

Enhancing Writing Self-Efficacy Beliefs of Students with Learning Disabilities Improves their Writing Processes and Products

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Abstract

Introduction. The use of self efficacy has been suggested as an effective classroom intervention procedure. The present research examined the use of self-efficacy training on the writing of Spanish elementary student with learning disabilities.

Objectives. We present a research study focused on the improvement of the writing product and the writing processes fostering self-efficacy in writing. We assessed pre and post results, comparing an experimental and a control group of students with LD. The question is whether we can improve, through a writing self-efficacy intervention, not only the writing product but the processes involved, and their relationship.

Method. In total 60 students participated. These students were placed in either the experimental or control group. Two writing samples were evaluated. The four major components of self-efficacy were taught to the experimental group.

Results. The results show improvement, not only in the process, but in the product of writing (productivity, coherence, structure and quality) in the experimental group, and in the relationship of process and product in the experimental group but not in the control one

Discussion. More instructional and experimental studies are required to confirm the nature of the process-product relationship in writing. The benefits of employing process product model of writing appears warranted.

Key Words: Self-Efficacy, Writing, Spanish Elementary Students, Learning Disabilities, Writing Products

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Mejorar las creencias de auto-eficacia para la escritura de los alumnos con dificultades de aprendizaje mejora también sus procesos y productos de escritura

Resumen

Introducción. La autoeficacia se muestra como uno de los determinantes motivacionales más importantes por lo que parece tener gran influencia sobre el rendimiento académico de los alumnos. Por ello, el presente estudio examina la influencia de la auto-eficacia en los procesos y productos de composición escrita, a través de una intervención específica que entrena las cuatro fuentes de autoeficacia propuestas por Bandura.

Método. Un total de 60 alumnos con dificultades de aprendizaje o bajo rendimiento de 5º y 6º de Educación Primaria, se han distribuido en dos grupos: uno *experimental* (40 alumnos), que ha sido sometido a 10 sesiones de instrucción específica en autoeficacia hacia la escritura, dentro de su contexto escolar; y otro grupo *control* (20 alumnos) que han recibido el currículum ordinario.

Resultados. Los datos muestran una mejora significativa no sólo de los textos escritos por los alumnos con DA sino también de los procesos que llevan a cabo a la hora de escribir, pero sólo en los alumnos intervenidos.

Discusión y Conclusión. Se requieren más estudios instruccionales y experimentales para confirmar la naturaleza de la relación proceso-producto en composición escrita, pero parece que están asegurados los beneficios de utilizar un modelo de proceso-producto de la escritura.

Palabras Clave: Autoeficacia; Composición escrita; Alumnos de educación primaria; Dificultades de aprendizaje; Proceso-producto de escritura

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Introduction

Different studies suggest that texts of students with LD are generally shorter, poorly organized, with more superfluous data and mistakes in their structure than their non LD peers (Graham & Harris, 2003). It is possible that these differences in the writing products were caused by differences in writing processes, given that it is considered that students with LD carry out little planning in their writing, which refers to a lack of competence in planning of writing and content generation as well as in their attempts to organize a structure for the compositions and to set the goals for the writing sub-processes (García & Fidalgo, 2008).

In fact, Braaksma, Rijlaarsdam, van den Bergh, and van Hout-Wolters (2004) found that the orchestration of writing processes is significant in contributing to text quality, so competent and weak writers differ in the way they distribute cognitive and metacognitive activities throughout the writing process. Also, other studies state that it is not possible to completely comprehend the cognitive processes that occur during writing just by their writing products; complementary methods such as real-time ones are necessary (Olive & Levy, 2002), as well as it is necessary to actualize current Spanish legislation about written composition (Rabanazo & Moreno, 2008)

Furthermore, motivational variables are important determinants of writing (e.g. Graham, Berninger, & Fan, 2007; Hayes, 2006). Researchers, as Martinez (2009), have found lack of motivation in students with low academic performance. Also, studies carried out by García and de Caso (2004) attempted to enhance LD students' motivation to improve their writing, but although the students gained better results in writing products after instruction, they did not modify their motivation towards writing. For this reason the researchers then focused on only one motivational factor, self-efficacy, given that different authors state that writing self-efficacy has a direct influence on the other motivational determinants (Pajares & Cheong, 2003; Pajares & Valiante, 1997; Zimmerman & Risemberg, 1997).

