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Analysis of lexical quality and its relation to writing quality for 4th grade, primary school students in Chile

- Gabriela Gómez Vera ORCID: orcid.org/0000-0002-6842-3953[1,3],
- Carmen Sotomayor[1],
- Percy Bedwell[2],
- Ana María Domínguez[2] &
- […]
- Elvira Jéldrez[1]
- - Show fewer authors

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Abstract

Few studies have addressed vocabulary quality in developing writing skill in Spanish. Even less addressed it within the Chilean educational system. The specific objective of this study was to characterize, using a comprehensive set of indicators, the quality of the vocabulary produced by Chilean 4th grade students. Based on a national writing survey, a sample of 2056 texts written by 685 students was collected (narrative, persuasive, and informative texts). Current literature defines lexical quality as a composite of diverse factors that, while distinct, are interrelated. To represent the properties of the vocabulary, a set of indicators were selected: (a) lexical diversity; (b) lexical sophistication; and (c) lexical density. Using multilevel modeling (students and schools as levels 1 and 2) to explain a global writing score we found that diversity was a significant determinant for narrative and persuasive texts, density was a significant determinant for the three genres and sophistication was a significant determinant for narrative and expository text. In addition, indicators related to gender and socioeconomic conditions were only significant determinants of narrative stories. The parts of speech most often used also varied according to the purpose of each text. In all genres, words had a short extension and were

very sensitive to the input presented in the stimuli. These results imply a significant challenge to this education system: how to promote the development of vocabulary in all children in order to support language learning.

Notes

1. 1.

   For those text in the sample with more than 50 different words, the index D was calculated using VOCD procedure of CLAN program (MacWhinney, 2000). The correlation between D index and CTTR measure was calculated for each genre: Narrative $r = 0.763$, N = 630; Persuasive $r = 0.670$, N = 296; Informative $r = 0.757$, N = 271.

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Author information

Affiliations

1. Center for Advanced Research in Education, University of Chile, Santiago, Chile
    - Gabriela Gómez Vera
    - , Carmen Sotomayor
    - & Elvira Jéldrez
2. Arauco Fundation, Santiago, Chile
    - Percy Bedwell
    - & Ana María Domínguez
3. Periodista José Carrasco Tapia Nº 75, Santiago, Chile
    - Gabriela Gómez Vera

Authors

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5. Elvira Jéldrez
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Corresponding author

Correspondence to Gabriela Gómez Vera.

Electronic supplementary material

Below is the link to the electronic supplementary material.

Supplementary material 1 (TIFF 2721 kb)

Supplementary material 2 (TIFF 2721 kb)

Appendices

Appendix 1: Usage frequency of headwords suggested through the writing prompt

Nouns suggested through the writing prompts

Nouns	Frequency
Delfín (Dolphin)	2505
Niño (Boy)	1691
Dinosaurio (Dinosaur)	1291
Paseo (Walk)	962
Hueso (Bone)	959
Director (Director)	842
Permiso (Permission)	588
Curso (Course)	519
Resto (Remain)	428
Escuela (School)	411
Investigador (Researcher)	266
Plata (Silver)	188
Carta (Letter)	185
Descubrimiento (Discovery)	112
Noticia (News)	122

Verbs suggested through the writing prompts

Verbs	Frequency
Ir (To go)	2188

Verbs	Frequency
Dar (To give)	703
Descubrir (To discover)	255
Escribir (To write)	76

Appendix 2: Descriptive statistics for variables in mixed models

Narrative stories (N = 683)

Variable	M	SD
CTTR index (Variety)	4.11	0.58
LC-CTTR index (Density)	3.20	0.66
Polysyllable frequency (%)	13.62	4.98
Reading score	264.51	52.21
Gender	0.50	0.50
Socioeconomic status	0.00	1.00
Narrative writing score	50.10	9.86

Persuasive letters (N = 686)

Variable	M	SD
CTTR index (Variety)	3.72	0.61
LC-CTTR index (Density)	2.44	0.54
Polysyllable frequency (%)	21.89	6.77
Reading score	263.37	52.13
Gender	0.50	0.50
Socioeconomic status	0.00	1.00
Argumentative writing score	50.00	10.00

Informative news report (N = 686)

Variable	M	SD
CTTR index (Variety)	3.72	0.61
LC-CTTR index (Density)	2.44	0.54
Polysyllable frequency (%)	21.89	6.77
Reading score	263.20	52.13
Gender	0.50	0.50
Socioeconomic status	0.00	1.00
Expository writing score	50.02	9.99

Appendix 3: Variations between genders in the use of words suggested through the writing prompts

Gender and number variation of the headword *niño* (child)

Word	Frequency
Niño (boy)	1441
Niños (boys)	180
Niña (girl)	32

Word	Frequency
Niñito (little boy)	25
Niñas (girls)	11
Niñita (little girl)	1

Gender and number variation of the headword *investigador* (researcher)

Word	Frequency
Investigador [male researcher]	266
Investigadores [male researchers]	51
Investigadora [female researcher]	2
Investigadoras [female researchers]	1

Gender and number variation of the headword *director* (principal)

Word	Frequency
Director [male principal]	842
Directores [male principals]	1
Directora [female principal]	56
Directoras [female principals]	0

Appendix 4: Multilevel linear regression, null models (mean of iterations estimations regressions)

	Narrative	Persuasive	Informative
Intercept (Thresholds)	49.603*** (0.47)	49.35*** (0.47)	49.64*** (0.47)
Random effects			
Intra-class correlation	0.17	0.16	0.16
Level 2 (school) variance	16.37	16.16	16.15
Level 1 (student) variance	81.69	82.04	83.78
−2 log V	5037.64	5061.40	5074.20
N Students	683	686	686
N Schools	272	272	272

1. Standard errors in parentheses
2. *** $p < 0.001$

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