



# Reading proficiency: design and validation of an instrument

*Irati Ortiz de Anda-Martín<sup>1</sup>, Leire Martín de Hijas-Larrea<sup>2</sup>  
 Asier del Arco<sup>3</sup>, Jone Hurtado-Reina<sup>4</sup> [0000-0003-4573-1635]  
 Laura Trimiño-Pérez<sup>5</sup> [0000-0003-1407-5751]  
<sup>12345</sup> Universidad de Deusto*

## Abstract

The main objective of this research was to design an instrument to measure reading proficiency in primary school students. Based on a sample of 216 schoolchildren from Bizkaia, the instrument consists of three versions, one for each cycle, and assesses 15 metalinguistic skills. Reliability analyses showed acceptable internal consistency, with coefficients ranging between .72 and .83. The sedimentation plot and the rotated component matrix identified five main factors: word and text recognition and structural comprehension, evaluation and critical reflection of information, advanced reading strategies, phonological awareness, and structural language comprehension. These results suggest a new five-level taxonomy of reading proficiency, contrasting with traditional fourlevel taxonomies. The comparison with previous studies shows significant coincidences and differences, highlighting the greater comprehensiveness of the instrument designed. In conclusion, the instrument developed provides a robust and complete tool for the assessment of reading proficiency in primary education, offering a solid basis for future research and pedagogical applications.

KEYWORDS: READING PROFICIENCY, INSTRUMENT, VALIDATION

## Reading proficiency

The development of Reading Proficiency (RP) is crucial for students' personal growth and social participation. The school is one of those responsible for cultivating language skills that include speaking, listening, reading, and writing (Tovar and Riobueno, 2018). In addition, its development has direct effects on the rest of the curricular areas, which makes it the basis for school success (Robledo et al., 2019). Knowing whether RP develops proficiently is one of the main educational purposes (Tovar and Riobueno, 2018). RP is a complex and multifaceted concept, since several skills contribute to its development, from decoding to the critical interpretation of information (Hoover and Gough, 1990), and a full development implies the acquisition of all of them.

Traditionally, these skills have been grouped into four levels, according to their purpose (Freebody and Luke, 1990; Wells, 1986): executive level (comprehension and application of the written code), functional level (comprehension of simple texts and use of reading for everyday tasks), instrumental level (interpretation, analysis, and comprehension of complex texts) and epistemic level (use of reading for knowledge construction and criticism).

However, although this taxonomy seems to be accepted by the literature, existing tests for measuring student RP are limited to only some of the skills that constitute it. Thus, while the PISA test delves into the skills of decoding, syntactic interpretation, and reflection, those consisting of the creation of inferences with reality and critical interpretation are measured in a much more superficial manner (OECD, 2019). The PIRLS test delves into the reflection and contrast of knowledge (Mullis and Martin, 2020), not considering other skills.

Therefore, the main objective of this research is, on the one hand, to confirm the taxonomy of RP and, on the other hand, to design and validate an instrument that measures all the skills that constitute it.

## **Methodology**

### ***Participants***

Participants were selected by non-probabilistic convenience sampling. The sample consisted of 216 schoolchildren (between 6 and 12 years), from first to sixth grade of primary school in the same school in Bizkaia (Basque Country).

### ***Instrument design***

The instrument created sought to evaluate RP in primary education students. Based on the literature, a total of 15 metalinguistic skills were defined, each of which was measured through a specific activity. Three versions of the instrument were designed, one for each school cycle, and it was submitted to three experts for validation.

### ***Data analysis***

Analysis of the results was performed with the statistical package SPSS 28 version. The reliability of the designed instrument was estimated and an exploratory factor analysis was carried out using the principal components method.

## **Results**

Reliability analysis showed that the internal consistency of the instrument was acceptable (Contreras and González, 2022): .83 in the first cycle, .74 in the second cycle, and .72 in the third cycle.

On the other hand, the sedimentation plot (Figure 1) and the rotated component matrix suggested 5 factors in which the 15 measured skills are grouped:

- Word and text recognition and structural comprehension.
- Evaluation and critical reflection of information for the creation of new ideas.
- Advanced/deep reading strategies.
- Phonological awareness.
- Structural understanding of language and detection of key elements.

Thus, a new taxonomy for RP is proposed, consisting of fifteen skills grouped into five levels.

## **Discussion**

The main objective of this research was to design an instrument to assess RP in primary school students. Although it was created based on four levels, the results suggested that the skills assessed were grouped into five levels.

