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Design and validation of a scale of self-perception of macronarrative competence in university students

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Abstract

The measurement of narrative competence at the higher education level is an understudied issue. The aim of this research is to elaborate and validate a scale to measure the self-perception of the level of macronarrative competence of university students, in three dimensions: textual narrative, digital storytelling and transmedia storytelling. The results demonstrate the content validity of the instrument by judges' criteria; likewise, the three dimensions obtained a high acceptance through the results of Aiken's V coefficient. The exploratory factor analysis of the macronarrative competence scale showed an adequate correlation between the items and a good sample adequacy respectively. It is concluded that the proposed scale is a valid and reliable instrument to measure self-perception of macronarrative competence.

Keywords: Narrative competence; textual storytelling; digital storytelling; transmedia storytelling; tests and scales; Higher Education.

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Diseño y validación de una escala de autopercepción de la competencia macronarrativa en estudiantes universitarios

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Resumen

La medición de la competencia narrativa en el nivel superior es un asunto poco estudiado. El objetivo de esta investigación es diseñar y validar una escala para medir la autopercepción sobre el nivel de competencia macronarrativa de los estudiantes universitarios en tres dimensiones: narrativa textual, narrativa digital y narrativa transmedia. Los resultados demuestran la validez de contenido del instrumento por criterio de jueces; asimismo las tres dimensiones obtuvieron una alta aceptación a través de los resultados del coeficiente V de Aiken. El análisis factorial exploratorio de la escala de competencia macronarrativa mostró una adecuada correlación entre los ítems y una buena adecuación muestral respectivamente. Se concluye que la escala propuesta es un instrumento válido y fiable para medir la autopercepción de la competencia macronarrativa.

Palabras clave: Competencia narrativa; narrativa textual; narrativa digital; narrativa transmedia; tests y escalas; Educación Superior.

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INTRODUCTION

Narrative is an age-old practice that has allowed human beings to express their deepest experiences and emotions. Scolari (2013) argues that we are homo fabulators, that is, beings who tell stories thanks to the faculty of language. For many centuries, oral narratives, mainly myths, were the means by which an explanation of the world was given (Fludernik, 2019); later, with the appearance of writing, written narratives made it possible to express and build worlds based on words. In later centuries, new media emerged that allowed storytelling such as cinema, hypertext, digital narrative, video games, etc.

The study of narrative has had several approaches, but mainly literary studies have made great contributions to the approach of narrative texts. It was the Russian formalists at the beginning of the 20th century who initiated a systematic study; later, structuralism and, in particular, narratology contributed to the analysis of the structures of narrative texts, which are made up of a succession of events. Their organization revolves around a plot axis with a series of actions performed by characters in a given time and space (Orellana et al., 2022). From a poststructural perspective, other pragmatic elements are considered for the study of narrative, such as the narrator's intention, the social context in which it is produced, the narrator's narrative competence, the audience, etc. (Gudmundsdottir, 1995). From this approach, narrative must be seen beyond the structures of the story. Here the intentionality with which it has been produced and received that matters. The act of narrating is not only expressed in literary creations, but also in the everyday life of human beings, mainly through oral stories.

On the other hand, telling a story using different media has given rise to new forms of narrative expression. In the late 1980s, Joe Lambert introduced the term digital storytelling and defined it as a narrated short film (Wu & Chen, 2020; De Jager et al., 2017). Digital storytelling has a technological support and has a multimedia character, i.e., it presents elements of textual, visual, auditory nature, which makes it possible to create hybrid narratives (Villalustre & Del Moral, 2014). Its application in various fields of human endeavour has been widely accepted, especially in education (Del Moral et al., 2016; Del Moral et al., 2018; Di Blass, 2022; Kisno et al., 2022; Rubegni & Landoni, 2015). Moreover, according to several studies, the use of digital storytelling contributes to the development of several competences in students such as communicative and narrative competence (Del Moral et al., 2016) as well as digital competence (Preradovic et al., 2016).

