Strategies for early detection of students at risk of dropping out

Estrategias de detección precoz del riesgo de abandono escolar

LEYVA-MALDONADO, Yadira†* & ESQUIVEL-SALAS, Abraham

Instituto Tecnológico Superior Zacatecas Norte

ID 1er Author: *Yadira, Leyva-Maldonado* / **ORC ID**: 0009-0001-4901-9189, **CVU CONAHCYT ID:** 1309993

ID 1er Co-author: *Abraham, Esquivel-Salas* / **ORC ID**: 0000-0001-8258-8837, **CVU CONAHCYT ID:** 252850

Abstract

Dropout in Higher Education Institutions is a widespread phenomenon that was exacerbated by the Covid-19 pandemic. With the return to the new normality, some institutions continue with high dropout rates and even low enrollment, which harms their indicators. The goal of this study is to know the factors that allow identifying at an early stage, students who are at risk of dropping out, which will allow applying strategies to reduce this phenomenon. Initially, a process of detecting students at risk began by monitoring their academic performance. The results are promising, since they allow generating a profile of the student at risk of dropping out of their studies.

Dropout, Students at risk, School dropout

Resumen

La deserción en las Instituciones de Educación Superior es un fenómeno generalizado y que se exacerbó con la pandemia por Covid-19. Con el regreso a la nueva normalidad, algunas instituciones continuan con altos niveles de deserción e incluso con baja captación de matrícula, lo que perjudica a sus indicadores. El objetivo de este estudio es conocer los factores que permitan identificar en una etapa temprana, los estudiantes que estén en riesgo de deserción, lo que permitirá aplicar estrategias para disminuir este fenómeno. Inicialmente se comenzó un proceso de detección de estudiantes en riesgo a partir del seguimiento a su rendimiento académico. Los resultados del seguimiento académico son prometedores, pues permiten generar un perfil del estudiante en riesgo de abandonar sus estudios.

Deserción, Estudiantes en riesgo, Abandono escolar

† Researcher contributing as first author.

Introduction

Dropout in higher education institutions is a complex research topic, addressed from different perspectives (Stăiculescu y Ramona, 2019).

There is a relationship between dropout levels increments with the increasing cost of each student of an educational program, proportional to the drop in terminal efficiency indicators, as well as study programs accreditation poor results (Fernández y Pérez, 2016).

The students at risk of dropping out identification should be an objective for every institution, especially in the initial stage of their studies. Stăiculescu y Ramona (2019) proposes a prevention and intervention strategy as a school dropout reducing method.

In the course of this article, you will find an empirical proposal, based on the analogy traffic lights, to detect at an early stage, students at risk of dropping out.

Next, a theoretical support review is presented, followed by the Institution context, and continuing with the proposal and results obtained. Finally, conclusions and future work are presented.

Theoretical Support

The development of a strategy for the early detection of students at risk of dropping out, requires the causes identification involved in the decision to drop out. However, the causes identification is complex since they also depend of the student social environment.

Rumberger (2012) tries to understand the desertion causes from two different approaches, the *individual* and the *institutional perspective*. The *individual perspective* that focuses on student attributes, such as their values, attitudes, academic engagement, behavior, and how those attributes contribute to their drop out decision. Lyche (2010) adds to the individual perspective the influence of some social factors related to the student's context as indicators of the risk of dropping out, such as bad experiences in other schools, a history related to health problems, and even, a problematic family context or lack of financial resources.

According to Seidman (2005), reducing the phenomenon of school dropout requires developing an early identification of students at risk, based on a meticulous academic records evaluation, including those of high school, in addition to a strong strategy based on help and support services.

According to Adelman (1999, 2006), there is a relationship between the student academic resources when they start college, their long-term attendance patterns, and their completion rates. Students with trouble finishing first year credits, are less likely to persist.

Adelman identified academic preparation as fundamental, since students who have presented mobility between different educational institutions, or with high school academic deficiencies, especially in mathematics, face difficulties in the university and tend to present a greater risk of dropping out.

On the other hand, the *institutional perspective* focuses on the contextual factors found in the student's families, schools, communities and peers, the set of all these contextual factors shape their behavior.

Goldrick-Rab (2020) considers as additional causes for school dropping out, the combination of bad economy, university preparation high cost, the difficulty of combining work and study, as well as additional conditions such as early parenthood and family obligations.