The question is whether we can improve, through a writing self-efficacy intervention, not only the writing product but the processes involved, and their relationship.

Method

Participants

A total of 60 fifth- and sixth- grade Spanish students with LD took part in this research. They were randomly assigned to either the experimental or control conditions, so that 40 students (20 males and 20 females) comprised the experimental group, who were trained in the specific writing program, and the other 20 students (12 males and 8 females) constituted the control group, who only received the standard instruction at their regular classes.

Instruments

All participants wrote a narrative text before and after the instructional program was given to the participants in the experimental group. While performing this writing task, the students heard a one-second tone played at random with a mean interval of 45 seconds. On hearing the tone, the students responded by indicating in a blank writing log, divided into multiple sections, the activity in which they were engaged. They chose from seven response categories: *Reading references* –reading information and data about the topic; *Thinking about content* –thinking about things to say in the essay; *Writing outline* –making a plan or notes about the essay that I am going to write; *Writing text* –writing my essay; *Reading text* –reading through part or all of my text; *Changing text* –making changes to my composition (correcting spelling mistakes, changing words, adding words, etc.); and *Unrelated* –doing or thinking something unrelated to the text (talking to my partner, looking through the window, etc.).

We also took measures of writing productos through the EPPyFPE instrument (Evaluación de los Procesos de Planificación y otros Factores Psicologicos de la Escritura) [Planning Processes Assessment and other Psychological Factors of Writing] (García, Marbán & de Caso, 2001), and self-efficacy measures through different questionnaires.

Writing Self-efficacy Program

The program designed was based on the four sources of self-efficacy according to Bandura (1997), following suggestions of McCabe (2003). During the first two sessions we trained and made explicit all processes involved in writing. Once ensured that all the students

in the experimental condition were familiar with the writing processes, we started to enhance their writing self-efficacy by establishing a positive psychological and affective state not only between students and teachers but also among the students (see De Caso & García, 2007 to review how self-efficacy sources were implemented). The second source of self-efficacy introduced was verbal persuasion and feedback, as it consolidates the positive psychological state. While continuing to carry out strategies to establish an optimistic psychological state and giving verbal persuasion, the next source introduced in session seven was enactive mastery. This was designed to make students aware that they could accomplish the writing task. Finally, we introduced the concept of vicarious experience using modelling between the students in the last two sessions, thus, the better student marked his partner's work, and the poorer student also marked his partner's paper.

Procedures

Once the sample was established, all participants were assessed in their regular classes to establish a baseline and to verify that students in the experimental group and students in the control group had the same writing level. The next step was to train the participants in the experimental group, administering the specific program in the context of the students' regular Spanish language classes, at a rate of two sessions per week. The program comprised 10 training sessions, each lasting approximately 50 minutes. One week after the trained program finished, all participants were again assessed using the same measures as in the initial assessment.

Results

Writing Products

We carried out a general linear model 2x1 comparing the data from the post program assessment. First, we found that the multivariate contrast in the writing task taken jointly is statistically significant giving high effect size differences [$F_{(26, 33)} = 2.55$; $p = .006$; $\eta^2 = .668$], which means there were highly significant differences between the participants in the control group and participants in the experimental one.

When we analyzed the inter-subjects effects we found statistically significant differences in 24 of the 31 writing variables, always in favor of the experimental group and with a size effect ranging from .11 to .41, as Table 1 shows.

Table 1. Results in narrative writing products post-test, control vs. experimental.