At the beginning of the 21st century, Jenkins (2003) coined the term transmedia storytelling to refer to the convergence of media to expand a story on different platforms. Scolari (2013) points out that this expansion occurs "a través de diferentes sistemas de significación (verbal, icónico, audiovisual, interactivo, etc.) y medios (cine, cómic, televisión, videojuegos, teatro, etc.)" (2013, p. 24). User participation is crucial in this process of story expansion. Freeman (2017) points out three characteristics of transmedia storytelling:

- character-building, and its link with other fictional characters;
- world-building, which has to do with the design of a fictional universe;
- authorship, individual or collective, and its role in the extension of the story in other media.

The expansion of these narrative universes has been made possible, to a large extent, by technological development in recent decades.

Traditionally, narrative competence has been related to the comprehension and production of narrative texts, both oral and written, whose argumentative axis allows the narrated events to present the necessary coherence and cohesion (Orellana et al., 2022; Widdershoven et al., 2020). Likewise, narrative competence has been associated with literary competence, since the narrative genre has a strong presence in universal literature mainly through novels and short stories. This competence comprises several aspects: reading the text, knowledge of the conventions of literary discourse and recognition of the contextualization of the text (Mendoza, 2010); it also demands from the reader a predictive, inferential, intertextual and critical capacity (Lluch, 2003), which goes beyond a literal reading of the literary

text (Alfonso-Benlliure & Mínguez-López, 2022). From a more up-to-dated perspective of literary studies, Marinkovich (2001) points out that narrative competence is: "esquemática (superestructura narrativa), semántica (macroestructura semántica o de base temática) y pragmática (macroacto del discurso llevado a cabo mediante el relato)" (Marinkovich, 2001, p. 160). All these approaches to narrative competence only refer to the textual level.

Given the recent technological development, there is a need to integrate the different ways of narrating a story. For this reason, this research considers narrative competence as the set of knowledge, skills and attitudes to understand and produce narrative texts, digital storytelling and transmedia storytelling, and therefore proposes the denomination of macronarrative competence, which would be composed of three dimensions: textual narrative, digital storytelling and transmedia storytelling:

- The first dimension, textual narrative, has to do with knowledge of narrative genres and the structure of narrative texts; that is, it is the ability to analyze, interpret, produce and evaluate narrative texts, as well as to connect with a narrative text on an emotional level.

- The second dimension, digital storytelling, has to do with knowledge of digital storytelling, i.e., the ability to analyze, interpret, and evaluate digital storytelling, as well as the ability to connect with digital storytelling on an emotional level.

- The third dimension, transmedia storytelling, has to do with knowledge of transmedia storytelling, i.e. the ability to analyze, interpret, produce and evaluate transmedia storytellings.

The measurement of narrative competence has been studied mainly at the child level (Iandolo, 2011) and at the high school level (Fernández et al., 2019); however, in the field of higher education it is a field to be explored, even more so if the aim is to integrate the textual, digital and transmedia levels, as described above.

The proposed macronarrative competence has its correlate in other competences that have surpassed its initial denomination, as is the case of media competence, understood as a set of knowledge, skills and attitudes that allow to critically interact with media messages; and is composed of six dimensions: languages; technology; interaction processes; production and dissemination processes; ideology and values; and aesthetic dimension (Ferrés & Piscitelli, 2012; Mateus, 2019). Likewise, Kačinová and Sádaba-Chalezquer (2022) propose an "extended or augmented competence" as a holistic form that transcends media competence and comprises in turn other competences: personal, social, civic and cultural. Similarly, Scolari (2018) along with other researchers, within the Transmedia Literacy project, proposes a taxonomy of 134 transmedia competencies organized into 9 dimensions: production; risk prevention; performance, social, individual and content management; media and technology; ideology and ethics; narrative and aesthetics. The latter is presented transversally, since young people consume indistinctly diverse media and platforms, and are more attracted by the stories and content than by the type of media platform used to tell them (Guerrero-Pico & Lugo, 2018). Similarly, there are other proposals with a transmedia integration approach (Palioura & Dimoulas, 2022).

The main objective of this research is to develop and validate a scale to measure the self-perception of the level of macronarrative competence of university students in three dimensions: textual narrative, digital storytelling and transmedia storytelling. The central question to be answered is the following: What is the level of self-perception that university students have about their macronarrative competence?

