Journal University Management 9[20]1-10: e4920110
Article

Durango 2024 learning assessment results. Statistical analysis of the mathematics area

Resultados de evaluación de los aprendizajes Durango 2024. Análisis estadístico del área de matemáticas

Díaz-Ledezma, José de la Cruz * [a], Lino Gamiño, Juan Alfredo [b] and Torres-Gutiérrez, Arturo [c]

*[a] Instituto Educativo Dolores del Río • AAH-8158-2020 • 0000-0002-9528-9235 • 852582
[b] Universidad de Colima • AIE-7505-2022 • 0000-0002-7022-5438 • 268945
[c] Universidad Internacional de la Rioja• LLM-3467-2024 • 0000-0001-8919-0602

Classification:

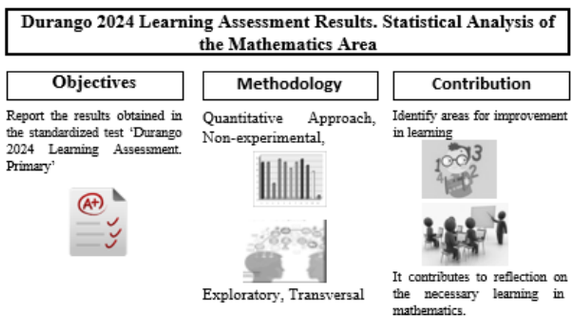
Area: Humanities and Behavioral Sciences
Field: Pedagogy
Discipline: Educational Theory and Methods
Subdiscipline: Evaluation of Students

https://doi.org/10.35429/JUM.2025.9.20.4.1.10
History of the article:
Received: October 07, 2025
Accepted: November, 2025

* ✉ [jdelacruzdiazl@gmail.com]

Abstract

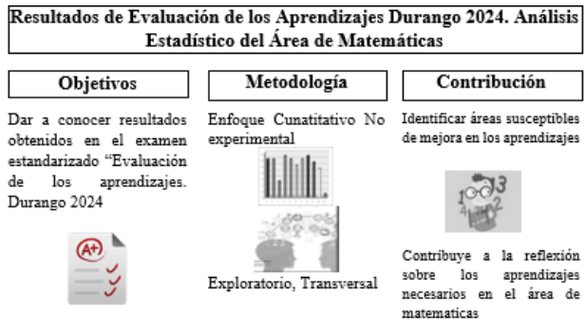
This document shares the results found in the descriptive analysis of the exam "Evaluation of learning Durango 2024", in the introduction we find the reasons for this evaluation and its purpose, it also presents a theoretical support for evaluation, standardized tests and the legal foundations that gave rise to this evaluation; from a quantitative approach, the analysis of the data is proposed using descriptive statistics, since the study is not a quasi-experimental or experimental research, the study aims to identify the level of achievement of students from third to sixth grades of primary education in knowledge in the area of mathematics; the discussion of results and conclusions are based precisely on the results obtained, validating the assumption that "students from third to sixth grade have conceptual and procedural deficiencies in learning mathematical content.



Educational assessment, Descriptive statistics, Standardized tests

Resumen

El presente documento comparte los resultados encontrados en el análisis descriptivo del examen “evaluación de los aprendizajes Durango 2024”, en la introducción encontramos los porque de esta evaluación y el propósito de la misma, también presenta un soporte teórico de evaluación, exámenes estandarizados y los fundamentos legales que dieron origen a la misma; desde un enfoque cuantitativo, se plantea el análisis de los datos empleando la estadística descriptiva, pues el estudio no es una investigación cuasi experimental o experimental, el estudio tiene como objetivo identificar el nivel de logro de los alumnos de tercero a sexto grados de educación primaria en los conocimientos en el área de matemáticas; la discusión de resultados y las conclusiones se basan precisamente en los resultados obtenidos, validando el supuesto que “los alumnos de tercero a sexto grado tienen deficiencias conceptuales y procedimentales en el aprendizaje de contenidos matemáticos



Evaluación educativa, Estadística descriptiva, Pruebas estandarizadas

Area: Promotion of frontier research and basic science in all fields of knowledge

Citation: Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110

Introduction

The purpose of this product is to report the results obtained in the standardized test 'Durango 2024 Learning Assessment. Primary', administered in April 2024. The aim of this test was to assess the learning achieved by pupils in grades three to six of primary education. This document presents the results from four schools in school zone No. 128, which are federally funded and represent a significant sample of the total number of pupils in these grades, approximately 65% of the total school population.

