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Scientific articles

Factores y estrategias que influyen en la deserción en educación superior: Revisión Sistemática

***Factors and strategies that influence dropout in higher education:
Systematic review***

***Fatores e estratégias que influenciam a evasão no ensino superior:
Revisão Sistemática***

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Resumen

Este trabajo pretende identificar las estrategias tutoriales asociadas al incremento de la eficiencia terminal en las universidades y el manejo de las tecnologías de la información como método de retención, es un tema de interés nacional e internacional, relevante por su enfoque en la mejora de la calidad educativa, la retención escolar en nivel superior. Se trabajó con una revisión sistemática atendiendo las directrices Prisma 2020, se consideraron estudios de Redalyc, ERIC, Dialnet, Researchgate, Scielo, Emerald, Google Académico, UNESDOC y ScienceDirect, se emplearon seis etapas en el proceso documental, en las que se identificaron como elegibles 76 artículos, de los cuales fueron eliminados 16 por extenso, quedando 60 artículos incluidos. De acuerdo con el análisis de los datos, se precisan estudios mayormente de 2021 y 2022, predominando México en el estudio, asimismo, se identificaron trabajos cuantitativos, orientados en la determinación de factores de deserción académica, la intervención e importancia de la tutoría en la interacción con el estudiante, existe escasa aplicación de las tecnologías de la información para apoyo estudiantil.

La revisión sistemática determina que las universidades suelen trabajar en el proceso de atracción de matrícula, no obstante, deben considerar el procedimiento para la retención, tomando en cuenta estrategias para atender la reprobación y deserción escolar, aunque se considera al tutor como un elemento importante, no se ha explorado la incorporación de las tecnologías de la información como herramienta de apoyo al tutor en el seguimiento académico y tutorial.

Palabras clave: calidad de la educación; deserción escolar; eficacia de la educación; revisión sistemática; tutoría.

Abstract

This work aims to identify the tutorial strategies associated with the increase in terminal efficiency in universities and the management of information technologies as a retention method, it is a topic of national and international interest, relevant due to its focus on improving educational quality, school retention at higher levels. A systematic review was carried out according to the Prisma 2020 guidelines, studies from Redalyc, ERIC, Dialnet, Researchgate, Scielo, Emerald, Google Scholar, UNESDOC and ScienceDirect were



considered, six stages were used in the documentary process, in which 76 articles were identified as eligible, of which 16 were eliminated due to their length, leaving 60 articles included. According to the data analysis, studies are needed mostly from 2021 and 2022, with Mexico predominating in the study. Likewise, quantitative works were identified, aimed at determining factors of academic desertion, the intervention and importance of tutoring in the interaction with the student, there is little application of information technologies for student support.

The systematic review determines that universities usually work on the enrollment attraction process, however, they must consider the procedure for retention, taking into account strategies to address failure and school dropout, although the tutor is considered an important element, the incorporation of information technologies as a support tool for the tutor in academic and tutorial monitoring has not been explored.

Keywords: efficiency of education; quality of education; school dropout; systematic review; tutoring.

Resumo

Este trabalho tem como objetivo identificar as estratégias tutoriais associadas ao aumento da eficiência terminal nas universidades e à gestão das tecnologias de informação como método de retenção, é um tema de interesse nacional e internacional, relevante pelo seu foco na melhoria da qualidade da educação, na retenção escolar. nível superior. Trabalhamos com uma revisão sistemática seguindo as diretrizes Prisma 2020, foram considerados estudos da Redalyc, ERIC, Dialnet, Researchgate, Scielo, Emerald, Google Scholar, UNESDOC e ScienceDirect, foram utilizadas seis etapas no processo documental, nas quais foram identificados como Foram elegíveis 76 artigos, dos quais 16 foram eliminados na íntegra, restando 60 artigos incluídos. De acordo com a análise dos dados, são necessários estudos principalmente de 2021 e 2022, com predomínio do México no estudo. Da mesma forma, foram identificados trabalhos quantitativos, orientados para a determinação dos fatores de abandono acadêmico, a intervenção e a importância da tutoria na interação com o aluno. , há pouca aplicação de tecnologias de informação para apoio aos estudantes.

A revisão sistemática determina que as universidades costumam trabalhar no processo de captação de matrículas, porém, devem considerar o procedimento de retenção, levando em consideração estratégias para enfrentar o fracasso e o abandono escolar, embora o tutor seja

considerado um elemento importante na incorporação da escolaridade. as tecnologias de informação como ferramenta de apoio ao tutor no acompanhamento acadêmico e tutorial não foram exploradas.

Palavras-chave: qualidade da educação; abandono escolar; eficácia da educação; revisão sistemática; tutorial.

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Introduction

In Latin America, access to higher education remains limited. In Mexico, a low percentage of applicants manage to enter university, and many face conditions that increase the risk of academic dropout. Of the students who manage to enter higher education, a high number are associated with risk conditions, academic difficulties, health problems, sociodemographic problems, related to poor academic performance, increasing the probability of dropping out. Coverage is 30.6%, school dropout is 8.5% and absorption is 68.1% according to data reported by the Ministry of Public Education (Secretaría de Educación Pública [SEP], 2022).

Both in Mexico and around the world, studies have been conducted to provide a better overview of terminal efficiency (TE), defined as the portion of students who complete their studies in the stipulated time, compared to those who initially enter. There is a high interest in addressing retention and regularity rates, which have been affected by factors such as dropout, failure, and irregular academic status. “TE is a crucial measure of the capacity of Higher Education Institutions (HEIs) to use the resources that society provides them and to train the citizens required by the nation for its development and economic strengthening” (López et al., 2008). Providing quality education is essential in all countries; it is imperative to address the indicators, given that society demands the preparation of qualified labor to form more just societies and competitive economies (Fernández, 2017).