MATERIALS AND METHODS

Design and procedure

This is an instrumental cross-sectional study (Ato et al., 2013). The research procedures were developed following the six stages proposed by Meza and Gonzalez (2020):

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1. Construct proposal: the construct "macronarrative competence" was proposed, understood as the set of knowledge, skills and attitudes to understand and produce narrative texts, digital storytellings and transmedia storytellings

2. Construction of the pilot instrument: the existing literature was reviewed to adequately define the construct to be measured, and the items and the dimensional structure of the construct were elaborated.

3. Content validation: the instrument was validated by means of expert judgment and a qualitative application to education students. First, in relation to the expert judgment, several judges independently evaluated the theoretically developed measurement model, i.e., the clarity, coherence and relevance of the construct, the quality of the wording of the items and their relevance for each subscale. These criteria were evaluated with scores between 1 and 4. In total, eight judges with different professional profiles participated in the activity: three specialists in communication, three specialists in comparative literature, one in literary theory, and one in education. In addition, four of them are of Peruvian nationality while the rest are of other nationalities: Mexicain, Colombian and American. All of them hold a doctorate degree and have a postgraduate degree in literature, communication and education.

Secondly, a qualitative application was carried out as a pilot test with the modifications suggested by the experts' judgment. The purpose was to confirm that all the items were correctly understood by the potential participants of the study.

43 students participated in the pilot test. The application was done through a self-administered Google Forms, since as a consequence of the COVID-19 pandemic, the classes were conducted virtually. After the application, no changes were made to the wording of the items, since they were understood by the students.

In summary, the pilot sample was made up of university students from the Education academic program. 30 women (69.08%) and 13 men (30.2%) from 18 to 37 years old participated (M = 23.02, SD = 3.889), 83.7% were enrolled in the fourth year and 16.3% in the second, third and fifth years. A Cronbanch Alpha of .930 was obtained in the total Scale (with 27 items), .787 in the Textual Narrative dimension; .874 in the Digital Narrative dimension; and .942 in the Transmedia Narrative with 9 items in each of the three dimensions, values that indicate the internal consistency of the instrument.

4. Instrument application to the sample (field test): this application was made through a self-administered Google Forms. The questionnaire was sent to the students through their institutional e-mail. An explanation of the objectives of the study, the informed consent of the participants and the confidentiality of the information were included.

5. Estimation of psychometric properties: For the analysis of the psychometric properties of the Scale, an exploratory factor analysis was performed on the total sample using the maximum likelihood estimation and to ensure adequate representation of the items, those whose factor loading was greater than .40 in any of the factors retained after a varimax rotation were retained (Bibiano et al., 2016; Ferrando & Anguiano-Carrasco, 2010).

6. After all these procedures, the final version of the Macronarrative Competence Scale was obtained (See Appendix A).

Participants

The sample was non-probabilistic. A total of 883 students participated, 397 (45%) women and 486 (55%) men, ages between 16 and 52 years with a mean of 19.88 years (SD = 3.90). Regarding the academic characteristics of the sample, 620 (70.2%) students belong to the social sciences (anthropology, arts, law, economics, education, literature and linguistics, psychology, social work) and 263 (29.8%) students belong to the engineering area (civil, electrical, industrial, mining, systems and mathematics) of a Peruvian public

university. Most of students are in the first year (69.2%) and the rest in the second (8.6%), third (12.6%), fourth (6.3%) and fifth year (3.3%).

Procedure

Data were collected between May and October 2022. For the evaluation of narrative competence, the Macronarrative Competence Scale was applied in Google Forms format. The surveys were anonymous; no data were requested that would allow identification of the participants. Participation was voluntary and informed consent was requested.

Instrument

The instrument was applied together with a brief sociodemographic questionnaire that collects information on gender, age, professional school and year of study. Macronarrative Competence Scale (final version after application to the pilot sample). The purpose of the scale is to evaluate the self-perceived level of macronarrative competence of university students. The scale comprises 27 items covering three dimensions of macronarrative competence: textual narrative (9 items), digital storytelling (9 items) and transmedia digital storytelling (9 items). A five-point Likert scale was used (1 strongly disagree and 5 strongly agree). In this study a Cronbach's Alpha of .946 was obtained for the Total Scale, .869 for narrative competence, .905 for digital competence and .917 for transmedia competence. The coefficients obtained with Cronbach's Alpha are consistent and indicate optimal reliability.

