

What's up with transmedia and education? A literature review

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Abstract

In the last few years, several works have emerged focusing on the cultural change that has to do with the simultaneous and sequential coexistence between different media. This is what is being called transmedia, and it is related to the new concepts of media convergence and participatory culture. All this new mediatic and cultural movement, of course, begins to have an echo in the educational world. However, what do we mean by this concept from an educational perspective? Through a systematic literature review, we analyse this transmedia concept in three meanings: transmedia as ability or literacy necessary to actively evolve in this movement of participatory culture; transmedia as the product resulting from that sequential jump between different analogical and digital media, conveyed by a narrative; and, lastly, transmedia as a didactic strategy that explores that narrative that is developed in different means to achieve concrete didactic objectives.

Keywords

Transmedia; storytelling; educational technology; digital literacy; convergence culture

I. Introduction

Much has been published over recent decades examining the impact of new digital cultures on teaching and learning processes (Gee, 2009; Ito et al., 2013; Jenkins, Purushotma, Weigel, Clinton, & Robinson, 2009). One of the emerging lines is what are termed transmedia learning processes, defined by Raybourn (2012, p. 471) as "the scalable system of messages representing a narrative or core experience that unfolds from the use of multiple media, emotionally engaging learners by involving them personally in the story".

This idea, as with other concepts such as transmedia play (Alper, 2013b) or transmedia literacies (Anderson, 2014) is, to a greater or lesser degree, linked to Jenkins' work (1991, 2004, 2006) on the concepts of media convergence and participative culture processes.

Jenkins (2006) sees media convergence as a cultural process characterized by interaction and interchange between commercial, governmental, educational, non-profit, and amateur bodies that create and distribute content through social media and other channels of cultural production and consumption. He states that convergence is the "flow of content across multiple media platforms, the cooperation between multiple media industries, and the migratory behaviour of media audiences who will go almost anywhere in search of the kinds of entertainment experiences they want" (Jenkins, 2006, p. 2).

In any event, this has led to a revolution. While the traditional *raison d'être* of the media was the production of cultural content on a specific platform for users to consume (for example, the unidirectional model of traditional television), people now join online communities such as Facebook, create and share videos or writing, collaboratively solve tasks in certain videogames or share knowledge on Wikipedia, as well as circulating content on blogs, switching between one media platform and another (Jenkins, 2006; Jenkins, Purushotma, et al., 2009). Neither is there any doubt that such circulation of cultural content across a range of media is dependent on the active participation of users.

In other words, people are no longer mere observers of what happens in the media (a computer, television or video console) but can participate in its production. Indeed, over the last decade, more than half of adolescents and young people - part of what is called the millennial generation (Álvarez Monzonillo & de Haro, 2017) - have created cultural content through digital media, and a third of internet users share the content they produce (Lenhart, Madden, & Hitlin, 2005).

Current digital media allow people to participatively store, note, appropriate and circulate content based on a social dynamic of exchange. According to Jenkins, Ito and Boyd (2016), this is more connected with the logic underpinning doing it together than doing it yourself.

In this sense, participative culture is taken to mean "a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing creations, with some type of informal mentorship whereby what is known by the most experienced is passed along to novices, where members believe that their contribution matter, where members feel some degree of social connection with one another (at the least they care what other people think about what they have created)" (Jenkins, Clinton, Purushotma, Robison, & Weigel, 2009, p. 7).

The idea of transmedia adopted in this article should be situated within this conceptual framework. Jenkins refers to two uses of the term transmedia; while they are related, they have different ends. Perhaps the more widespread links transmedia to an emerging form of discourse, story, or narrative (transmedia storytelling), while the other is linked to a capacity, ability, or competence (transmedia navigation).

One example is *The Matrix*, which was distributed across a range of media (cinema, television, internet, magazines, and video console). It can clearly not be reduced to a single medium; in its entirety it forms an intelligible whole. Within this context, Jenkins (Jenkins, 2006, pp. 95-96)

defines transmedia storytelling as a "story [that] unfolds across multiple media platforms, with each new text making a distinctive and valuable contribution to the whole. In the ideal form of transmedia storytelling, each medium does what it does best –so that a story might be introduced in a film, expanded through television, novels, and comics; its world might be explored through game play or experienced as an amusement park attraction".

