Caracterización de los factores docentes en torno al índice de reprobación en universitarios

Characterization of the Teaching Factors Around the Reprobation Rate in University

Caracterização dos fatores de ensino em torno da taxa de reprovação em estudantes universitários

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Resumen

El objetivo del presente ejercicio de investigación fue caracterizar los factores docentes que inciden en la reprobación de estudiantes universitarios. El estudio tuvo un enfoque cuantitativo no experimental transversal. La selección de la población de estudio fue no probabilística. Se incluyó a la totalidad de los profesores que impartieron las unidades de aprendizaje durante los ciclos escolares febrero-junio 2019 y agosto-diciembre 2019 en una universidad de México. Se llevó a cabo un análisis descriptivo, a través del cual se determinaron la media, la mediana, las frecuencias absolutas y la desviación estándar. Además, se vincularon los factores docentes con el índice de reprobación a partir de una prueba de ji al cuadrado. Entre los resultados destaca que el índice de reprobación del periodo de análisis de los cursos de competencia genérica fue de 34.37 %, de los interdisciplinarios 10.85 % y de los de competencias específicas de 16.03 %. Asimismo, 68.97 % de los profesores demostró un nivel máximo de estudios de maestría y 88.89 % refirió más de cinco años de experiencia profesional en el ámbito docente. Al asociar el índice de reprobación con las variables de estudio, no hubo significatividad con las unidades de aprendizaje por competencia y la evaluación docente; sin embargo, sí hubo significancia con el nivel máximo de estudios, con la experiencia profesional y con la preparación pedagógica.

Palabras clave: abandono escolar, docentes, reprobación.

Abstract

The objective of this research exercise was to characterize the teaching factors that influence the failure of university students. The study had a quantitative non-experimental cross-sectional approach. The selection of the study population was non-probabilistic. All the teachers who taught the learning units during the February-June 2019 and August-December 2019 school cycles at a university in Mexico were included. A descriptive analysis was carried out, through which the statistical mean, median, absolute frequencies and standard deviation were determined. In addition, the teaching factors were linked to the failure rate from a chi-square test. Among the results, it stands out that the failure rate for generic competency courses was 34.37%, 10.85% for interdisciplinary courses, and 16.03% for specific competences. Likewise, 68.97% of the teachers demonstrated a maximum level of master's studies and 88.89% referred more than five years of professional experience in the teaching field. When associating the failure rate with the study variables, there was no
significance with the learning units by competence and teacher evaluation; however, there was significance with the maximum level of studies, with professional experience and with pedagogical preparation.

**Keywords:** school dropout, teachers, school failure.

**Resumo**

O objetivo deste exercício de pesquisa foi caracterizar os fatores de ensino que influenciam o fracasso de estudantes universitários. O estudo teve uma abordagem quantitativa não experimental de corte transversal. A seleção da população de estudo foi não probabilística. Foram incluídos todos os professores que lecionaram nas unidades de aprendizagem durante os ciclos escolares de fevereiro a junho de 2019 e agosto a dezembro de 2019 em uma universidade no México. Foi realizada análise descritiva, por meio da qual foram determinadas a média, mediana, frequências absolutas e desvio padrão. Além disso, os fatores de ensino foram associados à taxa de reprovação por meio de um teste de qui-quadrado. Dentre os resultados, destaca-se que a taxa de reprovação do período de análise dos cursos de competência genérica foi de 34,37%, dos interdisciplinares 10,85% e das competências específicas 16,03%. Da mesma forma, 68,97% dos professores demonstraram nível máximo de estudos de mestrado e 88,89% referiram mais de cinco anos de experiência profissional na área de docência. Ao associar a taxa de reprovação com as variáveis do estudo, não houve significância com as unidades de aprendizagem por competência e avaliação do professor; Porém, houve significância com o nível máximo de estudos, com experiência profissional e com preparação pedagógica.

**Palavras-chave:** evasão escolar, professores, fracasso.

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**Fecha Aceptación:** Noviembre 2021

**Introduction**

Mexico faces great challenges regarding the access and permanence of students in higher education institutions. The dropout rate during the 2019-2020 cycle was 7.4% of all students, while the absorption percentage was 15.7% (Ministry of Public Education [SEP], 2020). The main problem is the quality of the educational system.

