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Educational transmedia narratives and the INAEP method: innovation and learning in the Colombian Context. Pilot study

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This pilot study examined how higher education students in Colombia perceived innovation while interacting with a transmedia product. The study aimed to determine the perceived innovation in students as prosumers of a transmedia product called "El Bogotazo" and to evaluate the impact of the INAEP method on their learning. A quantitative correlational methodology was employed, involving 57 students from fields such as Advertising, Marketing, Business Administration, Accounting, and Law. A 20-question Likert-type survey assessed dimensions like innovation perception, learning, prosumer behavior, and ICC. Preliminary results showed significant direct relationships among all dimensions. Notably, students' perceived innovation strongly correlated with their learning and prosumer roles in educational transmedia narratives. The study highlighted the importance of CCIs in education, positioning students as active prosumers and revealing the relationship between CCIs, innovation, and learning. The discussion confirmed the INAEP method's potential to measure 21st-century competencies, emphasizing innovation, educational transmedia narratives, and students' active roles in learning.

KEYWORDS

learning strategy, pedagogical innovation, educational technology, Colombia, undergraduate studies

1 Introduction

The Bogotazo, a historical event that significantly impacted Bogotá, inspired the development of educational transmedia narratives. These narratives form the basis of the work by the first author. "El Bogotazo: restart of a city" (Educativa, 2018) tells this event from a child's perspective through various platforms and formats, including comics, videos, infographics, and interactive games. These formats allow students to explore the content non-linearly and interactively (Scolari, 2013). This study is part of a multi-year process analyzing educational transmedia narratives among children and adolescents who have engaged with this innovative material and methodology.

Despite the increasing integration of Educational Transmedia Narratives (ETNs) in educational settings, there remains a significant gap in understanding their impact on

student learning and competency development. Current literature largely focuses on the theoretical foundations and anecdotal successes of ETNs, but empirical studies examining their effectiveness and practical applications are sparse. Specifically, there is limited research on how ETNs can foster critical thinking, creativity, and digital literacy among students, especially within the context of significant historical events like the Bogotazo.

This material uses the INAEP method (Investigate, Narrate, Elaborate, Ask) (García Rojas, 2022) and Educational Transmedia Narratives (NTE) (Jenkins, 2006; Scolari, 2013) as its core framework. These methods aim to transmit knowledge and hypertextuality to connect with new generations of students (Prensky, 2001). They are innovative tools that transform learning about this historical event in a deeper, more meaningful way. Students interact with the content in diverse, non-linear, and critical ways, offering various perspectives and interpretations of the event, and encouraging critical reflection on its impact on Colombian society.

Given the gaps in current research, this study aims to fill several key voids. First, it provides empirical evidence on the effectiveness of ETNs in enhancing student engagement and learning outcomes. Second, it explores how the INAEP method can be utilized to develop critical competencies required in the 21st century, such as digital literacy, creativity, and critical thinking. Finally, the study examines the role of ETNs in promoting entrepreneurial skills among students, thereby preparing them for future challenges in the Creative and Cultural Industries (CCIs).

By addressing these gaps, this study contributes to a deeper understanding of the pedagogical potential of ETNs and offers practical insights for educators seeking to implement innovative teaching methods. Ultimately, the research aims to highlight the transformative power of ETNs in education and their potential to foster a more engaging and reflective learning experience for students.

Starting from this basis, this work aims to analyze the innovation perceived by Colombian university students as prosumers of this transmedia product in the context of the Creative Cultural Industries (CCI). In addition to providing evidence on the impact of the INAEP method on learning in other educational stages different from those presented in the study previously published by the main author of this research (García Rojas, 2022), which is also part of the thesis doctoral program in progress titled "Evaluation of the INAEP method: an innovative instructional model based on the NTE".

1.1 Student-prosumers through the INAEP method and their connections with the creative cultural industries (CCI)

In 21st century education, the development of active, critical and creative students is essential for their success in a constantly changing world (Robinson, 2006, 2009). In this context, the INAEP method and the ICC are presented as two innovative tools that can contribute to the training of student-prosumers, in the terms in which authors such as Bruns (2008), or Toffler (1980) -author who coined the term- they describe it; In this sense, students not only receive information, they also produce, share and transform

it, in addition to (a) mastering digital technologies for creation and criticism (Siemens, 2005; Jenkins, 2006), (b) showing interest in participating in cultural production (Rheingold, 2008; Simón, 2011) and (c) generating understanding about consumption as an active and social experience (Malloy, 2010).