This idea was initially introduced to refer to a new way of building stories or narratives in accordance with the convergence between different media and channels that shape the way in which our culture expresses itself, and characterized by the flow between the different spaces that channel the user's narrative experience, thus favouring their involvement in the development of contents (Jenkins, 2003).

In parallel with the above, within the context of the MacArthur Foundation's initiative regarding the construction of what is termed "Digital Media and Learning" we find the "New Media Literacies. Learning in a participatory culture", of which Jenkins is the principal investigator. The project has its roots in the White paper of 2006, which was later published by the MIT Press and titled "Confronting the Challenges of Participatory Culture: Media Education for the 21st Century" (Jenkins, Purushotma, et al., 2009). Its main aim was to identify and describe those cultural competences and social abilities necessary for full participation in the new digital environment. Specifically, it set out 11 abilities, one of which is precisely transmedia navigation, defined as: "the ability to deal with the flow of stories and information across multiple modalities" (Jenkins, Purushotma, et al., 2009, p. 46). This competence is, in fact, very closely linked with the above-mentioned processes of media and cultural convergence, which require the ability to process, create and circulate emerging forms of stories and arguments. "It involves the ability to both read and write across all available modes of expression (...) learning to understand the relations between different media systems" (Jenkins, Purushotma, et al., 2009, pp. 48–50).

The educational implications of these new concepts are clear. If we talk of a new culture, this should be present in the education system; if we talk of a competence necessary for one to exercise citizenship in the 21st century, it is also undeniable that education should guarantee that new citizens acquire it. Nonetheless, as far as we are aware, more attention has been given to the essence of this competence or the nature of this participative culture than to the highly important educational implications. Therefore, the aim of this review of published work is to identify and analyse the uses that have been made of the idea of transmedia in education. This will enable us to identify the kind types of work published on the subject, as well as the educational levels they refer to. We also aim to identify the preferred focus of the documents, or the perspective from which the idea of transmedia is approached, and its associated ideas.

II. Method

This literature review was based on systematic approaches (Gough and Elbourne, 2002) and narrative ones (Slavin, 1995), with the aim of offering an alternative to metaanalytic and traditional systematic literature revisions. When we talk about systematic review, we mean the process of identification, selection and synthesis of primary research studies, which are done for providing a complete image of the issue under study (Crompton, Burke and Gregory, 2017). In this document, the review aims to provide a complete image of the educational uses of the term transmedia. When we talk about narrative approaches, we refer the process of discussion of the status of an issue both from theoretical and contextual perspectives. In this document, the contextual point of view is based on the fundamental works of Jenkins, as developed in the Introduction section.

Both the systematic and narrative literature review approaches imply critical analyses of literature

published in books and scientific journals papers with the aim of critically analyzing a particular topic. As Hobson, Ashby, Malderez and Tomlinson (2009) point out, both approaches help us to offer more complete review results starting from guiding objectives and questions, and at the same time, they keep openness to problems that appear during the reading process (Hobson, Ashby, Malderez and Tomlinson, 2009).

To achieve this, we consulted the Educational Resources Information Center (ERIC), the online library of education research and information sponsored by the U.S. Department of Education's Institute of Education Sciences (IES). The search term was limited to "Transmedia", thus ensuring that all articles fell within the educational field and dealt with the subject. Only peer reviews were chosen and no time frame was set.

A total of 24 publications were initially found, and all were included in the review. One book which was duplicated was later excluded, as was another which did not really deal with transmedia. The 22 texts chosen are referenced in Table X.

The search was carried out on 25th March 2017. The results show that the earliest publication dates from 2012 and the latest from 2016. The majority of articles were published in a total of 16 magazines, two were government reports and one was a chapter in a book.