Variables	EXPERIMENTAL (N=40)	CONTROL (N=20)	F _(1,58)	p	η ²
	M (SD)	M (SD)			
Paragraphs	3.62 (2.73)	1 (0)	18.28	.001	.24
Sentences	9.25 (7.60)	1.75 (0.91)	19.15	.001	.24
Verbs	28.28 (12.57)	15.10 (9.48)	17.04	.001	.22
Content words	59.50 (21.07)	30.25 (14.36)	31.14	.001	.34
Functional words	58 (25.06)	29.90 (18.26)	19.79	.001	.25
Determinants	28.13 (11.08)	13.65 (7.84)	27.16	.001	.31
Productivity total	173.90 (61.81)	88.90 (48.03)	28.97	.001	.33
Referential ties	18.85 (10.63)	9.45 (7.01)	12.78	.001	.18
Lexical ties	15.50 (9.52)	8.35 (6.83)	8.93	.004	.13
Referential coherence total	34.35 (17.11)	17.80 (13.21)	14.33	.001	.19
Structural ties	3.62 (2.84)	1.65 (2.09)	7.61	.008	.11
Connective ties	12.87 (7.01)	7.70 (5.18)	8.52	.005	.12
Relational coherence total	2.55 (0.81)	1.95 (0.68)	13.39	.001	.18
Paragraph structure	0.37 (0.49)	0.05 (0.22)	7.91	.007	.12
Other total coherence	2.55 (0.81)	1.95 (0.68)	7.98	.006	.12
Number of commas	4 (4.55)	.040 (0.75)	12.21	.001	.17
Number of full stops	6.73 (4.64)	1.40 (1.09)	25.35	.001	.30
Total structure	5.55 (1.03)	3.60 (1.27)	40.44	.001	.41
Total punctuation	13.75 (11.28)	1.85 (1.56)	21.84	.001	.27
Reader measures: structure	5.55 (1.03)	3.60 (1.27)	6.82	.011	.10
Reader measures: coherence	2.22 (0.80)	1.50 (0.60)	12.71	.001	.18
Reader measures: quality	2.48 (1.03)	1.45 (0.68)	15.95	.001	.21
Reader measures: total	6.60 (2.36)	4.50 (1.70)	12.51	.001	.17

*We only represent the statistically significant values (p<0.05).

** η² (eta-squared statistic) = Estimates of effect size. The Cohen (1988) rule signals = 0.01 – 0.06 (small effect); > 0.06 – 0.14 (medium effect); > 0.14 (large effect)

Writing Processes

We used a general lineal model, in the post-test, in that we counted the time and the percentages that the students spent on each writing process, and how many processes they used.

Related to the total time the students spent on their narration, the students in the experimental group doubled the time from the pre-test to the post-test, the control students spent

approximately the same time in pre-test and in post-test (from 285.75 seconds to 211.5 seconds) [$F_{(2, 57)} = 10.91$; $p < 0.001$; $\eta^2 = 0.277$].

We also found that experimental group improved their scores both in the frequency of but also the amount of time spent on reading references, writing text, reading the written text and changing the text, as table 2 shows.