According to the literature, in institutional management it is possible to identify endogenous (internal) causes: personal, relational, and exogenous (external): structural and institutional (Romero and Hernández, 2019), which impact on the performance and fulfillment of organizational goals and objectives, as well as behavior, organizational structure, policies, regulations or standards and control itself (Cruz and Anton, 2019). The main function of HEIs lies in the training process (teaching) and the efficiency in the number of students who graduate or graduate in relation to those who entered a cohort that covers the



duration of the career (López et al., 2008; Cuellar and Bolivar, 2006; Pérez 2006).

The Undersecretariat of Higher Education in Mexico, interested in increasing enrollment and supporting the development of the educational offer, establishes goals and policies that allow achieving a university education coverage rate of 50%, promoting continuity, inclusion and timely graduation of students (Undersecretariat of Higher Education, 2022).

Academic desertion is affected by various factors, which hinder the completion of their university education; it cannot be attributed to a single cause, but to multiple factors outlined in national, regional, personal situations and the relationship with the educational institution. Factors related to self-esteem, interest and vocation of students are exposed, some authors mention the emotional impact, dependence on some type of drugs, stress or anxiety, academically speaking it is related to teaching ability, failure, study techniques, disparate study plans as well as socioeconomic problems that lead students to work to solve their needs; in addition, family care or the acquisition of new roles within the home; are elements that address the works to explain the complexity of the phenomenon, noting the diversification and combination of factors hindering the efficient completion of their studies.

The decrease in ET is a controversial topic, since the works mention the dependence of the student's self-regulation, the social factors that surround him or her or institutional factors; faced with this evident problem, higher education institutions have worked on proposals that impact on the improvement of skills as well as learning strategies, intrinsic motivation, economic support, care programs (counseling, psychological), updating of study and teaching plans, diversification of educational modalities, use of information technologies (IT) for the teaching process and tutorial follow-up, understood as digital tools for data management and communication, from this frame of reference various institutional retention programs have emerged to mitigate the impact on the student population and thereby contribute to the terminal efficiency indicators.

With the objective of identifying the relationship between dropout and failure factors, the generation of tutorial strategies and support through IT in higher education, to generate an updated overview of studies focused on terminal efficiency, given that it is a topic of interest not only nationally, but internationally, we seek to contribute with relevant information that allows for the exercise of concrete actions in order to improve educational quality and competitiveness in nations.

Based on this background, this study conducts a systematic review to analyze the factors that influence academic dropout and the strategies that contribute to improving completion efficiency in higher education.

Method

Within the framework of research into the improvement of terminal efficiency, a systematic review of the literature on the strategies associated with it through tutoring is presented. To carry out the systematic review, the elements established in PRISMA (Preferred Reporting Items for Systematic Reviews and Metaanalysis) 2020 have been followed, and the quality of the scientific articles is corroborated through a checklist. This work uses criteria that promote credibility when sharing the reviewed articles and whose methodology is replicable.

Six stages were used for the documentary process of the systematic review. The first, which consisted of identifying the topic to be investigated, determining the search criteria in bibliographic resources, to establish a general research overview, in this stage the bibliographic terms and databases to be used are established. The search topic is summarized to identify unique ideas, or associated concepts.

In stage two, the research question was established: What are the strategies used to improve terminal efficiency in higher education?

In stage three, search strategies were developed based on terms, synonyms and concepts, such as tutorial factors, terminal efficiency and higher education. In stage four, the most relevant information sources on the topic were selected. In stage five, searches were refined to limit or expand, taking into account the necessary considerations such as time frame, language and type. Stage six consists of the organization, administration and results of the information obtained after selecting relevant bibliographies. The process described in the stages is detailed below.

Initial search

The initial search begins in September 2022, combining terms: tutorial factors, terminal efficiency and higher education in the databases: Redalyc, ERIC, Dialnet, Researchgate, Scielo, Google Scholar, Science Direct, UNESDOC and Emerald, with a total of 72,267 findings.

Systematic search

The systematic search was carried out in October 2022, and updated in October 2023 with the search equation: (tutorial factors) AND (terminal efficiency) AND (higher education) in Spanish and in English (tutorial factors) AND (terminal efficiency) AND (higher education), resulting in 616 elements.

The results of the systematic search were reviewed, 18 duplicate articles were identified and eliminated, resulting in 598 unique documents. In the next phase, 500 articles were eliminated by title, 19 by topic related to virtual education and 3 by abstract.

In the third phase of eligibility, a total of 76 articles were selected for analysis, of which 16 were excluded due to extensive reading. In the fourth phase, applying an inclusion criterion, a total of 60 articles were selected, which are included in the systematic review.

In the third phase of eligibility, a total of 76 articles were selected for analysis, of which 16 were excluded due to extensive reading. In the fourth phase, applying an inclusion criterion, a total of 60 articles were selected, which are included in the systematic review.

Inclusion criteria

Publications made in the last 6 years (2018-2023).