Pence, H. E. (2012). Teaching with Transmedia. <i>Journal of Educational Technology Systems, 40(2)</i> , 131–140.
Wohlwend, K. E. (2012). The boys who would be princesses: playing with gender identity intertexts in Disney Princess transmedia. <i>Gender and Education, 24(6)</i> , 593–610.
Alvarez, C., Salavati, S., Nussbaum, M., & Milrad, M. (2013). Collboard: Fostering new media literacies in the classroom through collaborative problem solving supported by digital pens and interactive whiteboards. <i>Computers and Education, 63</i> , 368–379.
Alper, M. (2013a). Developmentally appropriate New Media Literacies: Supporting cultural competencies and social skills in early childhood education. <i>Journal of Early Childhood Literacy, 13(2)</i> , 175–196.
Alper, M. (2013b). Transmedia Play: Literacy Across Media. <i>Journal of Media Literacy Education, 52(2)</i> , 366–369.
Benedict, L. A., Champlin, D. T., & Pence, H. E. (2013). Exploring transmedia: The rip-mix-learn classroom. <i>Journal of Chemical Education, 90(9)</i> , 1172–1176.
Fleming, L. (2013). Expanding Learning Opportunities with Transmedia Practices: Inanimate Alice as an Exemplar. <i>Journal of Media Literacy Education, 52(2)</i> , 370–377.
Llorente, C., Pasnik, S., Moorthy, S., Hupert, N., Rosenfeld, D., & Gerard, S. (2013). Preschool Teachers Can Use a PBS KIDS Transmedia Curriculum Supplement to Support Young Children's Mathematics Learning: Results of a Randomized Controlled Trial. A Report to the CPB-PBS Ready to Learn Initiative. In SREE (Ed.), <i>Society for Research on Educational Effectiveness Spring 2015 Conference</i> . Evanston (Illinois, US): SREE.
Rodríguez-Illera, J. L., & Molas-Castellas, N. (2014). Educational Uses of Transmedia Storytelling. The Ancestral Letter. <i>Journal of Educational Multimedia and Hypermedia, 23(4)</i> , 335–357.
Tillman, D., An, S., Boren, R., & Slykhuus, D. (2014). Building Model NASA Satellites: Elementary Students Studying Science Using a NASA-Themed Transmedia Book Featuring Digital Fabrication Activities. <i>Journal of Computers in Mathematics and Science Teaching, 33(3)</i> , 327–348.
Wiklund-Engblom, A., Hiltunen, K., Hartvik, J., Porko-Hudd, M., & Johansson, M. (2014). "Talking Tools": Sloyd Processes Become Multimodal Stories with Smartphone Documentation. <i>International Journal of Mobile and Blended Learning, 6(2)</i> , 41–57.
Chung, G. K. W. K. (2014). Toward the Relational Management of Educational Measurement Data. <i>Teachers College Record, 116(November)</i> , 1–16.
Paulsen, C. A., & Andrews, J. R. (2014). The Effectiveness of Placing Temporal Constraints on a Transmedia STEM Learning Experience for Young Children. <i>E-Learning and Digital Media, 11(2)</i> , 204–213.

Fainholc, B. (2015). Virtual Communication Processes of Open and Distance Education: Some Contributions from the Cultural Studies Field. <i>E-Learning and Digital Media</i> , 12(1), 3–16.
McDougall, J., & Potter, J. (2015). Curating media learning: Towards a porous expertise. <i>E-Learning and Digital Media</i> , 12(2), 199–211.
Zhou, Z., Chang, J. S.-K., Pan, J., & Whittinghill, D. (2015). Alternate Reality Game for Emergency Response Training: A Review of Research. <i>Journal of Interactive Learning Research</i> , 27(1), 77–95.
Stansell, A., Quintanilla, B., Zimmerman, E., & Tyler-Wood, T. (2015). Teaching Engineering Concepts Through a Middle School Transmedia Book. <i>TechTrends</i> , 59(2), 27–31.
Conner-Zachocki, J. (2015). Using the digital transmedia magazine project to support students with 21st-century literacies. <i>Theory Into Practice</i> , 54(2), 86–93.
Gambarato, R. R., & Dabagian, L. (2016). Transmedia dynamics in education: the case of Robot Heart Stories. <i>Educational Media International</i> , 53(4), 229–243.
Reid, J., & Gilardi, F. (2016). Transmedia teaching framework: from group projects to curriculum development. In C. Goria, O. Speicher, & S. Stollhans (Eds.), <i>Innovative language teaching and learning at university: enhancing participation and collaboration</i> (pp. 79–84). Dublin: Research-publishing.net.
Rhoades, M. (2016). “Little Pig, Little Pig, Yet Me Come In!” Animating The Three Little Pigs with Preschoolers. <i>Early Childhood Education Journal</i> , 44(6), 595–603.
Silander, M., Moorthy, S., Dominguez, X., Hupert, N., Pasnik, S., & Lorente, C. (2016). Using Digital Media at Home to Promote Young Children’s Mathematics Learning: Results of a Randomized Controlled Trial. In SREE (Ed.), <i>Society for Research on Educational Effectiveness Spring 2015 Conference</i> .