The exam [and its validation] and the implementation strategy were designed entirely by the Durango State Department of Education [SEED] through the Undersecretary of Educational Services. It was also determined that the exams would be administered by the same teachers from each school, with the presence of an internal observer from the school zone [specifically a teacher or administrator from another school in the same area] who was responsible for recording the start and end of the exam, as well as any incidents that occurred during the process. The exam was administered over two school days and also involved the participation of parents who, like the internal observer, were also required to report on the exam using a Google Forms questionnaire.

The exam for third to fifth grades consisted of 40 questions, and the sixth-grade exam consisted of 38 questions. The analysis presented here serves to show those questions in which students in each grade show the greatest deficiencies in learning achievement.

This analysis aims to inform the principals of the sample schools of the results so that, at a given moment, they can make decisions that will lead to improved learning. When they meet with the teaching staff, they will identify the questions that show inadequate results so that, together, they can design a path that will contribute to better results in the teaching process and, consequently, in learning. promoting, through reflection, analysis, and criticism of their own work and its results, the use of the learning projects proposed in the teaching methodology in the curriculum, as well as the proposal of alternatives that support the achievement of learning in relation to the content and the Learning Development Processes [LDP].

The document presented here intentionally starts from the assumption that students in grades three to six have conceptual and procedural deficiencies in learning the content and LDPs. Within this framework, the aim is to identify students' achievement levels through collegial analysis of the results in order to take the appropriate actions to improve results.

This document presents the thematic development organized into sections that allow us to delve into the process of analyzing the results. Among these sections, we find one related to the theoretical references that support the concept of assessment, the application of standardized tests [their meaning, purposes, and scope], and the legal framework on which this assessment for state students is based. The following section develops the methodology used to carry out the analysis [of a purely descriptive nature]. The next section presents the results supported by tables and graphs obtained from the analysis. Subsequently, the conclusions of this analysis are presented. Finally, there is a section on the references that were taken into account in the preparation of each section of this document.

Assessment. An approach to its meaning

Assessment has been a constant in education systems, both to evaluate learning outcomes and to evaluate the actions carried out in the classroom and, at a given moment, to evaluate the path taken by the education system in the training and education of students at different levels.

There is no doubt that everything that needs to be improved must be assessed in order to identify the elements that are susceptible to change.

Evaluation, specifically educational evaluation, has been explored at different times and by different authors, including Scriven [1966], Casanova [1995], [1998], Lukas and Santiago [2004], and the Secretariat of Public Education [SEP] [2012].

Based on the studies carried out by these authors, we will delve a little deeper into the meaning of the term evaluation.

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

Educational evaluation 'applied to teaching and learning consists of a systematic, rigorous process of data collection, incorporated into the educational process from the outset, so that it is possible to have continuous, meaningful information to understand the situation, form value judgements about it, and make the appropriate decisions to continue the educational activity, improving it progressively' [Casanova M. A., 1995, p. 60].

It is also a rigorous and systematic way of obtaining information in order to have valid and reliable data about a situation with the aim of forming and making a value judgement about it. These assessments will enable the necessary decisions to be taken in order to correct or improve the situation being evaluated [Casanova M. A., 1998, p. 71].

Thus, according to the description provided by the Ministry of Public Education [2012], learning assessment is "the process that allows evidence to be obtained, judgements to be made and feedback to be provided on students' learning achievements throughout their education; therefore, it is an integral part of teaching and learning' [pp. 19-20]. It should also be understood as 'a process of recording information on the state of development of students' knowledge...whose purpose is to guide decisions regarding the teaching process..." [SEP, DGDC, & DGFCMS, 2012, p. 305].

At least to this point, we can identify the fundamental role of assessment in educational processes, both in teaching and learning.