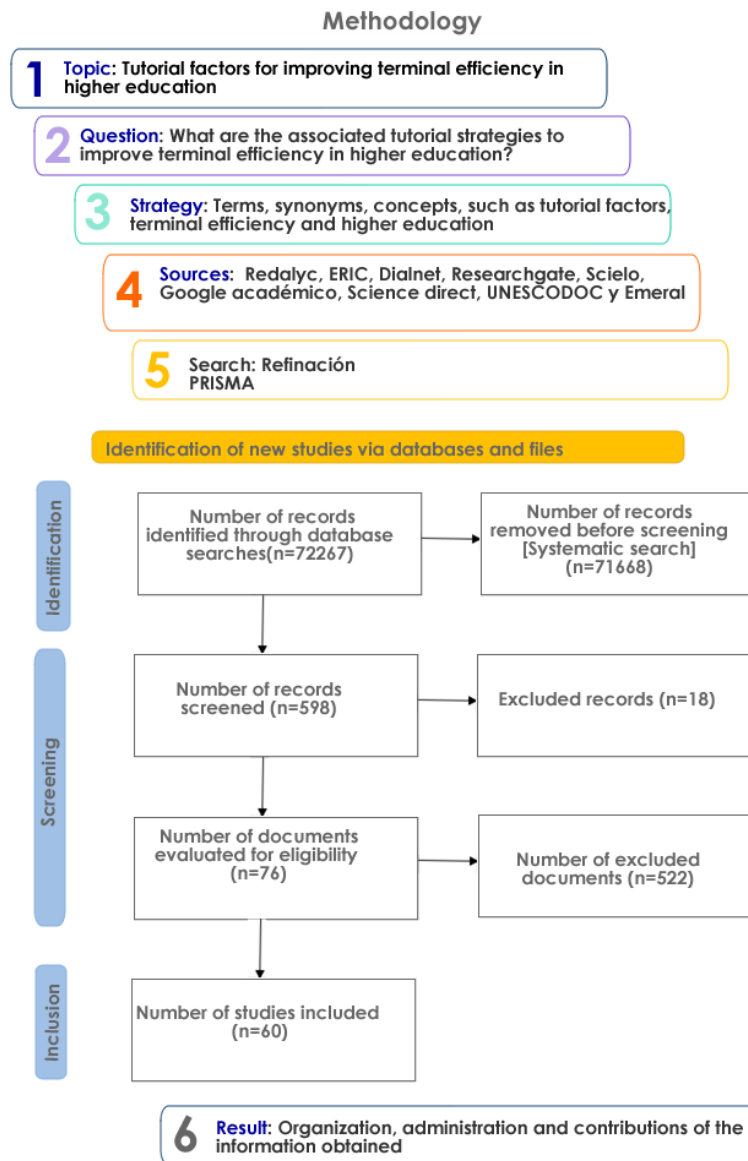
Advanced search by keywords: Terminal efficiency, Tutorial factors, higher education and their English analogues.

Exclusion criteria

Studies that referred exclusively to virtual education or were not related to higher education were excluded, as they did not meet the focus of the analysis.

Flowchart depicting the stages and phases of the systematic review (see figure 1).

Figure 1. Flowchart of the systematic literature research methodology.



Note: Own elaboration

In summary, the systematic review process followed six clearly defined stages, from the formulation of the research question to the final selection of relevant articles. This approach ensures the replicability of the study and the quality of the data included.

Results

Of the 598 articles resulting from the systematization, 230 were excluded from Redalyc, 24 from ERIC, 5 from Dialnet, 171 from ResearchGate, 2 from Scielo, 171 from Google Scholar, 11 from ScienceDirect, 2 from UNESDOC, and 31 from Emerald, with a total of 500 being discarded by title, 19 associated with virtuality, of which 6 were from Redalyc, 3 were Dialnet, 4 were ResearchGate, 3 were Scielo, 1 was Google Scholar, 2 were ScienceDirect, and 3 were excluded by *abstract* : 535 were excluded. Of the 76 articles evaluated for eligibility, comprising 28 from Redalyc, one from ERIC, 10 from Dialnet, 9 from ResearchGate, 10 from Scielo, 14 from Google Scholar, 3 from ScienceDirect, 1 from UNESDOC and 1 from Emerald, 16 were discriminated for extensive reading, leaving 60 selected (see table 1).

Table 1 summarizes the list of articles reviewed according to their database and exclusion criteria.

Table 1. List of reviewed articles

| Database | Search formula | Exclusion | | | | Extensive excluded | Included |
|----------------|----------------|------------|---------------|-------------------|----------|--------------------|----------|
| | | Duplicates | Qualification | Virtual Education | Abstract | | |
| Redalyc | 269 | 4 | 230 | 6 | 2 | 7 | 20 |
| Eric | 25 | 0 | 24 | 0 | 0 | 0 | 1 |
| Dialnet | 19 | 1 | 5 | 3 | 0 | 1 | 9 |
| UNESDOC | 3 | 0 | 2 | 0 | 0 | 1 | 0 |
| Scielo | 17 | 2 | 2 | 3 | 0 | 1 | 9 |
| Emerald | 32 | 0 | 31 | 0 | 0 | 1 | 0 |
| Google Scholar | 45 | 5 | 24 | 1 | 1 | 1 | 13 |
| Researchgate | 190 | 6 | 171 | 4 | 0 | 4 | 5 |
| ScienceDirect | 16 | 0 | 11 | 2 | 0 | 0 | 3 |
| n= | 616 | 18 | 500 | 19 | 3 | 16 | 60 |
| | | 598 | 523 | | | | |

Source: Own elaboration

From the results according to the search formula, the criteria and number of exclusions, a total of 61 were included. Articles were identified mostly in 2021 as seen in Table 2.

Table 2 shows the numerical summary of the articles reviewed, according to the year of preparation to ensure the relevance of the data.

Table 2. Relation of number of articles reviewed per year

| 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|------|------|------|------|------|------|-------|
| 3 | 9 | 9 | 17 | 17 | 5 | 60 |

Source: Own elaboration

Table 3 presents the relevant results that are recovered distributed by country: one article from Japan, India, two from Colombia, Peru and Cuba, three from Ecuador, four from Costa Rica, five from Chile, seven from Spain and 34 from Mexico.



Table 3 shows the countries of origin of the articles reviewed according to the database and criteria used.

Table 3. Relationship of number of articles reviewed by country

| Country | Number of Documents |
|------------|---------------------|
| Chili | 5 |
| Colombia | 2 |
| Costa Rica | 4 |
| Cuba | 2 |
| Ecuador | 3 |
| Spain | 7 |
| India | 1 |
| Japan | 1 |
| Mexico | 33 |
| Peru | 2 |

Source: Own elaboration

The systematic review identifies studies focused on the application of information technology as a tool in tutorial practice, and also identifies studies with tutorial strategies to impact terminal efficiency. Of the 60 articles, 10 are related to IT, 41 are focused on tutoring, 5 use tools, 40 are oriented to educational quality and 23 refer to dropout . A variety of methodologies are used, as described in Table 4.