Table 1. Chosen publications.
Source: Authors’

The review procedure was divided into three stages. Each publication was first read by two randomly-chosen researchers, the analysis categories were decided and the information screened, as will be explained below. In the second stage, each pair of researchers discussed the content in relation to the analysis categories and shared the relevant content; the initial categories were reviewed at the same time. The third and final stage saw group meetings discuss and compare the analyses and the final taxonomy was agreed upon.

a. Analysis framework / Categorization

The content of analysed texts was categorized according to the following characteristics:

- Educational stage of participants
- Study type: research, study review, theoretical reflection, innovation or educational experience
- Implicit or explicit transmedia concept
- Related concepts
- Description of work and conclusions

Our reading showed that the term transmedia is used mainly as an adjective. For this reason, the combination of transmedia and its accompanying noun was systematically analysed, always in relation to the category transmedia concept. This analysis showed that only two of the texts used the term transmedia as a noun and this observation therefore forms the backbone of the analysis in our main aim.

III. Results

In order to facilitate the reading of this section, we first offer a general description of the documents analysed, after which we examine the relevant concepts in depth.

a. Description of documents

A first descriptive approach to the chosen documents shows us that the texts can be broadly divided between those that address experiences of educational innovation and have involved transmedia elements, and those that review or reflect on transmedia as an important part of current education. We should also highlight the fact that the majority of texts that describe experiences of educational innovation are also research studies.

However, if we relate this description to the educational stage the documents focus on, we see that they are principally studies or experiences of educational innovation. In contrast, texts of reflection or review either tend not to refer to a specific stage or deal with all stages. Both aspects (type of research and educational stage of reference) are reflected in the table below.

Educational stage	Innovation and research	Educational innovation	Review of theoretical reflection	Total
Infant	3	1	1	5
Junior	3		1	4
Secondary	2	1		3
University	1		2	3
General or undefined	1	1	5	7
Total	10	3	9	

Table 2. Educational types and levels referred to.
Source: Authors'

b. Transmedia concept

We now return to the fundamental question posed by this article, what transmedia means and, more specifically, how it has been used in education. In order to address this, with the overall aim of providing an umbrella definition of transmedia when applied to education, we analyse the concepts reflected in the documents consulted. We should note here that not all of the documents have provided an explicit definition. There is no doubt that Jenkins' (2006) founding definition of the associated concept of media convergence which, over time, has become linked to transmedia, is generally accepted. It alludes to the flow of content across different media platforms, co-operation between different industries, and the migratory behaviour of audiences who can go anywhere in search of the form of entertainment they desire. This is generally expanded to include the narrative component that leads to the harmonization of this flow across the media accessed by the user (Benedict, Champlin, & Pence, 2013).

One might have thought that education is another common element in the documents, and certainly, whether directly or indirectly, reflections on transmedia do coincide on the characteristics of transmedia objects used in learning experiences (Conner-Zachocki, 2015; Stansell, Quintanilla, Zimmerman, & Tyler-Wood, 2015; Tillman, An, Boren, & Slykhuis, 2014), on the educational use of learning sequences contained in this flow between different media (Fleming, 2013; Cecilia Goria, Speicher, & Stollhans, 2016; Annika Wiklund-Engblom, Hiltunen, Hartvik, Porko-Hudd, & Johansson, 2014), and, finally, on the competence needed by the individual in order to smoothly navigate the transition between different digital forms, or between the digital and the analogical (Alper, 2013a; Alvarez, Salavati, Nussbaum, & Milrad, 2013; McDougall & Potter, 2015). We therefore observe that the educational element does not allow us to refine these various

conceptions, which, in itself, is logical should we accept that the database used in this analysis is educational.