However, what type of assessment should be developed in classroom work if it is conceived as "the process of identifying, collecting, and analysing relevant information— which may be quantitative or qualitative— in a systematic, rigorous, planned, directed, objective, credible, reliable and valid manner in order to make value judgements based on pre-established criteria and references to determine the value and merit of the educational object in question in order to make decisions that help to optimise the aforementioned object" [Lukas & Santiago, 2004, pp. 91-92], i.e., when the evaluation should be carried out and with what instruments to achieve the characteristics developed by the authors of reference.

The authors and the SEP itself have explained at least three types of assessment according to when they are carried out: diagnostic, formative and summative, each of which fulfils a function and has a defined purpose. We will discuss the first type of assessment in the following lines.

Diagnostic assessment and standardized tests

Diagnostic assessment is carried out prior to the start of a school year or a class or the development of a topic. Its purpose is to identify the knowledge, skills and attitudes that the student has for carrying out the task. It is "considered... as part of formative assessment... its objective is to establish a baseline of common learning" [Ministry of Public Education, 2012, p. 25].

In other words, it is to identify what the students have in common in terms of learning, in order to use this as a starting point for developing the subject matter. This allows for the achievement of new learning.

This is in line with Maria Antonia Casanova's [1995] definition of assessment based on its temporality and the development of initial assessment, in which she identifies the following features: when a student arrives at school for the first time.

Or when they start a new course or begin their school education, and when a specific learning process begins [the development of content, a new learning topic, among others]. The characteristic of this last feature is that the student is already engaged in school work, that is, in a learning process.

The above serves as a framework to justify the application of the exam referred to in this work, as the students were already in the learning process and the purpose of the exam was to ascertain the level of achievement in order to establish strategies for improvement.

I would like to point out that the exam was designed as a standardized exam, which seeks to identify the level of achievement in relevant aspects of learning.

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

In this regard, it is useful to refer to the meaning given by Demarchi [2020]: 'Standardised tests ... are comparative assessments ... used as standardized measurement instruments, applied jointly in several countries, selecting groups or grades of similar students' that 'collect information on conceptual and procedural learning in different areas' [p. 109], or as proposed by [Kuncel and Hezlett, 2007] cited by [Hernández, Ramírez & Gómez, 2018, p. 152] 'standardized tests are used to predict which students will be the most successful and will benefit most from higher education in different disciplines' but also 'standardized tests are useful predictors of a student's subsequent performance, they predict more accurately, show no bias and are not influenced by teacher advice' [Hernández, Ramírez, & Gómez, 2018, p. 153].

Legal basis

The Durango state government, through the Ministry of Education, based on the achievement rates of students at different educational levels, designed the Durango Educational Programme in line with the 2023-2028 State Development Plan. The State Plan sets out six priority areas, the first of which is 'A supportive, inclusive Durango with social welfare' [PED, 2023-2028, p. 69] is oriented towards social development and conceives children and young people as the present and future of the state. It therefore proposes to guarantee equitable and inclusive education to improve the employability of graduates.

The results of the National Learning Assessment Plan [PLANEA] prior to lockdown, which place the state at a level of achievement below the national average, were used to formulate this Plan. but also takes into account that these levels continue to be present after the lockdown resulting from the SARS-CoV 2 virus pandemic, which left an educational gap of approximately 7.9% due to exclusion, dropout and abandonment.

This plan outlines that: "The quality of education must improve significantly. The challenge is to ensure that all students have access to a comprehensive education and high standards of excellence. The quality gap between public and private schools will narrow, and teachers will be better trained and motivated." [Government of the State of Durango, 2023, p. 60]

For this reason, the guiding principles of the State Development Plan presented in Figure 1 are proposed.

Box 1

Figure 1
Guiding axes of state development
Source: State Development Plan 2023-2028

For the purposes of this work, only guiding principle No. 1, 'A supportive, inclusive Durango with social welfare' [Government of the State of Durango, 2023], is considered, along with objective 1.11, strategy 1.11.1, and lines of action 1.11.1.1 and 1.11.1.5, which read as follows:

"Objective 1.11. Increase the level of educational achievement of basic education students.

Strategy 1.11.1. Guarantee a comprehensive, inclusive, equitable, and relevant educational service.