Table 4. Articles included in the systematic review

| N | Article | Year | Y O U | Tutor ial | Tools | Educational quality | Deser tion | Methodol ogy | Coun try |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|--------------|-------|------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1 | Soto Grant, A. (2022). Process management as a fundamental tool in ensuring the quality of university courses. <i>Electronic Journal "Current Research in Education"</i> , 22 (2), 1-24. | 2022 | | | | X | | Hermeneutic-dialectical | Costa Rica |
| 2 | Rico Páez, A. and Gaytán Ramírez, ND (2022). Predictive models of academic performance based on characteristics of engineering students. <i>Journal of Educational Research of the Rediech</i> , 13 (2022). | 2022 | X | X | | | | Model with the technique, Bayes Ship. | Mexico |
| 3 | Peinado Camacho, JJ (2021). Challenges faced by tutors in the Polivirtual system. <i>Apertura</i> , 13(1). | 2021 | | X | | | | Qualitative, non-experimental study with a cross-sectional and exploratory design with a non-probabilistic and heterogeneous sample. | Mexico |
| 4 | Vázquez Cid de León, C., Montesinos, González, S. and Maya Espinoza, I. (2021) Analysis and proposal of improvement tools for tutoring in the industrial engineering career. <i>Peer-reviewed research</i> , 81(25). | 2021 | | X | X | X | | Quantitative with the interview technique | Mexico |

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| 5 | Peinado Camacho, JJ and Jaramillo Viguera, D. (2018). The terminal efficiency of the Center for Research and Technological Innovation. <i>REDIE. Electronic Journal of Educational Research</i> , 20(3). | 2018 | | | | X | | Quantitative, non-experimental. | Mexico |
| 6 | Amaya Amaya, A., Huerta Castro, F. and Flores Rodríguez, CO (2020). Big Data, a strategy to avoid school dropout in HEIs. <i>Ibero-American Journal of Higher Education</i> , 11(31). | 2020 | X | X | X | | X | Quantitative, analysis of structured and unstructured data. | Mexico |
| 7 | Venegas Ramos, L. and Gairín Sallán, J. (2020). Approach to the state of tutorial action in Chilean universities. <i>Educational Profiles</i> , 42(167). | 2020 | | X | | X | | Survival models were used and a Cox regression model was fitted. | Chile |
| 8 | Angulo Moreno, AJ and Urbina Barrera, F. (2021). Implementation and challenges of comprehensive tutoring: indicators and student perceptions at three universities in northern Mexico. <i>Latin American Journal of Educational Studies</i> , 51(3). | 2021 | | X | | X | | Questionnaire to evaluate tutoring (Cronbach's alpha) | Mexico |
| 9 | Murillo García, OL and Luna Serrano, E. (2021). The academic context of university students in a condition of failure lag. <i>Ibero-American Journal of Higher Education</i> , 12 (33). | 2021 | | | | X | X | Quantitative, descriptive study, evaluating the failure lag indicator; transversal. | Mexico |

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| 10 | Vanegas Pissa, JC and Sancho Ugalde, H. (2019). Cohort analysis: Dropout, delay and terminal efficiency in the Bachelor of Medicine and Surgery degree at the University of Medical Sciences. <i>Educational electronic journal</i> , 23(1). | 2019 | | | | X | X | Using sociodemographic variables, grades by subject, period by cohort, using Cox regression model. | Costa Rica |
| 11 | Chi, J., Porres, A. and Velez Bustillo, E. (2022). A way to improve the quality of education: the role of the school principal. <i>Cuadernos de Investigación Educativa</i> , 14(1). | 2022 | | | | X | | Literature review on mostly correlated and descriptive studies. | |
| 12 | Navarrete Cazales, Z. and Tomé López J.(2022). Tutoring in higher education. A historical approach. <i>Journal of the History of Latin American Education</i> , 24(39). | 2022 | | X | | X | | Review of documentary literature based on a socio-historical analysis of tutoring in higher education. | Mexico |
| 13 | Ponce Ceballos, S., Aceves Villanueva, Y., and Avíña Camacho, I. (2021). The evaluation of university academic tutors: a review of the state of research from Mexican institutions. <i>Acta Universitaria</i> , 31. | 2021 | | X | | X | | Review of research to characterize instruments to evaluate tutors at Mexican universities. | Mexico. |
| 14 | San Martín Cantero, D., San Martín Aedo, R., Pérez Morales S. and Bórquez Mella, J. (2021). Improvement practices for the pedagogical support process. <i>Electronic journal</i> | 2021 | | X | | X | | Qualitative method with interview with 15 students. | Chili |

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| | "Current Research in Education ", 21(2). | | | | | | | |
| 15 | Martín Romera, A. Berrios Aguayo, B. and Pantoja Vallejo, A, (2020) Quality factors and elements perceived by the teaching staff participating in the tutorial action plan of European universities. <i>Education XXI</i> , 23(1). | 2020 | | X | | X | | Qualitative approach, interactive technique for data collection . Spain |
| 16 | Sources Balderrama, J. and Rivera Heredia, ME (2022). Personal, contextual and academic factors associated with failure in higher education: A Mexican national sample. <i>Mexican Journal of Educational Research</i> , 27 (95), 1039 -1062. | 2022 | | X | | | X | Identification of personal, contextual and academic factors associated with failure. Mexico |
| 17 | Sotomayor Soloaga, P., Rodríguez Gómez, D. (2020). Explanatory factors of academic dropout in Technical Professional Higher Education: the case of a technical training center . <i>Journal of studies and experiences in education</i> , 19(41), 199-223. | 2020 | | | | X | X | Qualitative approach. Explanatory factors for dropout Chili |
| 18 | Andueza Correa, A. (2023). How did you help students solve their difficulty?: Analysis of the strategies used by writing tutors. <i>Educare Electronic Journal</i> , 27 (1), 1-19. | 2023 | | X | | | | Exploratory qualitative research. Chili |
| 19 | Salazar Duany, Z., Cardoso Camejo, L. and Panesso Patiño, V. The tutor, a fundamental link in the training process: a look from advanced education. (2022). <i>MediSur</i> , 20 (1), | 2022 | | X | | X | | Bibliographic review. Cuba |