Data analysis

For the estimation of inter-rater agreement, Aiken's V coefficients were calculated for each of the items.

The data obtained in the field application were analyzed using the IBM SPSS Statistics 25 program. The psychometric properties of the scale were estimated through exploratory factor analysis. Next, normality tests were performed using the Kolmogorov-Smirnov test with a significance level $\alpha = 0.05$ with p-value; and corrected by .200 Lilliefors significance in the engineering area. Normality was found in the sociodemographic variables sex and academic area. Therefore, the parametric Student's t-test for independent samples was applied. To measure the effect size of the differences by sex and academic area, Cohen's d was applied: values of $d \geq .2$, $d \geq .5$ and $d \geq .8$ represent a small, medium and large effect size, respectively.

RESULTS

Content validity

The aim of this study was to construct and validate a Macronarrative Competence scale. First, evidence of the content validity of the instrument was obtained by judges' criteria. Table 1 presents the judges' assessment of the four elements of content validity: clarity, coherence, relevance, and pertinence. The 40 initial items of the scale are distributed in three dimensions: items 1 to 17 correspond to textual narrative; items 18 to 31, to digital storytelling; and items 32 to 40, to transmedia storytelling.

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Table 1

Inter-judge concordance results using Aiken´s V indices

N° item	Clarity			Coherence			Pertinence			Relevance		
	Agreeement	V Aiken	IC 95 %	Agreeement	V Aiken	IC 95 %	Agreeement	V Aiken	IC 95 %	Agreeement	V Aiken	IC 95 %
1	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	30	0.92	[0.57, 0.99]
2	30	0.92	[0.57, 0.99]	31	0.96	[0.62, 1]	30	0.92	[0.57, 0.99]	30	0.92	[0.57, 0.99]
3	30	0.92	[0.70, 0.98]	32	1.00	[0, 1]	29	0.88	[0.69, 0.96]	28	0.83	[0.64, 0.93]
4	31	0.96	[0.62, 1]	32	1.00	[0, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
5	27	0.79	[0.55, 0.92]	30	0.92	[0.69, 0.98]	25	0.71	[0.46, 0.87]	26	0.75	[0.50, 0.90]
6	29	0.88	[0.53, 0.98]	30	0.92	[0.69, 0.98]	28	0.83	[0.59, 0.94]	28	0.83	[0.59, 0.94]
7	29	0.88	[0.64, 0.96]	30	0.92	[0.69, 0.98]	28	0.83	[0.59, 0.94]	27	0.79	[0.55, 0.92]
8	30	0.92	[0.57, 0.99]	32	1.00	[0, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
9	28	0.83	[0.59, 0.94]	31	0.96	[0.62, 1]	30	0.92	[0.57, 0.99]	29	0.88	[0.53, 0.98]
10	26	0.90	[0.56, 0.99]	28	1.00	[0, 1]	28	1.00	[0, 1]	28	1.00	[0, 1]
11	31	0.96	[0.62, 1]	32	1.00	[0, 1]	30	0.92	[0.57, 0.99]	30	0.92	[0.57, 0.99]
12	29	0.88	[0.64, 0.96]	31	0.96	[0.62, 1]	26	0.75	[0.55, 0.88]	27	0.79	[0.59, 0.91]
13	31	0.96	[0.62, 1]	32	1.00	[0, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
14	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	29	0.88	[0.53, 0.98]	29	0.88	[0.53, 0.98]
15	28	0.83	[0.59, 0.94]	29	0.88	[0.64, 0.96]	24	0.67	[0.47, 0.82]	25	0.71	[0.51, 0.85]
16	29	0.88	[0.64, 0.96]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
17	28	0.83	[0.59, 0.94]	32	1.00	[0, 1]	31	0.96	[0.62, 1]	30	0.92	[0.57, 0.99]
18	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	30	0.92	[0.57, 0.99]