Lines of Action:

1.11.1.1. Improve fundamental and priority learning in basic education.

1.11.1.5. Strengthen teaching practices." [Government of the State of Durango, 2023, pp. 102-103].

The above essentially aims to increase the level of educational achievement by guaranteeing educational services to improve fundamental and priority learning through the strengthening of teaching practices [Government of the State of Durango, 2023, pp. 102-103].

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

The State Development Plan [2023, p. 60], in its presentation of the axis '*Durango: supportive, inclusive and with social welfare'*, projects, through objectives and strategies related to education, a significant improvement in the quality of education in the state. To achieve this goal or purpose, it proposes that challenges must be overcome to enable universal access to comprehensive education with high standards of excellence, reduce the quality gap between public and private schools [RAE, Royal Spanish Academy, 2024], train teachers, and increase investment in education by implementing educational policies to ensure equity and access to education. All of the above is aimed at ensuring that Durango has an educated and competent population that drives the economic and sustainable development of the state.

In addition, the Plan itself has been designed to ensure that, through its eight thematic areas and 20 strategies, education in the state is a constitutional right that enables learning and, in this way, breaks down the barriers that generate inequality, poverty and the vulnerability that these two aspects bring with them. Derived from the State Development Plan, the Durango 2023-2028 Education Programme [PED 2023-2028] was designed [see image 2], which sets out five priority areas aligned with the specific objectives of the programme, whose general objective is stated as:

To guarantee the right to an excellent education centred on principles of equity, inclusion, interculturality and attention to diversity for the entire student population of Durango, in order to contribute to their comprehensive development and help them achieve maximum learning outcomes. [Durango Education Programme 2023-2028, 2023, p. 35]

Box 2

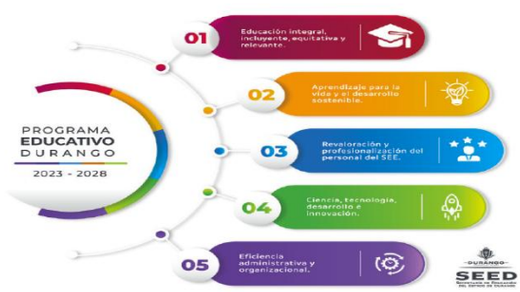


Figure 2
Priority axes of the EDP 2023-2028
Source: Durango Education Programme

In accordance with axis 1 of this educational programme, thematic line 1, 'improvement of fundamental and priority learning' [p. 42] and strategy 4 'Standardised state assessment' [p. 46], the objective is to 'Implement a standardized state assessment as a benchmark for improving teaching and learning in basic education' [p. 46], the standardized state-level exam '2024 Learning Assessment' was administered to propose alternatives to support teachers and students in reducing the academic gap between third and sixth grades of primary education. The purpose of the benchmark exam was stated as follows: 'To identify the knowledge and skills acquired by third, fourth, fifth, and sixth-grade primary school students throughout the current school year in the areas of language and mathematics' [2024 Learning Assessment, p. 2].

Methodology

The study was conducted using a quantitative, non-experimental approach at an exploratory, cross-sectional level, employing descriptive statistics, which, in the words of Orellana [2001], 'descriptive statistics or exploratory data analysis offers ways of presenting and evaluating the main characteristics of data through tables, graphs and summary measures' [p. 14].

For the analysis of the data, a sample of schools from school zone No. 128 was taken, using non-probabilistic sampling, which, among its advantages, allows 'the researcher to obtain cases that are of interest and that offer a wealth of information for data collection and analysis' [Hernández-Sampieri & Mendoza, 2018, p. 217]. Of the seven schools belonging to the school district, data were collected from the following: General Francisco Villa T. M. Primary School, General Francisco Villa T. V. Primary School, Silvestre Revueltas T. V. Primary School, and Carlos Marx T. M. Primary School. The first three are located in an urban area and the last in a rural area. It should be noted that they are representative of the population. 'Silvestre Revueltas' T. V. and Primary School 'Carlos Marx' T. M., the first three located in an urban environment and the last in a rural environment. It should be noted that they are representative of all the schools in the zone and that their enrolment represents around 65% of the school population in each of the grades in the School Zone.