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| | 18-24. | | | | | | | | |
| 20 | Portal Martínez, E., Arias Fernández, E., Lirio Castro, J. and Gómez Ramos, J.L. (2022). University failure and dropout: perception of Social Education students at the University of Castilla La Mancha. <i>Mexican Journal of Educational Research</i> , 27 (92), 289-316. | 2022 | | | | X | X | Descriptive and cross-sectional study. | Spain |
| 21 | Torres Vázquez, T. (2021). Virtual tutoring, an alternative model to improve terminal efficiency at the higher level. <i>Latin American Journal of Development</i> , 3(6). | 2021 | X | X | | | | Analysis of tutoring models. | Mexico |
| 22 | García Ramírez, RG and García Montejó, JS (2021). Characteristic analysis of the factors of dropout in higher education. <i>Academic – Scientific Journal</i> , 7(3), 21-31. | 2021 | | X | | X | X | Documentary analysis on desertion and its causes. | Mexico |
| 23 | Delgado García, M., Conde Vélez, S. and Boza Carreño, A. (2020). Profiles and functions of the university tutor and their effects on the tutorial needs of students. <i>Spanish Journal of Pedagogy</i> , 78 (275), 119-143. | 2020 | | X | | | | Survey, structural equation technique using Amos 18.0 program | Spain |
| 24 | Trujillo Zurita, JG and López Alarcón, HF (2022). Educational guidance strategy to improve the quality of the higher basic education learning process. Mikarimin. <i>Multidisciplinary Scientific Journal</i> , 8(2022). | 2022 | | X | | X | | Qualitative approach with descriptive study using collection instrumen | Ecuador |

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| | | | | | | | | ts. | |
| 2 5 | Gargallo Castel, AF, Pérez Sanz, FJ and Esteban Salvador, L. (2019). University students' perception of academic tutoring: a review of the relevant factors. <i>Journal of the Faculty of Education</i> , 37 (3). | 2019 | | X | | X | | Descriptive approach based on questionnaires to university students. | Spain |
| 2 6 | Martínez Clares, P., Pérez Cusó, F.J. and González-Lorente, C. (2022). The tutorial competences of university teachers. Validation of a tool. <i>Electronic Journal of Educational Research</i> , 24, 1-15. | 2022 | | X | | X | | Quantitative methodology with descriptive, non-experimental and cross-sectional research design. | Spain |
| 2 7 | Garza Puente, DG; Malacara Navejar, JG, Cabrera, O, (2019). Tutoring in education, self-esteem and assertiveness as factors that condition the study. <i>Education</i> , 4(2). | 2019 | | X | | | | Analysis of the role of personal skills in influencing students' study habits and the role of the tutor. | Mexico |
| 2 8 | Méndez Rodríguez, R.D., Arellano González, A., Ríos Vázquez, N.J., and Carballo Mendivil, B. (2022). Influence of personal and institutional factors on the academic performance of Mexican university students. <i>Innova Research Journal</i> , 7(2), 16-39. | 2022 | | | | X | X | Exploratory and correlational design applying an instrument using Cronbach's alpha. | Mexico |

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| 2 9 | Tristen Balwant, P. and Doon, R. (2021). Alternatives to the Conventional 'Oxford' Tutorial Model: A Scoping Review. <i>International Journal of educational Technology in Higher Education</i> , 29. | 2021 | | X | | X | | Quantitative study, comparative experimental design of tutoring. Compilation of 48 articles from 4 top-level journals. | India |
| 3 0 | Rochin Berumen, FL (2021). School dropout in higher education in Mexico: literature review. <i>RIDE-Ibero -American Journal for Educational Research and Development</i> , 11(22). | 2021 | | X | | X | | Qualitative approach. Bibliographic, historical-logical, analytical, synthetic and descriptive methods . Literary review. | Mexico |
| 3 1 | Rodríguez Pérez, I., Pérez Ramírez, R. and Flores Albino, JM (2021). Strategies for improving educational quality based on the analysis of the academic trajectory in the area of engineering. <i>RIDE-Ibero-American Journal for Educational Research and Development</i> , 11(22). | 2021 | | X | | X | | Non-experimental research. | Mexico |
| 3 2 | Fernández Martín, T., Solís Salazar, M., Hernández Jiménez, MT and Moreira Mora, T, E. (2019). A multinomial and predictive analysis of the factors associated with university dropout. <i>Educare electronic journal</i> , 2 (1). | 2019 | | X | | X | | Quantitative methodological approach based on a predictive correlational design. | Costa Rica |

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|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|--|--|---|---|-----------------------------------------------------------------------------------------------------------------------------------------------|----------|
| | | | | | | | | Exploratory explanatory and predictive model. | |
| 333 | Maya Pérez, PN, Aguilar C., J. R, Zamora R., RA and Barrón A., M. (2018) Predictive Model Design applying Data Mining to identify causes of Dropout in University Students. <i>Strategy, technology & society</i> , 7 (2). | 2018 | X | | | X | | Deductive scientific method, exploratory analysis, application of DM models, correlational and explanatory study. | Mexico |
| 344 | Ramos, D.N., Reyes Valenzuela, R., González Torres, A., Juárez Rodríguez, R. and Mendoza Montero, F.Y. (2022). Assessment of dropout at higher education level: dimensions that affect university careers. <i>Ibero-American Journal of Research and Development</i> , 13 (25). | 2022 | | | | X | X | Probabilistic and discretionary participati on. Quantitative approach with statistical analysis, non-experimental and cross-sectional design. | Mexico |
| 355 | Andrea Valencia, P. and Vera Jiménez, M. (2019). Influence of ICT skills to reduce school dropouts. <i>Social Science and Management</i> . | 2019 | X | | | | X | Descriptive explanatory research. | Colombia |
| 366 | Arnaud Bobadilla, AJ, Sánchez Villareal, F., Galindo Miranda, NE, Franco Bodek, D. and Ruíz Gutiérrez, R. (2022). Diagnosis of the causes of | 2022 | | | | X | X | Qualitative and quantitative | Mexico |