At the same time, it is important to highlight that CCIs are not only an important economic sector, but also play a vital role in society, from which, according to Florida (2002), the creative class, made up of people who work in these ICC are the engine of economic growth in cities and regions. Furthermore, as pointed out by the Inter-American Development Bank (IDB) (2013), and supported by scholars such as Throsby (2010) and Cunningham (2002), CCIs promote cultural diversity, social innovation and human development, in addition to offering student-prosumers a wide range of opportunities to develop their skills and knowledge. That go beyond traditional training.

In Colombia, since the enactment of Law 1834 (MINEDUCACION, 2017), sectors or economies related to traditional artistic activities such as visual arts—painting, photography, installation, video art, motion art, performance, among others—have been recognized.

In this context, the INAEP method integrates the creation of transmedia products within Creative and Cultural Industries (CCIs) (Scolari, 2013). This approach transforms students into prosumers and equips them with key competencies essential for working in CCIs. Moreover, it promotes entrepreneurship by helping students develop their entrepreneurial spirit and create their own projects within these industries.

The way in which this connection is managed in the classroom context is done through: (a) group research strategies, in which students seek information from various sources, analyze data and build their own knowledge about Bogotazo, developing a critical thinking and an ability to analyze the historical event of Bogotazo; (b) storytelling, in which they choose a format and a platform to share their learning, creating original content such as comics, podcasts or video games, enhancing their creativity and communication skills (Jenkins, 2006); (c) teamwork to develop your transmedia product using digital tools and multimedia resources, promoting collaboration and teamwork (García Rojas, 2022); and, finally, (d) in the question phase, students reflect on their learning experience, ask new questions and continue to delve deeper into the topic, developing a critical and reflective attitude.

1.2 Exploring intersections: perceived innovation in transmedia products and educational transmedia narratives

Although we know that educational technology is valuable to improve learning in specific contexts (Area and Adell, 2021), it is also essential to recognize and reflect on its use and understand that it is not the only way to innovate in education. An innovative approach supported by technology must focus on improving learning results (Granados Maguiño et al., 2020), it must adapt to the individual and collective needs of students, favoring participation and collaboration (Martínez Bonafé and Rogero Anaya, 2021), facilitate the personalization of teaching, extending the available learning time (Granados Maguiño et al., 2020), in

addition to getting closer to cultural codes and the recognition that learning also grows outside educational environments (Carbonell, 2001; Martínez Bonafé and Rogero Anaya, 2021).

Likewise, we must understand that storytelling is fundamental for education and learning (Harari, 2018) and is central to educational activity, since it tries to turn the small things, we want to tell into heroic stories (Annancotini and Rodriguez, 2019). In this context, NTE emerge - considered as a manifestation of this innovation—as tools that help generate such learning, influencing different areas of knowledge and integrating technology and narrative strategies to enrich the educational experience.

Innovative educational practices that integrate Educational Transmedia Narratives (ETNs) into educational dynamics are on the rise. Studies by Alonso and Murgia (2018) and Amador (2018) highlight the positive impact of ETNs on the development of learning and competencies in students, as well as the interactivity achieved during ETN production. Additionally, research by Alonso and Murgia (2020) and Piñeiro-Naval and Crespo-Vila (2022) underscores the importance of refining the use of these tools to foster meaningful learning and develop digital skills.

These findings suggest that focusing on how students perceive innovation is crucial for the success of transmedia products. Perceived innovation plays a vital role in creating an integrated, meaningful, and participatory narrative experience (Scolari, 2013). Consumers who find a transmedia product innovative and engaging are more likely to participate in all its aspects, thereby enhancing its success (Dena, 2009). Therefore, it is essential to ensure the omnipresence of innovation throughout the product, from the content itself to its presentation across different platforms (Dena, 2009; Jenkins, 2008). This approach helps achieve the primary objective of maintaining public interest and engagement with the various platforms.

1.3 Research objectives

- Demonstrate the effectiveness of the INAEP method in a select population group with diverse needs and characteristics, and explore how this method contributes to enhancing learning in the university context.
- Analyze the impact of the INAEP method on the development of specific competencies such as critical thinking, creativity, problem-solving, and collaboration in university students.

2 Methods

On this occasion, the present pilot study, corresponding to a quantitative methodology; applied to a sample of 57 students, adolescents and young adults (17 to 24 years old), from the academic programs of Advertising and Marketing, Business Administration, Accounting and Law, of the Colombian higher education institution that sponsored the study. A Likert-type survey of 20 questions was administered that included the dimensions raised in the application of the INAEP method. The instrument, survey, is designed and validated by a panel of expert quantitative researchers from the university, who monitored the

TABLE 1 Methodological structure.