We can, then, attempt to approach our study aim through an analysis of the viewpoints of the documents consulted. To do this, we carried out a preliminary analysis of nouns associated with the term transmedia. This first reading revealed that uses of transmedia as a noun are low in proportional terms (Benedict et al., 2013; Wohlwend, 2012). As can be observed in the table below, it is usually accompanied by a complementary noun:

Concurrence	Document
<i>transmedia navigation</i>	Alper (2013a) Alvarez et al. (2013) Rhoades (2016)
<i>transmedia play</i>	Alper (2013b)
<i>transmedia literacies</i>	Anderson (2014)
<i>transmedia magazine</i>	Conner-Zachocki (2015)
<i>transmedia learning</i>	Fleming (2013)
<i>transmedia storytelling</i>	Gambarato & Dabagian (2016) Rodríguez-Illera & Molas-Castellas (2014) Zhou, Chang, Pan, & Whittinghill (2015)
<i>transmedia method/transmedia storytelling</i>	Cecilia Gorla et al. (2016) Reid & Gilardi (2016)
<i>transmedia story</i>	Pence (2012)
<i>transmedia storybuilding</i>	Annika Wiklund-Engblom et al. (2014)
<i>transmedia book</i>	Stansell et al. (2015) Tillman et al. (2014)
<i>transmedia resources/transmedia approach</i>	Llorente et al. (2013)
<i>transmedia program</i>	Silander et al. (2016)
<i>use as noun</i>	Wohlwend (2012)
<i>transmedia approach/use as noun</i>	Benedict et al. (2013)
<i>transmedia/transmedia learning</i>	Chung (2014); Paulsen & Andrews (2014)
<i>transmedia literacy/transmedia reading and making practices</i>	McDougall & Potter (2015)
<i>transmedia languages/transmedia interaction</i>	Fainholc (2015)

Table 3. Concurrences with transmedia.
Source: Authors'

Beyond an apparently anecdotal linguistic question, the analysis of these concurrences lets us diagnose three broad approaches to the educational use of transmedia, resulting from the nouns that accompany the term. We find articles that focus on the subject that uses transmedia objects; there is research that analyses transmedia objects or resources; and there are articles that focus on the educational use of transmedia. The boundaries are, of course, blurred. Categories are not watertight and it is therefore easy to find points that connect them. This approach is shown in the table below:

Subject-centred	Resource-centred	Process-centred
Alper (2013a, 2013b); Alvarez et al. (2013); Anderson (2014); Fainholc (2015); McDougall & Potter (2015); Rhoades (2016)	Conner-Zachocki (2015); Llorente et al. (2013); Stansell et al. (2015); Tillman et al. (2014)	Benedict et al. (2013); Chung (2014); Fleming (2013); Gambarato & Dabagian (2016); Cecilia Gorla et al. (2016); Paulsen & Andrews (2014); Pence (2012); Reid & Gilardi (2016); Rodríguez-Illera & Molas-Castellas (2014); Silander et al. (2016); Annika Wiklund-Engblom et al. (2014); Zhou et al. (2015)

Table 4. Preferred focus of documents.
Source: Authors'

Subject-centred

As already mentioned, the first group comprises those texts which approach the transmedia question by focusing more on the individual that interacts with them than on the essence of the object itself or its educational possibilities, even if these are underlying. In this respect, a question linked to an individual's competence in managing transmedia resources is often addressed and explained through concepts such as literacy or navigation. These approaches treat transmedia as a competence (whether one that an individual may not have and needs to acquire, or one that new citizens often demonstrate and can be used in education). In any event, the co-existence and concurrence of different media require an individual to have "the ability to follow the flow of stories and information across multiple modalities" (Alper, 2013a). This is, indirectly, what Pence (2012) refers to when stating that the educator should emphasize the need for their audience (in our case students) to interact with the narrative implicit in transmedia, which leads us to affirm that we are referring to an instrumental competence.