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| | delay and desertion in students of the Faculty of Sciences of the UNAM. <i>Ibero-American Journal of Development</i> , 12 (24). | | | | | | | | |
| 37 | Rabuco Hidalgo, A. (2022). Factors associated with the prevention of school dropout: a look from the implementation of the pedagogical tutoring program. <i>Sophia Austral</i> , 28. | 2022 | | X | | | X | Qualitative paradigm, case study design with focused interviews with 13 tutors. | Chili |
| 38 | Rodríguez Pineda, M. and Zamora Araya, JA (2021). Early dropping out in university students: a cohort study on its possible causes. <i>Uniciencia</i> , 35 (1). | 2021 | | | | | X | Exploratory, non-experimental and correlational quantitative approach. | Costa Rica |
| 39 | Cajigal Molina, E., Cahuich Velázquez, MG and Hernández Marín, GJ (2022). Educational research to generate strategies from tutoring in favor of terminal efficiency. Prieto ME, Pech, SJ and Herrera, SC (Ed.s). <i>Technological advances in education and learning UNACAR-Autonomous University of Carmen</i> (66 - 78). | 2022 | | X | | X | | Document review technique, typical of qualitative methodology. | Mexico |
| 40 | Vargas Gutierrez, DJ, Vargas Gutierrez, MVTello Diaz, A., Lozano Achuy, M., Gomez Chagua, J.J. and Armas Barrantes, J.E. (2023). Factors that influence university dropout. <i>Journal of Climatology</i> , 1869-1877. | 2023 | | | | | X | Systematic review under the PRISMA protocol. | Peru |

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|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--|---|--|---|---|--------------------------------------------------------------------------------------------------------|-------------|
| 4 1 | Román Gálvez, R., Martínez Lobatos, L., Fierro López, LE and Sanchis Pedregosa IA (2023) Lag due to failure and terminal efficiency: autonomous university of baja california case of the faculty of human sciences, cohort 2019-1. <i>Brazilian Journal of Development</i> , 9 (5). | 202 3 | | | | X | X | Quantitati ve, explorator y and descriptiv e approach. | Mexi co |
| 4 2 | Uriol Castillo, GT and Mego Sánchez BA (2021). Factors that influence university dropout. <i>Educational Research</i> , 13(2). | 202 1 | | X | | | X | Non- experime ntal descriptiv e quantitati ve approach ; applying a survey. | Peru |
| 4 3 | Pimentel Elbert, MJ, Villamar Cárdenas, MA, Andrade Zumárraga, DA and Zambrano Mendoza, BM (2023) Strategies to avoid university dropout. <i>Scientific Journal of research update of the world in the Sciences</i> , 7(2). | 202 3 | | | | X | X | Bibliogra phic design and review methodol ogy. | Ecuad or |
| 4 4 | Hernández Contreras, Y. (2020). Analysis of admission, failure, delay, desertion, academic performance and terminal efficiency and their impact on the educational process of the 2016 generation of the Bachelor's degree in Linguistics and Hispanic Literature at BUAP [Master's Thesis, Benemérita Universidad Autónoma de Puebla]. | 202 0 | | | | X | X | Quantitati ve, descriptiv e, transversa l methodol ogy. | Mexi co |

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|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|---|---|---|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 4 5 | Zavaleta Carrillo, P., Cocón, F. and Pérez Cruz, D. (2018). Comparison of indicators of the terminal efficiency of educational programs through a Statistical System of Educational Indicators. <i>Mathematical programming and software</i> . 10(2), 25-39. | 201 8 | | X | | X | | Data processin g of the education al programs of Computer Engineeri ng and Computer Systems Engineeri ng offered at the FCI of UNACA R. | Mexi co |
| 4 6 | Garduño Romo, RC (2021). Academic monitoring of higher education students supported by artificial intelligence in Reynosa Gómez, LG and Solís Martínez, J. I (Eds.), Perspectives of education: A teaching look at the COVID-19 pandemic. Cloister of <i>the University of Eastern Perspectives of Education</i> . | 202 1 | X | X | X | X | | Descripti ve explorator y research. | Mexi co |
| 4 7 | Domínguez Urdanivia, Y. and Rojas Valladares, A. (2021). Support tutoring, from an inclusive approach, in vocational training in higher education. <i>University and society</i> , 13(5). | 202 1 | | X | | X | | Theoretic al, empirical and statistical methods. | Cuba |
| 4 8 | Lázaro Álvarez, N. (2020). Tutorial actions with ICT addressing predictive factors of student dropout in computer engineering courses [Doctoral thesis, University of Granada]. | 202 0 | X | X | | X | | Non- experime ntal mixed design with literature systemati zation. | Spain |

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|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|---|---|--|---|----------------------------------------------------------------|--------|
| 49 | Valdivia, EM, Ruíz, BV Cárdenas, CM and Ortíz CP (2019). Design of a comprehensive tutoring program for engineering students. <i>ANFEI Digital</i> , 11. | 2019 | | X | | | X | Design of a comprehensive, experience-based mentoring program. | Mexico |
| 50 | Ramos Ojeda, E., Herrera Enciso, F., and Herrera Enciso, V. (2019). Tutoring: a strategy to reduce the failure rate and improve academic performance at a higher level. <i>Educational Tracks</i> , 133. | 2019 | | | | | X | Qualitative using surveys. | Mexico |
| 51 | Gómez Morales JG (2022). Needs assessment and design of a tutorial action program aimed at the comprehensive training of higher education students [Master's thesis, Benemérita Universidad Autónoma de Puebla]. | 2022 | | X | | | X | Non-experimental design, with variable management. | Mexico |
| 52 | Flores, A. J, Jaimes Jaimes, A. and Jaimes Albíter, M. (2020). Analysis of the implementation of a tutoring system for higher education. <i>Open University</i> . | 2020 | X | X | X | | | Descriptive statistical research. | Mexico |
| 53 | Juárez Rosales, BA (2019). Proposal for the implementation of an Internal Academic Monitoring System for UTH students. <i>Reaxion. Journal of scientific dissemination</i> , 6 (2). | 2019 | | X | | | X | Observation methods. | Mexico |
| 54 | Avilés Coyoli, KL, Martínez Pagola, S., Enciso González, A. and Camacho Quijano, G. (2020). Web 2.0 resources in support of the tutorial process of the National Technological | 2020 | X | X | X | | | Research based on web.2.0 technological tools. | Mexico |