19	28	0.83	[0.59, 0.94]	32	1.00	[0, 1]	29	0.88	[0.69, 0.96]	28	0.83	[0.64, 0.93]
20	29	0.88	[0.64, 0.96]	32	1.00	[0, 1]	26	0.75	[0.55, 0.88]	23	0.63	[0.43, 0.79]
21	26	0.75	[0.50, 0.90]	31	0.96	[0.62, 1]	30	0.92	[0.57, 0.99]	28	0.83	[0.59, 0.94]
22	28	0.83	[0.59, 0.94]	31	0.96	[0.62, 1]	29	0.88	[0.64, 0.96]	28	0.83	[0.59, 0.94]
23	27	0.79	[0.55, 0.92]	30	0.92	[0.57, 0.99]	29	0.88	[0.69, 0.96]	27	0.79	[0.59, 0.90]
24	27	0.79	[0.55, 0.92]	30	0.92	[0.57, 0.99]	30	0.92	[0.57, 0.99]	28	0.83	[0.59, 0.94]
25	26	0.75	[0.50, 0.90]	31	0.96	[0.62, 1]	28	0.83	[0.49, 0.96]	25	0.71	[0.46, 0.87]
26	25	0.71	[0.46, 0.87]	32	1.00	[0, 1]	29	0.88	[0.53, 0.98]	28	0.83	[0.59, 0.94]
27	31	0.96	[0.62, 1]	32	1.00	[0, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
28	28	0.83	[0.59, 0.94]	30	0.92	[0.69, 0.98]	27	0.79	[0.59, 0.908]	26	0.75	[0.551, 0.88]
29	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	30	0.92	[0.57, 0.99]	30	0.92	[0.57, 0.99]
30	29	0.88	[0.64, 0.96]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
31	27	0.79	[0.55, 0.92]	30	0.92	[0.69, 0.98]	30	0.92	[0.69, 0.98]	29	0.88	[0.64, 0.96]
32	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
33	23	0.63	[0.39, 0.81]	27	0.79	[0.55, 0.92]	28	0.83	[0.59, 0.94]	26	0.75	[0.50, 0.90]
34	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	28	0.83	[0.64, 0.93]	28	0.83	[0.64, 0.93]
35	30	0.92	[0.57, 0.99]	32	1.00	[0, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
36	30	0.92	[0.69, 0.98]	30	0.92	[0.69, 0.98]	30	0.92	[0.57, 0.99]	29	0.88	[0.64, 0.96]
37	29	0.88	[0.64, 0.96]	30	0.92	[0.69, 0.98]	29	0.88	[0.64, 0.96]	29	0.88	[0.64, 0.96]
38	31	0.96	[0.6, 1]	32	1.00	[0, 1]	28	0.83	[0.64, 0.93]	28	0.83	[0.64, 0.93]
39	31	0.96	[0.62, 0.98]	32	1.00	[0, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]
40	29	0.88	[0.64, 0.96]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]	31	0.96	[0.62, 1]

Note: p ≤ .05

The summary of the results of Aiken's V is shown in table 2. As can be seen the Aiken's V indices .91 in the textual narrative, .88 in the digital storytelling and .90 in the transmedia storytelling show high agreement; but total agreement was not reached among the judges, so the items that did not respond to the content validity criteria were modified. The comments provided helped to improve the wording and terminology used in some items; on the other hand, items were merged and those that did not meet the content validity criteria were eliminated and others were adapted according to the experts' observations. Finally, the total scale of the Macronarrative Competence construct was composed of 27 items equally distributed in the three dimensions of the scale (see Appendix A).

Table 2

Summary of the results of Aiken´s V for the three dimensions and the total scale of macronarrative competence

	Clarity	Coherence	Pertinence	Relevance	Total
Textual narrative	0.90	0.96	0.88	0.88	**0.91**
Digital storytelling	0.84	0.96	0.89	0.84	**0.88**
Transmedia storytelling	0.89	0.94	0.90	0.88	**0.90**
Total	**0.87**	**0.96**	**0.89**	**0.87**	

Exploratory factor analysis

Table 3 shows the results of the validity of the instrument. An exploratory factor analysis of the Macronarrative Competence Scale was carried out.