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

The sample was selected for two main reasons: first, because the School Supervision Department needed data to identify the level of achievement in the school zone; and second, because the school principals allowed and facilitated the use of the exam answer sheets to analyse the results. The analysis presented here aims to provide an approximation of the level of achievement of the students so that the appropriate actions can be taken to increase it in the coming school years, addressing the particular needs of the groups and schools that allowed the use of the data.

As with all quantitative research, the variables that enabled the analysis to be carried out were taken. The variables defined are: Test item [numbered from 1 to 40 in grades three to five and from 1 to 38 in grade six], School, Grade, Group and Student number. Each of these variables was used to capture the data from the exam referred to in the first paragraph of the introduction to this paper.

The variable corresponding to the exam items is the variable that allows the results to be found and the achievement levels of each of them to be identified. These questions were grouped into three units of analysis: numbers and their operations, geometry and measurement, and data analysis or information management. Students had to use their knowledge and skills to solve them correctly, employing addition, subtraction, multiplication, or division, and in the case of sixth grade, fractions.

The school variable corresponds to the name of the school from which the data was recorded in order to control it and be able to establish the analysis as the results were obtained. The grade and group variables correspond to the school grade and the group being analyzed, as some schools have parallel groups labelled A or B. The student number variable corresponds to the records of all students in the sample. The folios of the answer sheets were used for this analysis, as that was all that was necessary. The aim of the analysis was not to make comparisons between students by gender or age.

The exam results were entered using Microsoft Office Excel. This process was carried out using the answer sheets corresponding to each of the students who took the exam, starting with the third grade and ending with the sixth grade.

Each mathematics exam had pre-determined answers, indicating that it was a multiple-choice exam in which students had to select the correct answer for each question. It should be noted that the third-grade exams, unlike those of other grades, which had four answers, only had three answers, of which only one was correct.

The student had to select the answer after reading the problem or statement presented in each of the questions that made up the exam.

Once the exam results had been recorded, the number of correct answers per question was counted, as well as the total number of correct answers obtained by each student. This allowed for statistical analysis using measures of central tendency. Since the aim was not to make generalisations, but only to find out the results of the examinations, the researchers decided to use only these measures to try to explain the results. The results were tabulated by grade and group, by school and for the entire sample, considering the percentage obtained per question and the score obtained per student.

Box 3

Table 1

Measures of central tendency for the analysis of the sample data

Measurement	3°	4°	5°	6°
Reagents	40	40	40	38
Mean	42	34.1	29.6	40.6
Median	43	30.9	27.5	38.1
Mode	#N/D	25.2	14.7	35.6
Minimum	16	14.5	4.9	11.0
Maximum	73	72.5	79.4	67.8

Source Own creation with Excel

Graphical results

Grade 3 results

Box 4

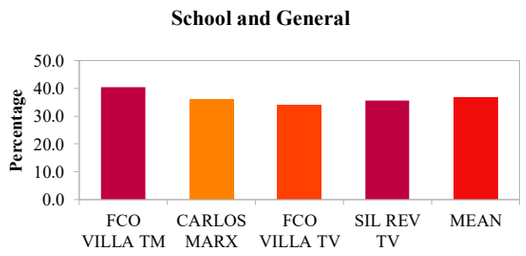


Figure 3

Overall hit rate

Source: Own creation based on analyzed data

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

Box 5

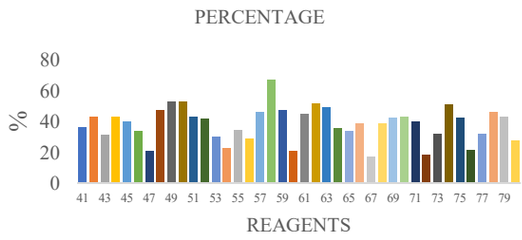


Figure 4
Percentage of achievement per item
Source: Own creation based on analyzed data