Object-centred

Secondly, and as mentioned above, we find documents that particularly focus on the nature of the transmedia object or resource. By this, we mean transmedia magazines (Conner-Zachocki, 2015), books (Stansell et al., 2015; Tillman et al., 2014), or educational resources (Llorente et al., 2013). These are educational resources or have been designed to serve as a base for the users' learning. Nonetheless, they are aprioristic reviews, in which the analysis of the resource or, if you will, their creation, is prior to their educational use, which occurs once the resource exists. Inanimate Alice or the Matrix universe may well represent this idea perfectly as fictional products of an author (a novel and a film, respectively) that lead to interactive and multi-modal creative processes and that, in their entirety, can also be viewed as a transmedia resource or text.

We should make the difference between multimedia and transmedia clear here. While most transmedia products contain multimedia content, insofar as the role of the user changes significantly, the term transmedia involves a qualitative jump over the former. We take multimedia to refer to the integration of different communicative codes (written, visual and audio) in a single digital product which can contain still or moving images, graphics, texts, sounds, etc., and which enables the possibility of interaction that facilitates communication between the user and the product. Transmedia, on the other hand, refers to the dispersion of those multimedia elements across multiple media platforms, through which the user can navigate, edit and publish, and interact with other users in a much more active role than that mentioned above. Transmedia navigation is, therefore, a competence linked to the movement across a range of platforms or

means of communication and expression.

Process-centred

Finally we reach the third block or perspective, in which we no longer talk of the individual that uses transmedia or transmedia products themselves but rather of the deliberate, planned educational use made of them (or, in other words, documents in which this constitutes the element on which the discourse is articulated).

This final group (the largest, as can be seen in Table 4), is centred on how transmedia is used in the learning process. This is the most practical approach to transmedia from an educational perspective. We find here the most general approaches, alluding to the existence of methods, didactic methodology or educational transmedia focuses, or learning through transmedia resources (Benedict et al., 2013; Chung, 2014; Fleming, 2013; Paulsen & Andrews, 2014; Silander et al., 2016). Lastly, there is a large sub-group that, by addressing the learning process through transmedia, centres on the narrative component as the backbone of experiences. This is termed storytelling or storybuilding (Fleming, 2013; Gambarato & Dabagian, 2016; Cecilia Gorla et al., 2016; Rodríguez-Illera & Molas-Castellas, 2014; Annika Wiklund-Engblom et al., 2014; Zhou et al., 2015). In this respect, we should highlight that this sub-group is notable for not adding any element that was not already present in the above experiences to a greater or lesser degree. Unsurprisingly, as acknowledged at the beginning, narration is inherent to transmedia in that it is what permits navigating across different media. It is therefore the backbone or guiding thread of media flow. Nonetheless, what makes these storytelling experiences different is that the narration is not always aprioristic (it is not always provided), but rather is what the learning individual produces and what allows them to advance in their learning process with the help of the necessary media. The narrative produced by this jump between media, constructed by the user in their interest in continuing a story that they do not intentionally construct, may also be changing the role of users. Instead of being the receiver-consumer, they become a low-level prosumer. In contrast, in story-telling experiences it is the user who constructs the narration, making them a primary creator; it is the change of media that helps them construct their learning.

Despite the above, the categories are not watertight, and we should talk of an inter-related continuum by means of which a return journey is made from the individual who uses transmedia products to the products themselves, caused by learning (or what can be used for educational ends). Nevertheless, the very existence of transmedia products (as a result of this participative, convergent culture) takes us back to the beginning, to the individual who must be competent in order to use the possibilities offered by a transmedia digital culture. This, once again, leads us to reflect on education (less now about how to make the most of transmedia for individual learning, than about how to train the individual to learn from transmedia). This is shown in the following image:

Image 1. Educational return trip by individual in relation to transmedia product (authors' own work).
Source: Autors'

c. Other associated concepts

In addition to these three broad categories, we can also analyse some of the remaining concepts underlying this first view, which are intimately inter-related and often permeable.