In this sense, from the Lyche perspective (2010) regarding the factors linked to the school as an institution, there are those related to the structure, whether it is public or private, as well as its teaching practices.

Rumberger's (2012) individual perspective is a good starting point for diagnosing and trying to contain the dropout school phenomenon.

Undoubtedly, the institutional perspective factors should be part of the containment mechanisms, but since they are complex social phenomena, they are outside of the study scope.

Contextualization

During the Sars-Cov-2 pandemic, despite multiple attempts to mitigate inequality, the school dropouts were worrying.

In Latin America, approximately half of the population aged 25-29 who started the university at some point, did not finish their studies (Ferreyra *et al*., 2017).

After the pandemic, the Decentralized Technological Institutes observed, in general terms, high dropout and low enrollment, both worrying situations.

The Instituto Tecnológico Superior Zacatecas Norte has decided to make an effort to apply the "prevention and intervention" of Stăiculescu and Ramona (2019).

After low enrollment post pandemic, a diagnostic evaluation is carried out as part of the admission process.

As an observation, the results of the evaluation are not used to make an applicant's selection, therefore the student academic level is unknown, as well as other factors as:

− The student academic deficiencies in study programs such as Mathematics, Physics, Chemistry

− Admission to a university program that was not their first choice.

− Economic hardships and problems in the family context, among other factors.

They become a cocktail that exacerbates the dropout phenomenon in the first stage of university. Right now, the Institution perceive the cases of desertion when the student has already left, or, when they already have failed a study program, in view of this panorama, the initiative was taken to develop a strategy in order to detect at early stage, students with high dropout probability.

Proposal

Emphasizing Rumberger's individual perspective (2012), as the factors on which a contingency plan can be established to reduce the dropout phenomenon.

An academic tracking of the initial curses students was carried out, of Instituto Tecnológico Superior Zacatecas Norte study programs.

The tracking consisted on verifying the high school graduation grades, as well as the grades of the study programs taken at the higher level.

The number of dropouts by study program was documented, as well as the reason for dropping out, in order to determine if it was due to poor academic performance, or due to factors that are part of the institutional perspective.

Study program	Period			
	Aug-Dec 22	Jan-Jun 23	Total	%
CP	75	60	45	43%
IA	97	67	30	31%
IEM	86	77	9	10%
IGE	26	22	4	15%
IIA	23	17	6	26%
ISC	51	50	1	2%

Tabla 1 Information provided by the School Control Department. CP Public Accountant, IA Administration Engineering, IEM Electromechanics Engineering, IGE Business Management Engineering, IIA Food Industries Engineering, ISC Computer Science Engineering.

Results

As a result of the academic tracking the beginner students of all study programs, the following statements could be made:

− The students who dropped out of the study programs had a deficient rating from high school.

− About 80% of the dropouts were due to the fact that the Instituto Tecnológico Superior Zacatecas Norte was not considered their first option to continue their professional studies. Finally, they are students who enter temporarily hoping to be accepted at another institution.

− About 90% of the students who dropped out failed on study programs in the first months of the course.

Acknowledgments

Conclusions and future work

Based on the academic tracking results, it is necessary to establish a traffic light strategy that allows the dropout phenomenon to be contained. The analogy with the traffic light allows us to determine that the green color is a student profile indicator with low probability of dropping out.

On the other hand, it is necessary to attend to those students who, upon entering to high school, are already labeled in yellow, because they have a low-grade rate, and implement the following actions:

– The Tecnológico Nacional de México has a tutorial program whose purpose is to strengthen student profiles as an empowering mechanism, which allow preventively addressing phenomena such as failure, lag, and desertion.

– The tutoring program can be used as a containment mechanism, with the aim of dissuading desertion. Given that the available number of tutors is insufficient, the tutor assignment will have to be based on the high school graduation grades, prioritizing tutoring to those students whose grades are less than 80.

– The benefits of the tutorial program prevent the student from dropping out of the Institution. The function of the counseling is to retain the student by improving their academic situation.

– The induction course will have to be mandatory for all new students who are already in yellow (high school average less than 80).

– It is crucial that career managers implement a strong tracking of exams failed.

Other actions that involve an institutional effort, is the implementation of a continuous promotion program, to improve the student's recruitment.

Once the aforementioned actions have been implemented, it will be important to evaluate the relevance of the solution based on a formal study.

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