Box 6

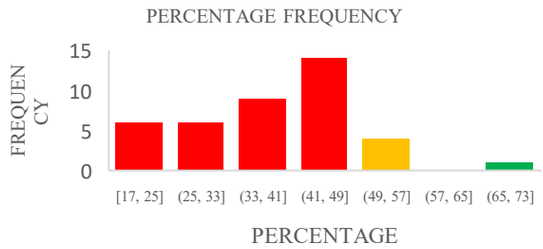


Figure 5
Percentage of pooled data
Source: Own creation based on analyzed data

Fourth grade results

Box 7

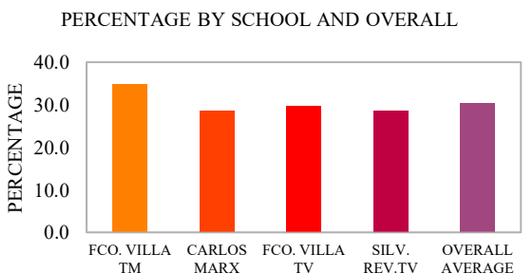


Figure 6
Overall hit rate
Source: Own creation based on analyzed data

Box 8

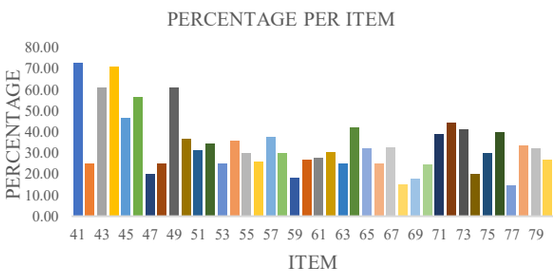


Figure 7
Percentage of achievement per item
Source: Own creation based on analyzed data

Box 9

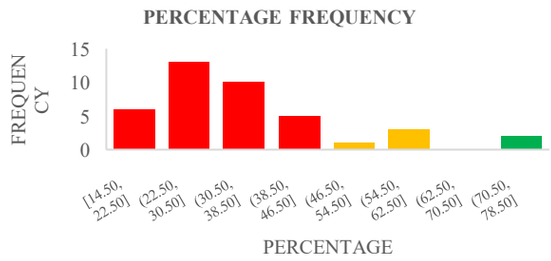


Figure 8
Percentage of pooled data
Source: Own creation based on analyzed data

Fifth grade results

Box 10

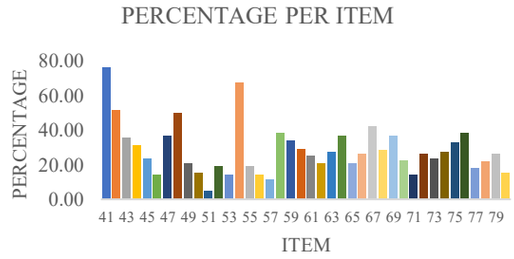


Figure 9
Overall hit rate
Source: Own creation based on analyzed data

Box 11

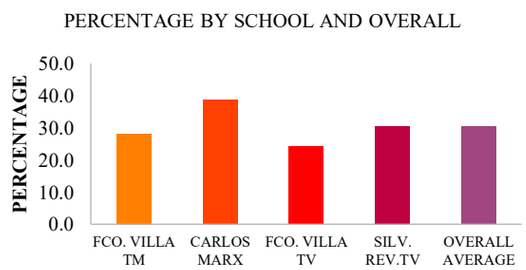


Figure 10
Percentage of achievement per item
Source: Own creation based on analyzed data