Storytelling

The first of these, although we have dealt with it partially above, is storytelling. Indeed, as we have said, beyond the narrative component intrinsic to the concept of transmedia, there are many didactic approaches that consciously use it, meaning it is this need to make the narrative advance that leads to learning. Jenkins (2006) considers *The Matrix* to be the paradigmatic example of transmedia narration. From the film's plot, as a commercial product that leads to the transmedia sequence, the narrative thread becomes a choral story that has been distributed in other films and video games (as further commercial products) or blogs and multimedia fan fiction products (as non-commercial products that are social in nature and often collaborative). Ultimately, *The Matrix* is a story comprised of multiple texts that creates a transmedia narrative. A transmedia story therefore, "unfolds across multiple media platforms, with each new text making a distinctive and valuable contribution to the whole" (Jenkins, 2006, p. 95-96). As Jenkins noted in his blog in 2007, "Transmedia storytelling represents a process where integral elements of a fiction get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated entertainment experience. Ideally, each medium makes its own unique contribution to the unfolding of the story. So, for example, in the *Matrix* franchise, key bits of information are conveyed through three live action films, a series of animated shorts, two collections of comic book stories, and several video games. There is no one single source or ur-text where one can turn to gain all of the information needed to comprehend the *Matrix* universe" (Jenkins, 2007).

Fiction

The educational use of storytelling, this use of narrative implicit to transmedia, is what permits cognitive challenges, the solving of which leads to learning. These strategies often arise from commercial fiction (Alper, 2013b), on the basis of which the narration is continued in a range of formats (whether in a sequence pre-defined by the teacher or not) to develop cross-disciplinary learning, such as communicative (Cecilia Goria et al., 2016; Reid & Gilardi, 2016) or digital learning (Alper, 2013a). These narrative processes need not be commercial or fictional, although this doubtlessly increases motivation (Fleming, 2013; Rodríguez-Illera & Molas-Castellas, 2014). Indeed, this fictional element may be the fortunate context for methodologies such as learning based on problems that are solved through a range of media (Gambarato & Dabagian, 2016; Paulsen & Andrews, 2014; Tillman et al., 2014). However, fiction is often not present, not even as a trigger, and the narration is instead formed around the learning process itself, so that students narrate their own learning in general (Benedict et al., 2013) or the process of construction of analogical products in real time (Annika Wiklund-Engblom et al., 2014), which provide them with a useful debriefing once the construction or learning process is completed.

Different environments

Another of the recurring elements in the work studied is related to the use (whether sequential or simultaneous) of different environments and the Internet itself. It is not only the medium that changes, but also the sequence distribution channels that integrate transmedia. The collaborative dimension that underlies transmedia itself means that this leap between different media is not only individual and local, but also that it has to take place in social media environments (Pence, 2012), working towards a shared common aim (Conner-Zachocki, 2015). In order to achieve this, as we

have said, this jump from the local to the cloud is indispensable, from the use of collaborative suites on the Internet (Benedict et al., 2013) to the Internet itself as a centralizing element; mobile technologies are accessed naturally, whether in parallel with other resources (Stansell et al., 2015) or principally, through specific mobile applications (Annika Wiklund-Engblom et al., 2014).

Between the analogical and the digital

If the leap between different environments is frequent, we should highlight that the leap between the analogical and the digital is also common. Not all transmedia sequences take place completely in virtual space, the process involves notable analogical elements. These may often be the cause of the process, in the form of a book or printed story (Alper, 2013a, 2013b; Silander et al., 2016), and are often also intermediate phases. The latter may include experimental processes that facilitate the development of the transmedia product (Benedict et al., 2013; Silander et al., 2016; Stansell et al., 2015), construction processes (Annika Wiklund-Engblom et al., 2014), or play processes in their most traditional meaning (Wohlwend, 2012). It is here that we can talk of transmedia experiences in which fiction plays a small role, or those exclusively associated with the digital and not present in the analogical.

Play

This somewhat recurrent switching between fiction and reality leads us to identify another of the elements frequently found in the documents analysed, play. Whether analogical or digital, games are one way in which the narrative can progress and, therefore, contribute to the construction of the transmedia product. For example, one of the sequences of a game may consciously be planned (Anderson, 2014); in fact, this may serve for the learning of curricular competences, such as mathematics (Llorente et al., 2013), or be integrated within the experimental stage of learning of scientific competences (Stansell et al., 2015), especially at infant education level. It may also serve in the learning processes of cross-disciplinary competences, such as digital competence (Alper, 2013a), those of collaborative work or management of the learning network (Alper, 2013b), or even for the construction or negotiation of personal identity (in particular, that of gender identity) (Wohlwend, 2012).