Despite the multiple policies and strategies designed to ensure the education of the youth population, a significant proportion of young people who enter do not manage to
remain within the educational system. Some of the elements to which this phenomenon is attributed are the scarce economic resources, the institutional problems, the little professional training, the dilemma between studying and working, the lack of interest and belonging to the institution and the high failure rates (Ramírez and Gallur, 2017). This last element is defined as the inability of a student to obtain a minimum grade necessary to allow him to pass a specific evaluation or academic period. It is, as we have already said, a factor that has been highly associated with the abandonment of studies in this population. It should be noted that although school dropout is a global phenomenon, it is mainly observed in developing countries.

School dropout can be measured either monthly, quarterly, or annually, as is the case in basic and secondary education (Anchondo and Martínez, 2020). In the specific case of universities, it is generally determined with semester cuts (Castillo, Gamboa and Hidalgo, 2020).

Through multiple educational investigations, an attempt has been made to explain this problem: from exercises that include analysis of simple quantitative records to consulting sources of qualitative information that are the theoretical foundations of the subject. In these studies, the teachers, the institution, the study plan, the study methods and time management, among others, are usually the factors associated with failure, which trigger the inadequate understanding of thematic content, that is, a deficiency in the teaching-learning process (Campos, 2018).

The literature that addresses the teaching characteristics as factors of student failure and the studies that delve into the perception of the student is still incipient, however, interesting conclusions have been found about the interference that the little clarity has in the evaluation criteria and the little clarity in the presentation and resolution of doubts by the teacher (Ramírez and Gallur, 2017). The teacher represents the institution, builds and validates the educational proposal, as well as makes the objectives and goals of an educational system tangible, all of which represents a great responsibility.

The teacher is a benchmark in education. He plays the role of promoter of social change. He is a key piece in the training of students (Santelices and Valenzuela, 2015). He must, therefore, be an ethical, critical, competent, reflective professional, capable of transmitting knowledge and even generating knowledge through research work (Sanz, Ruiz & Pérez, 2014). This implies that the teacher must be involved in constant and deep professional training and education, so that he can fulfill his role as a transforming agent of
society. Without a doubt, the human, personal and social development of this actor is fundamental (Nieva and Martínez, 2016).

Once the teacher is located as a focal point, the following questions arise: what is the factor that does not allow the correct development of teaching-learning? Will professional or pedagogical preparation be a key part? What is the factor that most should be taken care of in the practice of teaching? (Pérez, Estrada and Estrada, 2021). The assumption that a good teacher is the one who achieves that students achieve the necessary knowledge to accredit their subject could erroneously suggest that it is not necessary to evaluate the work or performance of each teacher, since this could be inferred from the performance of their students (Martínez, 2013).

Therefore, the general objective of the research is to characterize the teaching factors that affect the failure of university students and generate useful information for decision-making in updating the educational program.

**Materials and methods**

Quantitative, observational, descriptive, non-experimental, cross-sectional study. The population was made up of 29 teachers who taught the learning units during the February-June 2019 and August-December 2019 school cycles in the educational program of the health area of a Mexican university. Those teachers who, although they taught a subject in the intersessional period, did not do so in the school cycles contemplated in the study were excluded from the research. The factors that were related to the failure rate were the following:

- Type of subjects by competence (generic, interdisciplinary and specific [basic career, professional, compulsory terminal and optional terminal]).
- Maximum degree of teacher studies (bachelor's, master's and doctorate).
- Professional teaching experience (one to two years of experience, between two and five years of experience and with more than five years of teaching experience).
- Pedagogical preparation (one pedagogical course taken, one to three courses taken, and more than four pedagogical courses taken).
- Qualification of the teaching performance given by the student (excellent [9.5-10], good [8.9-9.4], fair [8.3-8.8] and low [7-8.2]).
To identify the failure rate, the grades obtained by the students, contained in the institutional programs of the school trajectory, were evaluated and classified as "Approved" and "Not approved". All the variables were supplied as data by the institutional computer systems, provided by the coordination of the educational program of the study institution. Authorization to start the study was formally requested in writing from the coordinator and the leaders of the academies of the educational program. Likewise, by ruling out conflicts of interest, the proposal by the disciplinary group attached to the program was valued positively. Researchers from outside the institution studied participated. The SPSS version 25.0 package for Windows was used as a statistical assistance tool. As statistical significance the value of \( p \leq 0.05 \) was taken. A descriptive analysis was generated, through which means, medians, absolute frequencies and measures of dispersion were obtained. Finally, with the chi-square test, the teaching factors and the failure rate were related.