Box 12

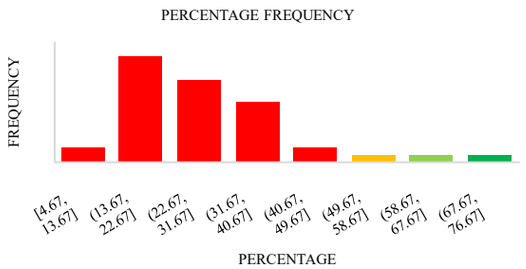


Figure 11
Percentage of pooled data
Source: Own creation based on analyzed data

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

Sixth grade results

Box 13

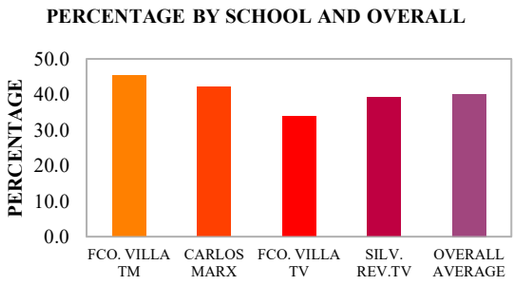


Figure 12

Overall hit rate

Source: Own creation based on analyzed data

Box 14

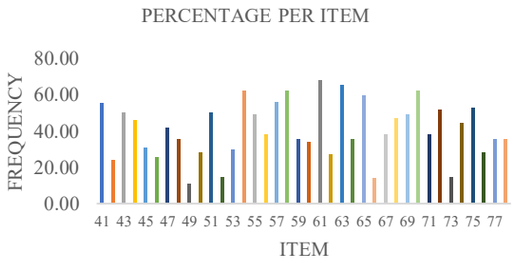


Figure 13

Percentage of achievement per item

Source: Own creation based on analyzed data

Box 15

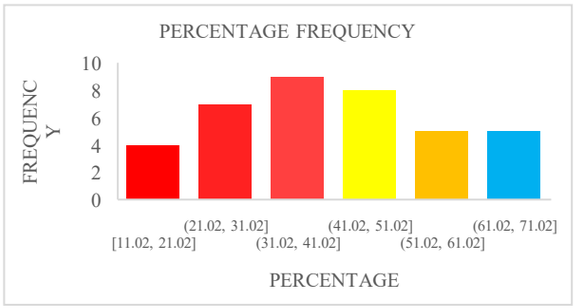


Figure 14

Percentage of pooled data

Source: Own creation based on analyzed data

Results

Assessment should always be considered an integral part of the teaching-learning process, as it provides data that, once analyzed, can be used to improve results, as suggested by the authors cited in the section on assessment.

The use of standardized tests provides a snapshot of the moment in which they are administered, but they also provide diagnostic elements that help teachers, school authorities and educational authorities in making decisions that focus on strategies aimed at improving learning, Once the areas with the greatest learning deficiencies have been identified, alternatives can be proposed to move along the path of continuous improvement, supporting students, teachers, and schools with materials, strategies, support, and advice to substantially increase student learning.

The Durango State government proposed the application of the exam in order to identify these gaps in students' knowledge, to develop a teaching strategy that would enable them to achieve lasting, meaningful and practical learning.

Undoubtedly, the results provide a great deal of information, which is why the analyses focused on the level of achievement of each grade in the sample schools, obtaining the results presented in Table 1 of this document.

There is no doubt that the results presented in the table are indicators of less than encouraging results in the learning process, as in all grades the average does not reach 50%. If we were to translate this to a grading scale of 5 to 10, the items, with the exception of those with the highest percentage, would be, so to speak, failed or without an adequate level of achievement.

However, it is also noteworthy that in Year 6, the number of questions with a percentage higher than 50 is greater than in the other years, which is possibly an indicator that students in this year have more cognitive tools to solve the exam they were given.

Conclusions

Assessment, whether carried out by internal or external evaluators, will always be an essential benchmark for improving the educational process, as stated by the authors referenced.

Even when standardized, assessment shows results that cannot be obtained simply by observing the group and recording their work, assignments, and so on. It is necessary to have a tool that encourages students to put their knowledge and skills into practice in solving problem situations that support them in making decisions in a real-life context.

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

Demonising standardized tests is akin to saying that teachers do nothing in the classroom. However, it should be remembered that there are many factors to be taken into account when creating a standardized test, as the teacher of the group does not participate in its development and application.

The standardized exam administered in April 2024 establishes some guidelines for analysis in order to make the necessary modifications to how students learn and what they learn, and how teachers teach and what they teach.

The analysis presented only emphasizes the achievement percentages of the questions that made up the exam. We believe that the next step is to identify the questions with the lowest achievement levels and identify what they were assessing in order to develop strategies that will improve teaching in this area of knowledge.

The assumption we made at the beginning is fully confirmed, as the results of the analysis show that there are indeed deficiencies in mathematics knowledge.