Dimensions	Dimension variables	Analysis factors
X1: Innovation	Product innovation	Design Layout Reading Hypertextuality
	Use of QR	Expansion of the story
	Social networks	Network use Closeness to the generation
	Standardized material	Application to other subjects
	Narrative coherence	Content sequence
X2: Learning	Emotions	Emotion relationship with the story
	Content attraction	Inteest
	Media Mixing (Multiple Screens)	characters
		History and narration
		Topic mastery
X3: Prosumer (Student)	Media Mixing (Multiple Screens)	Understanding the story
	The comic protagonist	Perceptión
	Audio and Video Complement	Content Deepening
	Student Production	Expansion of the story (networks publications)
	Credibility	Historical narrative
	Modulation of content	Consistent with history
	History immersion	Link to content
X4: Creative Cultural Industries	Use of some of the cultural industries in the transmedia context	Impact of videos, podcasts and comics

Source: self-made.

methodological processes corresponding to the pilot test, which we took as input for the development of this article.

The work has been evaluated from four dimensions or study variables; immersed in transmedia products, their relationship with learning and the student as a prosumer that will be explained later. The evaluation of the data returned was based on the response number, giving greater weight to the variables with greater dimensions and analysis factors, with the variable with the greatest weight being X1-innovation- in relation to the others (See Table 1).

2.1 Description of instrument dimensions

2.1.1 First dimension, X1. Innovation

Products are innovative when they differ significantly from previous ones in characteristics or uses (OSLO, 2007). The transmedia educational product “El Bogotazo, restart of a city” presents innovations in hypertextuality, content modulation and the design of work sessions. Students, as prosumers, can deploy

various means of interactivity with the contents, the teacher and other students (Amador, 2014). The material encourages the publication of results by students for dissemination and discussion in the community, spreading at the pace of internet platforms (Blanch, 2020).

2.1.2 Second dimension. X2. Learning

Many authors define learning from different educational theories, in this case the definition of author Leiva (2005) will be taken into account: "learning includes the acquisition and modification of knowledge, beliefs, behaviors, skills, strategies and attitudes." (p. 66).

From this definition, the process developed in this research showed how the knowledge acquired improved some abilities related to narrative, reading the graphic novel and immersion of the stories since the expansion.

All this happens because students, in their capacity as receivers and creators, express their knowledge in the appropriation of new concepts, modifying their cognitive structure. "We consider the cognitive structure (CS) of any subject as a network that expresses three-dimensional relationships between concepts." (Galagovsky, 2004, p.351) and in the case of this exercise the convergence of media and multiple screens is that three-dimensional network that expands the cognitive structure.

Learning is a product of immersion and interaction with the narrative, which is expressed in higher communication processes expressed in multiple output elements, as we will observe later.

2.1.3 Third dimension. X3. The student as a prosumer

ICT transformed the role of the student from passive to producer of knowledge, which implies developing visual, grammatical, and technological skills that expand learning (Area and Adell, 2021; Arriaga Delgado et al., 2021). This work shows how students create and verify content when creating a comic about Bogotazo, developing critical and reflective thinking, appropriating the historical story, participating in the collective construction of knowledge and transcending their role as learners. The student immerses himself in history, interprets it and gives it personal meaning, promoting autonomy in learning and participation in learning networks. In conclusion, Transmedia Narratives are tools that enhance critical thinking and the construction of knowledge in students.

2.1.4 Fourth dimension. X4. Creative cultural industries

The Creative Cultural Industries (CCI), as we have presented, are economic sectors that are based on creativity, talent and knowledge to generate cultural goods and services. According to UNESCO (2009), these industries cover "those sectors of organized activity whose main objective is the reproduction, promotion, dissemination and/or commercialization of goods, services and activities of cultural, artistic or heritage content."

CCIs in Colombia include a wide range of sectors, such as music, film, television, radio, literature, visual arts, video games, design and fashion. These industries have experienced significant growth in recent years and are expected to continue growing in the future.

2.2 Analysis of data

This research project is based on a quantitative approach (Hernández Sampieri et al., 2014; Otzen and Manterola, 2017). The aim was to collect "data to test hypotheses based on numerical measurement and statistical analysis, in order to establish behavioral patterns and test theories" (Sampieri, 2014, p.5). This study is exploratory as we approach the perceptions that students have about the innovation received.

Initially, a descriptive study was carried out based on measures of central tendency (Mean) and measures of dispersion (Standard Deviation). Subsequently, a correlational study was carried out through the non-parametric statistical test of Spearman's Rho Coefficient, between the different dimensions of the scale used to analyze and quantify whether there are associations or correlations between them and study what type they are.