**Results**

The 29 teachers that made up the study population taught at least one learning unit during the 2019 semesters in the reference educational program. Regarding gender, 79.31\% (23) of the academic staff included in the research is female and 20.69\% (six) male.

The declared educational model is based on competencies, focused on the student's meaningful learning process. Regarding the curricular structure of the educational program studied, generic, interdisciplinary and specific competences are promoted. Table 1 shows the failure rate by competition.
Tabla 1. Índice de reprobación por área de competencia

<table>
<thead>
<tr>
<th>Competencias</th>
<th>Inscritos</th>
<th>Aprobado</th>
<th>No aprobados</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>Media</td>
</tr>
<tr>
<td>Genéricas</td>
<td>355</td>
<td>233</td>
<td>66</td>
</tr>
<tr>
<td>Interdisciplinarios</td>
<td>295</td>
<td>263</td>
<td>89</td>
</tr>
<tr>
<td>Específicas</td>
<td>911</td>
<td>765</td>
<td>84</td>
</tr>
<tr>
<td>Específicas: básicos de la carrera</td>
<td>212</td>
<td>176</td>
<td>83</td>
</tr>
<tr>
<td>Específicas: profesionalizante</td>
<td>579</td>
<td>485</td>
<td>84</td>
</tr>
<tr>
<td>Específicas: terminal obligatorio</td>
<td>65</td>
<td>63</td>
<td>97</td>
</tr>
<tr>
<td>Específicas: terminal optativo</td>
<td>55</td>
<td>41</td>
<td>75</td>
</tr>
</tbody>
</table>

Fuente: Elaboración propia

Table 2 shows the classification of teachers by learning units and type of competence.

Tabla 2. Clasificación de los profesores por tipo de curso que imparte

<table>
<thead>
<tr>
<th>Competencias</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genéricas</td>
<td>4</td>
<td>13.79</td>
</tr>
<tr>
<td>Interdisciplinarios</td>
<td>8</td>
<td>27.59</td>
</tr>
<tr>
<td>Específicas: básicos de la carrera</td>
<td>3</td>
<td>10.34</td>
</tr>
<tr>
<td>Específicas: profesionalizante</td>
<td>10</td>
<td>34.48</td>
</tr>
<tr>
<td>Específicas: terminal obligatorio</td>
<td>2</td>
<td>6.90</td>
</tr>
<tr>
<td>Específicas: terminal optativo</td>
<td>2</td>
<td>6.90</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100</td>
</tr>
</tbody>
</table>

Fuente: Elaboración propia

In relation to the maximum level of studies that the teachers who taught the learning units had, 20.69% (n = 6) had a bachelor's degree related to the course taught, 68.97% (n = 20) had a master's degree and 13.79% (n = 4) PhD.
Regarding teaching professional experience, 7.71% (two) had between one and two years of experience, 11.11% (three) between two and five years and 88.89% (24) had more than five years.

Regarding pedagogical preparation, 100% had at least one course in the area; 6.90% (n = 2) declared more than four courses and 93.10% (n = 27) declared one to three courses.

Finally, regarding the results of the evaluation of teaching performance carried out by 178 university students during the 2019 school cycles, the teaching staff obtained an average of 9.6 ± 0.01, that is, a rating of excellent, as shown in the Table 3.

**Tabla 3. Evaluación de docentes por los estudiantes**

<table>
<thead>
<tr>
<th>Resultados</th>
<th>f</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Excelente (9.5-10)</td>
<td>27</td>
<td>93.10</td>
</tr>
<tr>
<td>Bueno (8.9-9.4)</td>
<td>1</td>
<td>3.45</td>
</tr>
<tr>
<td>Regular (8.3-8.8)</td>
<td>1</td>
<td>3.45</td>
</tr>
<tr>
<td>Bajo (7-8.2)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Fuente: Elaboración propia

While regarding the failure rate, six categories were used, which are described in Table 4.

**Tabla 4. Clasificación de los docentes por los porcentajes de reprobación**

<table>
<thead>
<tr>
<th>Porcentaje de reprobación</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>11</td>
<td>37.93</td>
</tr>
<tr>
<td>11-20</td>
<td>6</td>
<td>20.69</td>
</tr>
<tr>
<td>21-30</td>
<td>4</td>
<td>13.79</td>
</tr>
<tr>
<td>31-40</td>
<td>3</td>
<td>10.34</td>
</tr>
<tr>
<td>41-50</td>
<td>3</td>
<td>10.34</td>
</tr>
<tr>
<td>&gt;50</td>
<td>2</td>
<td>6.90</td>
</tr>
<tr>
<td>Totales</td>
<td>29</td>
<td>100</td>
</tr>
</tbody>
</table>

Fuente: Elaboración propia
To analyze the association of the failure rate with the study variables, the chi-square statistical test was performed. And it was found that, with the classification of learning units by competence, $p = 0.87$, which is not statistically significant. Regarding the teacher evaluation, a value of $p = 0.54$ was obtained.