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|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|---|--|---|---|--------------------------------------------------------------------------------------------------------------------|
| | Case of Mexico. <i>ANFEI Digital Electronic Journal</i> , 12 (2020). | | | | | | | |
| 55 | Ramírez Torres. S. & Castillo Flórez, NS (2021). Early warnings of the risk of dropping out of school: A strategy for student permanence and success monitored from ICT at the Universidad del Valle[Presentations]. Latin American Congress on dropout in higher education. | 2021 | X | X | | | X | Traffic light methodology in five risk dimensions. Mexico |
| 56 | Villanueva Vargas, IN (2021). Thoughts and reflection of the university professor in the face of a scenario of innovation in his tutoring practice [Doctoral Thesis, Autonomous University of the State of Morelos]. | 2021 | | X | | | | Flexible design to make adjustments to the criteria and strategies for data collection and analysis. Mexico |
| 57 | Guffante Naranjo, FR, Guffante Naranjo, TM, Barragán Erazo, V. and Meneses Freire, MA (2022). Impact of tutoring on the comprehensive training of university students. <i>Podium. Journal of Science and Technology in Physical Culture</i> , 17(2). | 2022 | | X | | X | | Quantitative approach. Ecuador |
| 58 | Ocampo, VM, Torres, FJ, Esquivel, M. and Hurtado, A, (2023), The conceptualization of tutoring and its impact on HEIs, case of the Polytechnic University of the State of Guerrero. <i>Forum of studies on Guerrero</i> , 6 (1). | 2023 | | X | | | X | Statistical monitoring, using surveys Mexico |

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|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|--|--|---|---|-----------------------------------------|----------|
| 59 | Romero Sánchez, E. and Hernández Pedreño, M. (2019). Analysis of the endogenous and exogenous causes of early school leaving: a qualitative research. <i>Education XXI</i> , 22 (1). | 2019 | | | | X | X | Qualitative research review of studies. | Spain |
| 60 | Quiroz Ruíz, A. (2022). Analysis of student dropout in higher education in Colombia associated with the use of information technologies [Master's thesis]. EAFIT University. | 2022 | X | | | X | X | Bibliographic review. | Colombia |

Source: Own elaboration

The works correspond to dialectical hermeneutic type studies, they use the Nave Bayes technique, two use sociodemographic variables, two Cronbach's alpha, two use the Cox regression model, 11 refer to a literature review, 14 are quantitative, 12 qualitative, 2 mixed, 12 descriptive, nine non-experimental, one experimental, six with a transversal approach, one synthetic, two explanatory, one deductive, five exploratory, three correlational, two of them use interviews, four surveys, one questionnaire and one based on traffic lights.

Most of the research uses a descriptive quantitative approach, in which the constant is the tutoring process (42), the quality of education (41) and the impact on university dropout (23) in person; in the works explored, nine use IT resources as support for tutoring, and only five report some support tool. The constant converges in the interest in quality education and the treatment of university dropout, as well as the influence of the tutor's role in the application of strategies.

The variability of the works explored allowed for a quantitative analysis, identifying the year of production and the geographic location of the studies. Most of them were located in Mexico, where common discourses focused on factors and conditions of school dropout.

In order to improve the terminal efficiency that represents quality in education, works are addressed in which sociodemographic variables, grades (Venegas and Sancho, 2019) and failure (Román et al., 2023) are analyzed to understand the phenomenon and from there generate strategies that promote university student retention.



Within the studies explored, student dropout is related to information technologies, electronic devices and the lack of access to them (Quiroz, 2020). On the other hand, in the works that address the dropout factors, some associated with inequality of knowledge, psychological, personal, and economic problems were identified (Núñez, 2020; Alarcón et al., 2020; Portal et al., 2020; Fuentes and Rivera, 2020, Fernández et al., 2019; Uriol and Mego, 2021), it is also associated with the vocational profile (Portal et al., 2020), academics associated with attitudes and aptitudes that affect performance, causing failure in subjects (Sotomayor and Rodríguez, 2020; Méndez et al., 2020; Murillo and Luna, 2021), on the other hand, failures in university management, in study plans and programs, deficiencies in the teaching staff as well as the lack of good study habits were identified (Marrón et al., 2022; Rochin, 2020; Arnaud et al., 2022), others related to stress, self-esteem and educational policies (Vargas et al., 2023); although it is mentioned that the dropout problem is not related to social classes, there are differences between students with a high rate of marginalization.

It is interesting to investigate the strategies proposed by the authors to contain dropouts. One of them is the creation of an advisory program, pedagogical channeling (Rodríguez et al., 2021; Valdivia et al., 2019), diversification of educational modalities (Amaya et al., 2020), use of information and communication technologies (ICT) in the teaching-learning process (Torres, 2021), integrating structural and content elements for didactic design, as well as tutorial actions supported by ICT to generate preventive strategies in real time and not just corrective ones (Lázaro, 2020; Garduño, 2020; Ramírez and Castillo, 2021), adding flexibility in schedules, providing tutorial follow-up to students, providing information and modification of the study plans as well as generating didactic strategies (Hernández, 2020; García and García 2020; Rochin 2021), it is suggested to strengthen the skills of tutors, build mechanisms for integration and creation of support networks (Rabucco, 2022) as well as strengthen institutional, personal and economic actions (Pimentel et al., 2023)

The tutor as the main actor and fundamental piece in the formative process (Salazar et al., 2022); has been considered throughout history from New Spain to the present as a means of timely attention to poor performance and educational dropouts (Navarrete and Tomé, 2022), is significant, offering attention with equity and equality (Domínguez and Rojas, 2021), in which academic and personal aspects are prioritized

to generate meaningful learning (Delgado et al., 2020), supported by international, national, state and institutional policies (Gómez, 2022).