As for the purpose of the exam, we can also say that it was achieved, as it establishes the elements that need to be reviewed based on the questions in order to identify the conceptual and procedural knowledge that students should demonstrate in mathematics as part of their academic training.

Declarations

Conflict of interest

The authors declare that they have no conflict of interest. They have no known financial interests in competition or personal relationships that could have appeared to influence the article reported in this article.

Contribution of the authors

Díaz-Ledezma, José de la Cruz: Contributed to the search for antecedents and theoretical references for the work, developing the theoretical section on assessment as well as the elements corresponding to the legal basis for the assessment and the theoretical basis for the methodology used in the analysis of the data, as well as the collection of the data.

Lino-Gamiño, Juan Alfredo: Performed the statistical analyses using descriptive statistics and Microsoft Excel software to develop the corresponding analysis tables and graphs.

Torres-Gutiérrez, Arturo: Was responsible for reviewing and editing the product presented here, taking into account the templates provided for the presentation of the work and writing the introduction to the document.

Availability of data and materials

Full availability of materials online. Any specific data can be requested by emailing jdelacruzdiazl@institutoeducativodoloresdelrio.edu.mx

Funding

No financial support was received.

Acknowledgements

No institution or company provided funding for this research; the costs were covered by the researchers.

Abbreviations

SEP	Ministry of Public Education
SEED	Durango State Ministry of Education
PLANEA	National Learning Assessment Plan
PDA	Learning Development Processes
PED	Durango Educational Programme
SARS-CoV-2	Severe Acute Respiratory Syndrome- Coronavirus 2 [virus that causes COVID-19]
CVU	Unique Curriculum Vitae [in CONAHCYT database]
DGDC	General Directorate for Curriculum Development
DGFCMS	General Directorate for Continuing Education for Teachers in Service
SNI-CONAHCYT	National System of Researchers - National Council for Science and Technology

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10

References

Background

I. Casanova M. A. [1995]. *Educational Assessment Manual [2nd ed.]*. Madrid, Spain: La Muralla.

II. Casanova M. A. [1998]. *Educational Assessment. Basic School* [1st ed.]. SEP-Muralla.

III. Ministry of Public Education. [2012]. *The Formative Approach to Assessment [1st ed.]*. DGDC-SEP.

IV. SEP DGDC & DGFCMS. [2012]. *Study Programmes 2011. Teacher's Guide Basic Education. Primary. First Grade* [1st ed.]. Mexico: Ministry of Public Education.

Basic

Lukas J. & Santiago K. [2004]. *Educational Assessment [2nd ed.]*. Madrid: Alianza Editorial S.A.

Government of the State of Durango. [2023]. *State Development Plan. 2023-2028.* https://www.durango.gob.mx/ped.pdf

Hernández-Sampieri R. & Torres C. P. [2018]. *Research Methodology: Quantitative, Qualitative and Mixed Methods [1st ed.]*. Mexico City: McGraw-Hill Interamericana Editores S.A. de C. V. ISBN: *978-1-4562-6096-5*

Orellana L. [March 2001]. *Descriptive Statistics.* Department of Mathematics, Faculty of Exact and Natural Sciences, University of Buenos Aires. Argentina. Retrieved on 5 August 2024

SEED [2023]. Durango Educational Programme 2023-2028. Government of the State of Durango

Support

Demarchi Sánchez G. D. [2020]. *Assessment based on standardised tests in Latin America*. En-Contexto Journal of Research in Administration, Accounting, Economics and Society 8[13], 106-121. From

Hernández M. M., Ramírez F. É., & Gamboa C. S. [2018]. *The implementation of standardised assessment in a higher education institution*. Educational Innovation, 149-170.

Discussions

Scriven M. [1966]. *The Methodology of Evaluation.* Indiana University. Social Science Education Consortium.

ISSN: 2523-2495.
RENIECYT: 1702902

Díaz-Ledezma, José de la Cruz, Lino-Gamiño, Juan Alfredo and Torres-Gutiérrez, Arturo. [2025]. Durango 2024 learning assessment results. Statistical analysis of the mathematics area. Journal University Management. 9[20] 1-10: e4920110.
https://doi.org/10.35429/JUM.2025.9.20.4.1.10