also interested in problem situations that arise in the school.

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