All statistical analyzes of this research were carried out with the SPSS statistical package version 28.0.1.1 (14) for Windows.

3 Results

Initially, a descriptive analysis was carried out to analyze the average of the items of the different dimensions that make up the scale.

The results show that the average response of the participants in the first dimension "Innovation" was 3.714 (SD = 0.373); The average response in the second dimension "Learning" was 3.884 (SD = 0.436); The average response of the third dimension "The student as a prosumer" was 4.122 (SD = 0.503); and finally the average response of the fourth dimension "Creative cultural industries" was 3.959 (SD = 0.570) (Figure 1).

In the descriptive analysis we can see how the third dimension obtains a higher score, corresponding to the use of the student as a prosumer; followed by the fourth dimension corresponding to support for new creative cultural industries and, the lowest score is reflected in the third dimension corresponding to the improvement of learning through educational transmedia narrative. The first dimension referring to the innovative perception of educational transmedia narrative obtained the lowest score. Although they differ in the average scores of responses in the 4 dimensions, all of them present very high scores with few significant differences between them.

Regarding the correlational study between dimensions, the results show a medium and considerable association (Table 2).

The correlational analysis shows us that the four dimensions of the scale used in data collection are positively and directly associated with each other, which indicates that as the score of one of the dimensions increases, the score of the other increases dimension. Specifically, the innovation perceived by students presents an important association with the perception that students have about their learning processes ($p = 0.685$) and with students as prosumers of educational transmedia narratives ($p = 0.658$), respectively, however, It is observed in the data that the relationship between perceived innovation and the importance of the ICC, although it is positive, that is, as the students' perception of innovation increases, the importance of the ICC increases, it is medium ($p = 0.437$).

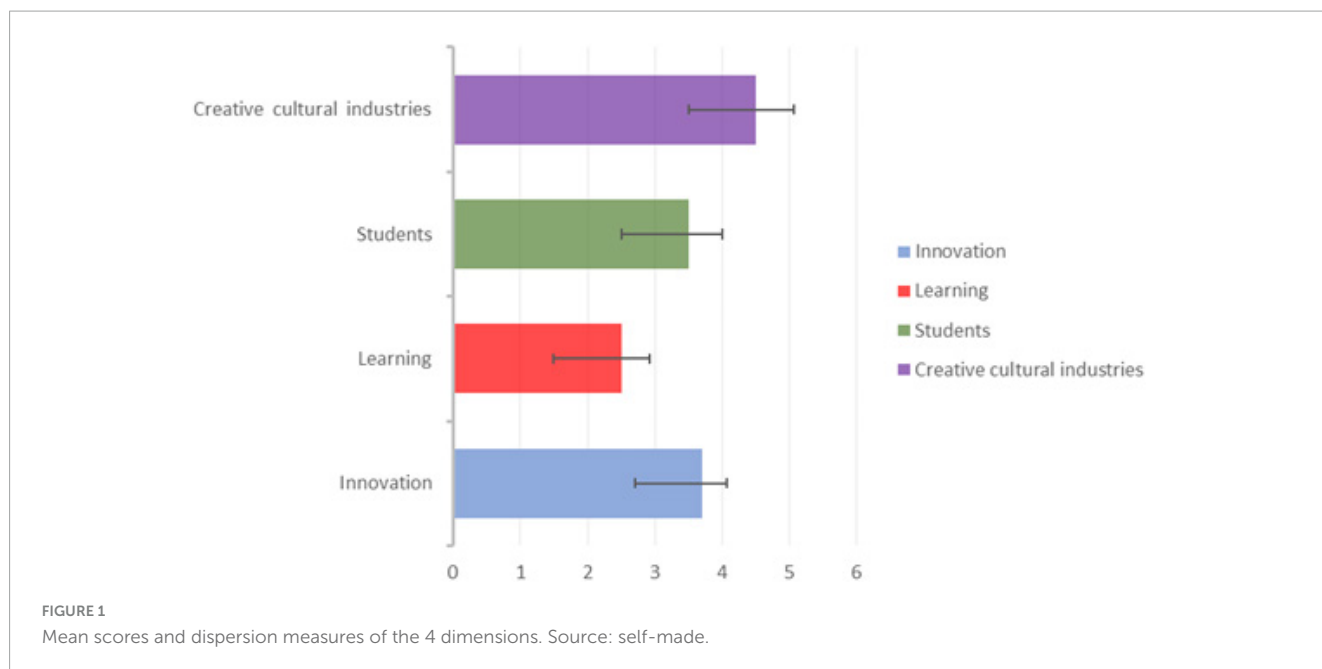


TABLE 2 Correlation between the 4 dimensions.