The significance of the Bartlett Test (χ^2 = 16932.738, p < .001) and the Kaiser-Meyer-Olkin sampling adequacy measure (KMO = .943) showed an adequate correlation between the items and good sampling adequacy, respectively, evidencing the relevance of an exploratory factor analysis. As a result of the exploratory factor analysis in the total sample, after a varimax rotation, 27 items were identified with a three-factor structure: textual narrative (items 1 to 9), digital storytelling (items 10 to 18) and transmedia storytelling (items 19 to 27). The set of retained factors explained 61.82% of the variance.

Table 3

Results of the exploratory factor analysis. Structure matrix of the Macronarrative Competence Scale

		Factor		
Item	Communality	Textual narrative	Digital storytelling	Transmedia storytelling
1	.555	.740		
2	.585	.755		
3	.522	.544		
4	.614	.779		
5	.557	.653		
6	.622	.766		
7	.613	.732		
8	.606	.724		
9	.558	.658		
10	.556		.514	
11	.571		.558	

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Item	Communality	Factor		
		Textual narrative	Digital storytelling	Transmedia storytelling
12	.650		.769	
13	.599		.569	
14	.578		.730	
15	.642		.784	
16	.557		.481	
17	.555		.502	
18	.615		.503	
19	.617			.659
20	.577			.699
21	.664			.686
22	.660			.737
23	.664			.675
24	.703			.756
25	.747			.810
26	.771			.847
27	.733			.805

Differences by academic area and sex

Finally, differences by academic area and sex are explored. The means and standard deviation are shown in tables 4 and 5. Significant differences were found, the results suggest that social science students reported higher levels of narrative competence than engineering students, in the total scale and in the three dimensions, with medium effect size in the total scale (0.4) and in the digital narrative (0.47) and small effect in the textual storytelling (0.37) and transmedia storytelling (0.2). Similarly, female students reported higher levels of narrative competence than male students, on the total scale and on two dimensions, with small effect size on the total scale (0.32) and digital storytelling (0.36), and medium effect on the textual narrative (0.47). No significant differences by sex were found in the transmedia storytelling.

Table 4

Comparison of macronarrative competence and subdimensions according to academic area

Narrative competence	Social sciences		Engineering		t	p	Cohen's d
	M	DS	M	DS			
Textual narrativa	33.47	5.999	31.29	5.582	5.048	.000	0.37
Digital storytelling	28.23	7.371	24.71	7.584	6.436	.000	0.47
Transmedia storytelling	26.67	8.198	25.03	7.625	2.776	.006	0.2
Total scale	88.38	18.656	81.03	18.165	5.392	.000	0.4

Note: T test results asume equal variances for social sciences (n = 620) and engineering (n= 263).

Table 5

Comparison of macronarrative competence and subdimensions as a function of sex

Narrative competence	Women		Men		t	p	Cohen's d
	M	DS	M	DS			
Textual narrative	34.32	5.501	31.59	6.043	6.952	.000	0.47
Digital storytelling	28.66	7.513	25.98	7.469	5.304	.000	0.36
Transmedia storytelling	26.49	8.130	25.93	8.007	1.020	.308	
Total scale	89.48	18.291	83.50	18.809	4.753	.000	0.32

Note: The t test results asume equal variances for sex: women (n = 397) and men (n = 486).

DISCUSSION AND CONCLUSIONS

The aim of this research was to develop and validate a scale to measure the self-perception of the level of macronarrative competence of university students in three dimensions: textual narrative, digital storytelling and transmedia storytelling. The proposed scale was shown to be a valid and reliable instrument to measure self-perception of macronarrative competence. The quantitative nature of the data allowed us to analyze the psychometric properties of the proposed scale through content validation and, subsequently, the reliability of the instrument.