Previous studies, Contreras and González (2022), also proposed five levels for RP, two of which (organization and elaboration) present similarities with this study. Others have proposed an instrument

consisting of 6 dimensions (Cadavid-Ruiz, 2016; Rosas et al., 2011). The dimensions of recognition and structural comprehension of the text, phonological awareness and structural understanding of language, and detection of key elements proposed in them show similarities with those obtained in this work. However, these studies do not consider more complex factors that require reflection and evaluation.

Also, Candel et al (2006) do not specify levels related to evaluation, reflection, analysis, and structure. They only propose two fundamental levels: comprehension of the text and creation of inferences through previous knowledge.

Given the direct influence of RP on academic performance, it is considered necessary to develop and promote it in its entirety, not only in Compulsory Education, but also in Higher Education and the university context (González-Betancor et al., 2023). The instrument designed covers RP skills more comprehensively, grouping them according to their specific objectives and showing a new taxonomy that extends the traditional ones.

## Conclusions

The present study aims, on the one hand, to confirm the taxonomy of RP and, on the other hand, to design and validate an instrument to measure RP in primary school students.

The results obtained provide a new taxonomy for RP, consisting of five levels, which offers a more detailed view of reading skills compared to previous ones. This suggests that RP is a multifaceted construct that can be comprehensively assessed through the designed instrument.

In conclusion, the developed instrument offers a valuable and robust tool for RP assessment in primary school students, providing a solid basis for future research and pedagogical applications at all educational levels.

## Limitations

The main limitation of the study is the size and homogeneity of the sample, which may limit the generalizability of the results.

In future research, it would be beneficial to expand the sample and diversify it to include students from different educational contexts. Likewise, the application of the instrument in longitudinal studies could be explored to verify its consistency and validity over time. It would also be interesting to investigate how specific pedagogical interventions may influence the development of the identified dimensions of RP.

## References

- Candel, M., Fernández, C. and León, J. (2006). Una propuesta de evaluación de la competencia lectora en niños de 6º de Educación Primaria. *Investigaciones Psicología Educativa* 12 (1), pp. 65-78. <https://acortar.link/9nUOeb>
- Cadavid-Ruiz, N., Quijano-Martinez, M., Escobar, P., Rosas, R. and Tenorio, M. (2016): Validación de una prueba computarizada de lectura inicial en niños escolares colombianos. *Ocnos: Revista de estudios sobre lectura*, 15(2), pp. 98-109. <https://acortar.link/Y6ePZt>

- Contreras, A. and González, R. (2022). Validación de un instrumento evaluativo que mide la competencia lectora con grado de dificultad progresiva mediante la taxonomía de Barret en estudiantes de segundo año medio. *Revista de estudios y experiencias en educación*, 21(47), pp. 75-95. <https://doi.org/10.21703/0718-5162202202102147004>
- Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics And Sex and Drugs and Rock "N" Roll*. Sage.
- Freebody, P. and Luke, A. (1990). Literacies programs: Debates and demands in cultural context. *Prospect: An Australian Journal of TESOL*, 5(3), pp. 7-16. <https://acortar.link/vnsN0F>
- González-Betancor, S., Fernández-Monroy, M., Galván-Sánchez, I. and López-Puig, A. (2023). Academic performance of first-year university students: modelling the role of reading competence. *Higher Education Research and Development*, 42(6), pp. 1422-1437. <https://acortar.link/d6O7Zm>
- Hoover, W. and Gough, P. (1990). The simple view of reading. *Read Write*, 2(2), pp. 127-60. <https://doi.org/10.1007/BF00401799>
- Mullis, I. and Martin, M. (2020). *PIRLS 2021 Assessment Frameworks*. TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College and International Association for the Evaluation of Educational Achievement (IEA).
- OECD (2019). *PISA 2018 Assessment and Analytical Framework*. PISA, OECD Publishing. <https://doi.org/10.1787/b25efab8-en>.
- Robledo, P., Fidalgo, R. and Méndez, M. (2019). Evaluación de la comprensión lectora a partir del análisis de la práctica del Profesorado y la Interacción Docente-Estudiante. *Revista de Educación*, 384, pp. 97-113. <http://doi.org/10.4438/1988-592X-RE-2019-384-414>
- Rosas, R., Medina, L., Meneses, A., Guajardo, A., Cuchacovich, S. and Escobar, P. (2011). Construcción y validación de una prueba de evaluación de competencia lectora inicial basada en computador. *Pensamiento Educativo*, 48(1), pp. 43-62. <https://doi.org/10.7764/PEL.48.1.2011.4>
- Tovar, L. and Riobueno, J. (2018). El club de lectura como estrategia creativa para fomentar la lectura creativa en los estudiantes educación integral. *Revista de Investigación Educativa*, 36(1), pp. 123-137. <https://acortar.link/blccaN>
- Wells, G. (1986). *The meaning makers: children learning language and using language to learn*. Heinemann Educational Books