Table 2 Results in narrative writing process post-test, control vs. experimental

Variables	EXPERIMENTAL (N=40)	CONTROL (N=20)	$F_{(47,9)}$	P	η^2
	M (SD)	M (SD)			
Total process frequency	18.86 (4.39)	11.25 (3.64)	43.76	.001	.44
Writing frequency	18.27 (4.72)	9,70 (4.65)	43.14	.001	.44
Time Writing	822.16 (212.56)	436.50 (209.59)	43.14	.001	.44
Writing time percentage	96.37 (8.39)	85.05 (25.28)	6.24	.015	.10
Writing time percentage at 1st moment	32.18 (2.09)	28.20 (10.72)	4,85	.032	.08
Writing time percentage at 3rd moment	31.32 (4.14)	26.10 (12.89)	5.15	.027	.08
Category 1 frequency	.027 (.16)	.20 (.41)	5.12	.028	.08
Category 4 frequency	14.97 (4.03)	8.10 (5.33)	29.98	.001	.35
Category 5 frequency	.97 (1.48)	.10 (.44)	6.57	.013	.10
Category 6 frequency	.94 (1.48)	.25 (.55)	4.03	.049	.06
Category 1 Time	11.21 (7.39)	9.00 (18.46)	5.12	.028	.08
Category 4 Time	673.78 (181.39)	364.50 (239.85)	29.98	.001	.35
Category 5 Time	43.78 (66.65)	4.50 (20.12)	6.57	.013	.10
Category 6 Time	42.56 (67.03)	11.25 (24.75)	4.03	.049	.06
Category 4 1° frequency MNP	4.21 (1.52)	2.05 (1.82)	22.75	.001	.29
Category 4 1° time MOMNP	203.10 (69.24)	106.50 (87.17)	21.02	.001	.27
Category 4 2° frequency MOMNP	4.89 (1.61)	2.70 (1.83)	21.74	.001	.28
Category 4 2° time MOMNP	235.94 (72.25)	135.75 (85.88)	21.84	.001	.28
Category 4 3° frequency MOMNP	4.37 (2.38)	2.40 (1.75)	10.60	.002	.16
Category 4 3° time MOMNP	211.62 (106.75)	122.25 (85.99)	10.35	.002	.15

*We only represent the statistically significant values ($p < 0.05$).

** η^2 (eta-squared statistic) = Estimates of effect size. The Cohen (1988) rule signals = 0.01 – 0.06 (small effect); > 0.06 – 0.14 (medium effect); > 0.14 (large effect)

*** Category 1 = reading references; category 3 = outline; category 4 = writing text; category 5 = reading the text; and category 6 = changing the text

Relations between writing processes and products

We observed statistically significant correlations, in the post-test, between writing product and process in both control and experimental groups, in text based measures (productivity, coherence, but in structure only in the experimental group). Concretely, structural

structure correlated with the percentage of time spent writing in a 2nd moment ($\rho = .32$); in the category of writing the language ($\rho = .50$) and changing writing ($\rho = .32$); as well as the frequency of writing in the category of reading the writing ($\rho = .32$) in the experimental group, while no significant differences were observed after the intervention in the control group.

We did not find statistically significant correlations in the pre-test. But we found statistically significant correlations in the experimental but not in the control group, in the post-test, in reader based measures (in structure, coherence and quality). For example, we observed statistically significant correlations as regards structure in the categories: make an outline ($\rho = .36$), changing text ($\rho = .44$), time and frequency in carrying out the task, also concerning coherence with time and frequency of changing text ($\rho = .45$), time devoted to changing text ($\rho = .42$), and the category of thinking about content in a 2nd time ($\rho = -.31$). Furthermore, we noted differences between the quality of text in the categories of frequency and time of making an outline ($\rho = .37$), and changing text ($\rho = .37$).

Discussion

We investigated whether a specific training program in writing self-efficacy is effective in improving the writing products and writing processes of children with LD.

As we measured writing self-efficacy and we found significant differences between groups (García & de Caso, 2006), we could probe that enhancing the writing self-efficacy through the increment of the Banduras' four sources of self-efficacy has a powerful impact on the writing processes and products. Trained students improved not only the writing product (structure, coherence, quality) which could be translated as a significant improvement of their writing (de-Caso & García, 2007, García & de-Caso, 2006; Graham, Harris, & Mason, 2005; Graham & Perin, 2007), but also in different writing processes such as the total frequency of processes, time spent on writing, the frequency and time spent on reading, writing and checking the essay, after the training program (Braaska, *et al.*, 2004). We can question the possibility that the improvement of the processes affect their quality. One approach would be to study the relationship between the processes and the product. We found significant relationships between the product and the processes, in the post program assessment, in the experimental group but not in the control group, suggesting the influence of some type of training.

So, we can highlight the effectiveness of the treatment, not only in the processes involved (frequency, time and moment), but in the product (structure, coherence and quality).

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