The proposal of this instrument for measuring the self-perception of macronarrative competence is pioneering in two ways, first because of its integrating nature of the three levels (textual, digital and transmedia), and second because of its application at the university level. It is also necessary to highlight that both narrative competence and literary competence are fields that are just being explored at the higher education level. It should not be forgotten that narrative competence is a valid means for the development of communicative competence in general (Gagarina et al., 2012).

Other studies have only been circumscribed to the textual level of narrative competence, or more properly literary competence, such as the proposal by Mínguez-López and Benlliure (2019), who designed and validated a Literary Competence Battery (BCL) to measure literary competence in adolescents, composed of three scales: Literary Concepts Scale (ECL), Literary Procedures Scale (EPL) and Attitudes towards Literature Scale (EAL). Likewise, other studies have related literary competence to other crucial aspects in education such as the development of creativity. Alfonso-Benlliure and Mínguez-López (2022) found that the relationship between literary competence and creativity is highly significant.

Based on the findings obtained, it is necessary to rethink the approach to the teaching of narrative and literary competence in general, since the presence of technology in different areas of human life cannot be ignored, especially in the field of higher education. Palioura and Dimoulas (2022) found that transmedia storytelling technologies are not sufficiently employed in literature-related subjects, especially in classical studies; they also found that the study participants had expectations about the favorable use of multimedia and trivia games, i.e., with a predisposition to the use of serious games and gamification.

Finally, the conception of the proposed instrument is congruent with Kačinová and Sádaba-Chalezquer's (2022) theoretical proposal of an augmented competence in which the educational objectives proposed by UNESCO and the learning of media use converge. Macronarrative competence integrates other forms of storytelling beyond words and more in line with the use of new technologies. The proposed scale can be used by teachers of any specialty, mainly in the areas of literature, communication and education. The development of macronarrative competence brings cognitive, communicative, motivational, social, etc. benefits (Di Blass, 2022). In future works, intervention programs will be applied to develop

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macronarrative competence and the role of artificial intelligence in its development will also be investigated.

AUTHORS' CONTRIBUTIONS

Rosa Núñez-Pacheco: Project administration; Conceptualization; Writing – original draft; Writing – review & editing; Investigation; Resources.

Aymé Barreda-Parra: Formal Analysis; Data curation; Writing – review & editing; Methodology; Software.

Margarita García-Candeira: Formal Analysis; Data curation; Writing – review & editing; Investigation; Validation.

Ignacio Aguaded: Writing – review & editing; Supervision; Validation; Visualization

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APPENDIX A

Scala for measuring -narrative competence

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
1. I know the concept of narrative text.					
2. I identify narrative genres (fable, short story, novel, etc.).					
3. I produce narrative texts.					
4. I identify the basic structure of a narrative text.					
5. I use narrative techniques (dialogues, descriptions) to create stories.					
6. I use print media or digital platforms to disseminate my stories.					
7. I infer the meaning of a narrative text.					
8. I identify the emotions of the characters in the stories.					
9. I recognize the aesthetic values of a narrative text					
10. I know the concept of digital storytelling.					
11. I identify digital narrative genres (hypertexts, multimodal works, etc).					
12. I produce digital storytellings.					
13. I identify the structure of a digital story.					
14. I use digital tools (Twine, Storybird, Canva, Storyline creator, etc.) to tell stories.					
15. I use digital platforms or social networks (Wattpad, YouTube, Facebook, Tumblr, etc.) to disseminate my digital stories.					
16. I infer the meaning of a digital story.					
17. I identify the emotions of the characters in the digital story.					
18. I recognise the aesthetic and narrative values of a digital story.					
19. I know the concept of transmedia storytelling.					
20. I identify transmedia worlds (movies, video games, comics, literature, etc.).					
21. I elaborate transmedia narratives.					
22. I identify the macrostory of a transmedia narrative.					
23. I use diverse media or formats (movies, video games, comics, literature, etc.) to create a transmedia storytelling.					
24. I use digital platforms and/or social networks (Wattpad, YouTube, Facebook, Tumblr, etc.) to disseminate transmedia narratives.					
25. I infer the meanings of transmedia worlds.					
26. I identify the emotions of the characters in a transmedia narrative.					
27. I recognize the aesthetic and narrative values of transmedia worlds.					

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