On the other hand, the variable associated with the maximum level of studies showed a positive relationship, with a value of $p = 0.04$, which is statistically significant, as did professional experience, whose value was $p = 0.03$, and pedagogical preparation, with $p = 0.05$.

**Discussion**

Currently, the educational system in Mexico faces school dropout as one of its main problems. The act of failing is a sign of low school achievement, which denotes inequality in learning and is considered the main cause of school failure. Furthermore, as stated in various studies, it is a reliable sign of low educational quality. This places Mexico among the nations with the lowest levels of school performance (Díaz and Ruiz, 2018).

There are failure rates considered normal by teachers; it would be little credible that in an educational institution there is no disapproval. Since the cut-off points to measure the failure rates are relative, the recommendations issued by evaluating bodies are used. Thus, the National Council for the Quality of Educational Programs in Nutriology [Concapren] (2016) stipulates as ideal values lower than 10%, while the guidelines of the Teaching Career Program in State Public Universities (UPES) suggest approval rates of 70% or more, that is, an acceptance of failure not exceeding 30% (General Directorate of Higher University Education, 2020). A phenomenon considered to some extent normal are the high failure rates in the first school cycles (Ciro and Reyes, 2017); However, this is an unstable reference, since in a school year the same teacher can have a marked variability in the failure rates (between 10% and 30%) and the next cycle show a considerable increase or decrease and even in the same cycle but in different learning units (Villalón, Palma, Medina and Sillero, 2016). The complexity of the phenomena in the educational process has been pointed out by the Organization for Economic Cooperation and Development [OECD] (2006), which keeps records of coverage in higher education in member countries, reaching 25% of enrollment student, who completed elementary and upper-secondary level education with the possibility of moving to higher-level studies and even a postgraduate degree.
The magnitude of the problem can be traced with the data in Table 1. There it is observed that the learning units with the greatest impact are the generic ones, which are basic and transversal in the various degrees. The learning units that integrate these competences are systemic or integrative, transversal and transferable and include the English courses A, B, I, II, II and IV and logical reasoning, where the greatest affectation occurs. Of utmost importance is the recognition of the correlation between failure and school dropout.

The results of the association between failure and the area of competence are not significant, however, it can be observed that the highest failure rate occurs in the learning units that contribute to generic competences, especially in the levels of English. These results are comparable to those reported by Sánchez and De Santiago (2017), who found that insufficient time, according to the student's perception, was the cause with the greatest influence on English failure. The same phenomenon is observed in all degrees. And as a second influencing factor in failure, the lack of good study strategies was pointed out (Sánchez and De Santiago, 2017).

On the other hand, despite the fact that the teacher is recognized as the central axis of university learning, it is not easy to find a consensus on the profile that a good teacher should have at the higher level (Valerio and Rodríguez, 2017). Regarding the training of university professors, the academic degrees are directly related to the interest of influencing the research teaching function, while the development of pedagogical skills is relegated to the background, so it remains at will of the institutions to provide training opportunities and even under the teachers' own responsibility to seek the updating and training mechanisms (de la Cruz y Alamilla, 2018).

Regarding the training required, according to the type of hiring, for subject professors, universities generally require a minimum academic level of a bachelor's degree and with verifiable work experience. On the other hand, for a full-time professor, the academic level requested is a master's degree, with research experience (Universidad Autónoma del Carmen [Unacar], 2009). In this sense, the results of this exercise show that the relationship with the maximum level of studies was statistically significant: there is an association between the teacher's level of studies and the failure rate. This is similar to the results of Pérez et al. (2021), but higher than that reported by Díaz and Osuna, (2017). The foregoing allows proposing that the training of university teachers must correspond to the competency profile established as a reference: a minimum degree training in the area of knowledge (Mas, 2011).
The professional teaching experience is enriched in daily life, by the daily learning that is obtained through the observation of the facts. The positive interaction of experience with training occurs to the extent that it facilitates learning as a check of the validity that the learned theoretical-practical principles have in practice (Ocampo and Cid, 2011). This statistically significant variable is different from the findings of Pérez et al. (2021), who declared it not significant.