Dimensions	Punctuation Rho Spearman	Interpretación
Innovation-Learnin	0,685	Positive and Considerable Relationship
Innovation-Student as prosumer	0,658	Positive and Considerable Relationship
Innovation-Creative cultural industries	0,437	Positive and Average Relationship
Learning-Student as prosumer	0,485	Positive and Average Relationship
Learning-Creative cultural industries	0,367	Positive and Average Relationship
Student as prosumer-Creative cultural industries	0,418	Positive and Average Relationship

Source: self-made.

With respect to the students’ perception of learning with educational transmedia narratives, a direct and medium association is observed with the dimension of the student as a prosumer ($p = 0.485$) and also with the importance given to creative cultural industries ($p = 0.367$).

Finally, the results show that the dimension of students as prosumers and creative cultural industries present a positive and medium association ($p = 0.418$), which indicates that as the level of consumption of students in these applications increases Transmedia increases the importance given to creative cultural industries in a moderate way.

If we take the data globally, it could be stated that the data obtained in our scale indicates that all the dimensions of the scale used are directly and significantly related.

4 Discussion-conclusion

The perception of innovation is a critical component for the success of transmedia products. To develop a product that attracts and retains the public’s attention, innovation must be omnipresent in all facets (Dena, 2009; Jenkins, 2008). It is imperative that student-prosumers perceive the quality and originality of the product to ensure that it is more accepted within the community that uses it, achieving a significant impact on their learning and interest (Carbonell, 2001, 2019).

In this context, the correlational analysis developed reveals how the innovation perceived by students maintains a direct relationship with said learning processes, as well as their role as prosumers of N.T.E. According to Amador (2018), this is because students achieve forms of interactivity in environments that promote communicative styles and whose learning content is based on the participatory production of N.T.E. This suggests that as students perceive more innovation, they also perceive an improvement in their learning and become more active prosumers.

If we compare all these findings with the previous study by García Rojas (2022), we can highlight the following aspects:

1. The crucial role that students’ perception of innovation and emerging technologies has in promoting learning -and its dimensions-, and also the active participation of students as prosumers of educational material (Area and Adell, 2021; Blanch, 2020). Something that is evident both in the previous study (García Rojas, 2022) and in this one.
2. The way in which the INAEP method is presented as a tool adaptable to a variety of educational contexts, including the university, in improving student learning and that remains in line with the flexible educational models proposed by the Ministry of Colombian Education in 2020. This method demonstrates its effectiveness in imparting knowledge to non-conventional groups in traditional education.

- The impact of the NTE on the students' perception of learning, in addition to the capacity that they represent so that the students can generate new and different learning; especially when it comes to topics as important as the teaching of History.

In conclusion, we consider that the creation of educational materials with the INAEP method requires a balance between presentation, story and interaction. This enhances learning, ensures innovation and culminates in an inclusive and flexible education; However, these results also highlight the need for continued research to better understand the relationship between the perception of innovation and the importance of CCIIs (Cunningham, 2002; Macanquí Pico et al., 2020). These aspects are directly linked to the idea of establishing new evaluation spaces for students (Macanquí Pico et al., 2020; Martínez Bonafé and Rogero Anaya, 2021; Suárez et al., 2020; Throsby, 2010). These spaces should not be supported by formal evaluation, but rather by the student's production and its adaptation to expandable media (Jenkins, 2006; Suárez et al., 2020). Despite the limitations of the study, questions are raised about how to adapt flexible educational models to other contexts, balance the presentation of engaging material with continuous student interaction, achieve inclusive and egalitarian education based on a common and flexible narrative, and establish new evaluation spaces based on the student's production (Siemens, 2005; Simón, 2011).

The scope of this study focuses on the innovative application of educational transmedia narratives through a novel methodology known as INAEP. This approach is considered innovative and is expected to significantly enhance methodological processes, particularly in the context of teaching history at the higher education level. The study aims to explore and evaluate the effectiveness of INAEP in enriching educational experiences and outcomes, providing new perspectives and tools for educators in higher education.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the Fundación Universitaria San Martín. The studies were conducted in accordance with the local legislation and institutional

requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

MG-R: Conceptualization, Funding acquisition, Investigation, Project administration, Resources, Writing – original draft, Writing – review and editing. MM-O: Conceptualization, Supervision, Writing – original draft, Writing – review and editing. LA: Data curation, Formal analysis, Investigation, Methodology, Software, Supervision, Writing – original draft, Writing – review and editing. PC-G: Supervision, Validation, Writing – original draft, Writing – review and editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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