To achieve this interaction between tutor and student, it is important to consider the attitude and follow-up in the tutorial sessions (Villanueva, 2020) as well as the construction of resilience in the students to seek their comprehensive training by identifying endogenous and exogenous factors that may lead to university dropout (Cajigal et al., 2022; Romero and Hernández, 2019); therefore, it is important to consider the role of the vocational counselor, doctor, pedagogue and psychologist who help to enhance the student's skills (Vázquez et al., 2021). The proposals also include the exercise of peer tutoring to promote literacy or as a means of university adaptation (Andueza, 2023; Venegas and Gairín, 2020).

There are studies focused on quality tutoring, considering teacher training, commitment and the tutor's competence profile (Martín et al, 2020; Angulo and Urbina, 2020), these tutorial competencies are evaluated through quality instruments (Ponce et al, 2021) and others from the students' perspective to describe problems and improvements in university tutoring (Martínez et al., 2022; San Martín et al., 2021).

Regarding students, personal skills influence study habits and tutor guidance is important for motivational growth (Garza et al., 2019), self-confidence, time savings and economy (Gargallo et al., 2019).

To determine that tutoring works as a retention strategy, it is necessary to evaluate the impact (Guffante et al., 2022) since it has been perceived as the solution to dropout problems (Ocampo et al., 2023), contributing to the decrease in dropout and failure rates (Ramos et al., 2019).

Discussion

The objective of the systematic review is to understand the strategies used to improve completion efficiency in higher education institutions in Latin America, Spain, India and Japan. The works evaluated identify an interest in quality in education, classified as a priority issue, where the main activity of higher education institutions is focused on teaching, whose efficiency is measured by the number of students who graduate compared to those who enter, being an indicator of educational capacity.

In the studies addressed, elements such as student desertion are found, which acquire relevance in the search for the improvement of terminal efficiency. Knowing the associated factors allows having an overview of what happens in the institutions in order to provide alternative solutions. The documentary review contributes to locating studies in which factors were identified and strategies are proposed to mitigate them.

The authors determine sociodemographic, economic, personal, achievement, vocational, health and income factors as the most outstanding, and find that self-esteem, stress, family, study programs and university management have an influence on university dropout. It is necessary to recognize that there are multiple factors that affect performance and invite reflection; the search for causes through different models speaks of the interest of educational institutions to counteract desertion and lag (Vanegas and Sancho, 2019).

It is worth mentioning that the problem of terminal efficiency is complex. It is important to know the factors, but also to have lines of action to address them. This work provides the opportunity to explore research that establishes actions that support inherent and endless problems of universities such as school dropout (Cajigal et al., 2022). Providing effective solutions is a thorny task and depends on each educational institution, its experiences (Soto, 2022), guidelines, policies and traceability with the state or the federation; For this purpose, strategies are generated such as: the creation and execution of an institutional tutoring plan that responds to the student's satisfaction needs (Cid et al., 2021), establishing functions, guidelines and tutorial actions, providing spaces for advice and tutorial support (Lledó et al., 2018), the preparation and updating of teaching staff (Rochin, 2021) on issues of educational model, new technologies, vocational guidance and support, accreditation of educational programs, updating of study plans and programs, psychopedagogical help, as well as monitoring of the academic trajectory through a tutor.

IT resources are used through predictive methods of academic performance that contribute to generating intervention strategies in students with failure problems (Rico and Gaytán, 2022). Likewise, strategies such as the use of *big data are used* to avoid school dropouts by analyzing the negative effects (Amaya et al., 2020) or structural and content elements for the didactic design of IT-mediated tutorial actions that address identified factors (Lázaro, 2020).



Based on these findings and the results obtained, it was identified that educational institutions are focused on identifying, factoring and addressing through strategies the obvious problems of student delay, desertion and failure. To this end, different types of tools were used, including information technologies (IT) as a means for identifying factors and implementing tutorial action tools.

Likewise, the systematic review found a deficiency in the use of complementary technological resources for collaboration in educational practice, which is an area worth exploring. The documentation shows the relationship between the search for factors for attention through tutorial strategies of any kind, sharing the interest in efficiency, with the tutor being the constant element in the research since he plays an extremely important role as he is considered the main element and executor of strategies, therefore, his training and skills are fundamental.

These findings not only underline the importance of the tutor in improving terminal efficiency, but also open up new possibilities for the use of technological tools and innovative institutional strategies in higher education.

Conclusion

The systematic review allows to compare relevant publications on terminal efficiency, in response to research, there is interest in higher education topics in the scientific community, addressing issues such as dropout, delay, failure and academic trajectory to contribute to improving terminal efficiency. In addition, it is important to highlight the role of the tutor and tutoring in the university environment; as well as the management of the tutorial process as a fundamental means to ensure educational quality.

Regarding information technologies, they have been used as a means of data extraction and management, to understand the factors that influence academic performance, school dropouts and their effect on terminal efficiency. Technologies such as artificial intelligence (Garduño, 2021), data mining, *big data*, *predictive analysis*, *use of Naïve* techniques are used. *Bayes*, implementation of Web 2.0 systems and resources.)

Institutions need to work on comprehensive tutoring programs and innovative methods to improve this process, monitoring academic progress, but above all, innovating in processes that collaborate with educational practice to increase terminal



efficiency.

In conclusion, ensuring educational quality and improving completion efficiency depend on strengthening tutoring, integrating advanced technologies and innovation in educational processes. Future studies could explore more specific tools adapted to each institutional context.

Future lines of investigation

In future works on this topic, strategies focused on university retention will be designed, focusing efforts on the points addressed by the authors and taking advantage of the identified areas of opportunity.

These areas of opportunity include addressing failure rates, dropout rates and irregular conditions, as challenges that educational institutions must face. Each institution has its own particularities and faces unique challenges when addressing them. Although strategies may vary, the common goal is to increase terminal efficiency and guarantee equity in access to higher education.

Future research may focus on implementing advanced technologies to monitor terminal efficiency, predictive data analysis to drive retention, and personalizing strategies and retention.

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