The conditions that are determined for the professional activity of university teaching are substantially different from those defined in other educational levels (de la Cruz and Alamilla, 2018). In higher education, teachers are required not only to have wise knowledge (scientist in a specific area), but also to teach knowledge (translated knowledge), which denotes the pedagogical and didactic capacity of the person who teaches (de la Cruz and Alamilla, 2018). Regarding the pedagogical preparation variable, there is a statistically significant association with failure, contrary to that studied by Pérez et al. (2021), where no significance was observed.

The university professor at present, within the teaching functions, develops tutoring and the extension of services; skills to incorporate innovations in teaching practice and congruence with the ideals of the institution to which he belongs are equally desirable. At the higher level, teaching must be related to an area of knowledge and research must be related to it. In fact, matching the research function with the teaching work, or privileging one over the other, often generates an imbalance in the performance of both functions (de la Cruz and Alamilla, 2018).

On the other hand, educational institutions promote the evaluation of the teaching function by the student through instruments applied in a systematic way to assess aspects such as responsibility and compliance with the course program, theoretical knowledge and mastery of the course to be taught, diversity and innovation in evaluation methods and resources for support, respect, punctuality and tolerance, among others. The results of these exercises presuppose an analysis of both the teacher and the directive area of competence to design actions that positively impact the educational program (Interinstitutional Committees for the Evaluation of Higher Education [Ciees], 2018). In this sense, despite the fact that the information analyzed did not show a statistically significant association, the perception of the students was positive, therefore, it represents an opportunity to improve learning in the classroom and in the quality of the educational service of the universities (Segovia and Cabello, 2017).
The information collected shows that the surveyed students consider that their teachers adhere to what is established in the learning unit, as described by Segovia and Cabello (2017). Elements such as punctuality in class, adequate administration of time, considering attendance, monitoring of what is established in the learning units and timely notice about academic grades are adequately valued by students with respect to the teacher.

Similar to the reports by Gómez, and Gómez (2009) and Segovia and Cabello (2017), a reference of the teacher-student relationship consists of identifying the teacher as a reflection of the elements that give identity to the institution, including being coherent with respect to to their academic conduct, because it positively influences students and their future professional performance.

Higher education institutions observe a sustained increase in the values of failure and dropout, which requires the development of studies that help to recognize the factors that cause them. Consequently, in recent years the lines of research that address these phenomena and the way in which they are related in an educational context have increased. Education is approached in studies from different paradigms, however, the teacher has been scarcely attended as an active subject of learning (Pérez et al., 2021). That is why characterizing the teaching factors and the existence of a relationship with the failure rate are extremely useful when updating educational programs.

Conclusions

At the university level, one of the main problems observed, especially during the first semesters, is the high failure rates, which are directly proportional to those of school dropouts. It is a common concern in all institutions of higher education. The university subject of this study declares in the educational model the integral formation of the student as a substantial pillar, reinforced in turn by different institutional programs.

The present research highlights the high degree of complexity of the failure phenomenon and, likewise, emphasizes the educational factors that are associated with it. It is a solid relationship between academic training, professional experience and pedagogical skills.

Clearly, educational quality is related to the quality of teaching performance. Along these lines, the design of government policies and theoretical guidelines by prestigious academic communities is usually insufficient to increase the educational level of a country;
it is the critical and constructive appropriation by teachers that will allow these guidelines to become elements of value to achieve the goals and projected training benefits.

This research supports the findings of other authors and provides information that will allow the development of actions that contribute to reducing failure rates and increasing the chances of academic success for university students.

The greatest limitation found during the conduct of the present investigation was the limited amount of information available for the comparison and analysis of results, since in other similar investigations carried out by various authors there are many factors that are not considered or that do not resemble those factors considered in the present study, as is the case of study plans, since these vary greatly between university and university.

**Future lines of research**

Failure is a multifactorial phenomenon. Not necessarily all causes are attributable to the student; on the contrary, there are external factors related to the academic performance of students. This makes it necessary to insist on the search for means or methods that contribute to the proper functioning of education and thus have a favorable impact on university student desertion. For all of the above, it is demanded to open new lines that could generate relevant information for updates of university programs and generate intervention, evaluation, coverage and impact strategies at this level.
References


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