Between the real and the virtual

Through the above reflections, another aspect has been identified, connected with switching between the real and the virtual worlds, as will be discussed now. The classic idea of multimedia led us to focus on the simultaneous concurrence of different media; now, with transmedia (and particularly its use in education), this barrier is broken and we can suggest that the interaction between the various players in the educational process (basically, the students and teachers, but also the family) (Alvarez et al., 2013; Gambarato & Dabagian, 2016; Pence, 2012) not only takes place in the virtual world, but also in the face-to-face world, and that some sequences feed off this switching. Examples of this might be analogical experimentation and construction (Stansell et al., 2015; Annika Wiklund-Engblom et al., 2014), reflection on which continues in the virtual world with the production of transmedia products; this can arise from sequences in a game that are continued in the digital world (Tillman et al., 2014), or may present analogical face-to-face elements which link the various transmedia sequences (Rodríguez-Illera & Molas-Castellas, 2014). As we have said, all of this enables the whole range of possible interactions between users; between students (Stansell et al., 2015; Wohlwend, 2012); between students and teachers (Llorente et al., 2013; Paulsen & Andrews, 2014; Annika Wiklund-Engblom et al., 2014); and also between the families involved (Benedict et al., 2013; Stansell et al., 2015).

Marketing

Lastly, although it did come up indirectly in the previous reflection, we would also highlight the conscious use of elements provided by industry (commercial elements, marketing or pure merchandising) that give rise to transmedia. Limitations in relation to intellectual property and a degree of rejection of all free-time associated marketing have often doubtlessly caused the educational sphere to view this with a certain degree of distrust; despite this, however, when looking at the transmedia movement as a whole (if such a concept exists), we not only see commercial products as a resource that is far-removed from education, but can also sense a conscious effort to integrate them within the transmedia sequence (especially as a cause). This is largely due to its great power to motivate and catch people's attention. Examples are the Disney cosmogony in infant education (Wohlwend, 2012), or commercial publications (Rhoades, 2016), as we have already indicated, with *The Matrix* able to build a creative environment that favours the development of transmedia narration (Jenkins, 2006).

IV. Conclusions

Our analysis of the selected documents has provided us with a closer understanding of the most frequent educational approaches to transmedia. Perhaps the first consideration underlying this analysis is that, while the transmedia movement and participative culture have been studied for over a decade in a range of areas (arts and humanities, digital culture, and media), there has been little interest in the education sector, and this interest is relatively recent; only 22 works were found, the earliest dating from 2012. Despite this, the concept is both current and relevant; we feel that this recent interest in its educational possibilities ensures its future as a subject well worth the interest of educators, teachers and researchers alike over coming years.

It is not surprising, therefore, that the circulation of media content, this flow of content across multiple media and forms of cultural expression, is a form of cultural creation and participation that is unlikely to diminish (Gee, 2017; Jenkins, Ito & Boyd, 2016). This requires the active participation of consumers who agree on and believe in the kind of collective intelligence provided by the Internet (one such example is Wikipedia, itself the product of the contributions of numerous authors). Indeed, Jenkins (2006) argues that convergence represents above all a cultural change in which the media spectator as passive receiver of content and information is substituted by producers, authors who create and publish their work on the Internet and multiple platforms (the participative culture we have just mentioned).

It also involves the move from consumers to prosumers (who, while consuming, also create content and products). And based on these considerations it is logical that there is a leap from reflecting on what is almost a social issue to reflecting on the individual who struggles with them and the competence profile that is needed in order to do this productively. It is here that the educational model becomes clearer, since we should concern ourselves with the individual's competence and guarantee this from the perspective of both general and formal education.

As we have said, this conception of transmedia found in the documents analysed has important cultural and social connotations. To this end, according to Jenkins (2006) people should, and in fact do, acquire specific abilities with which to navigate the new digital media. Here, transmedia is linked to digital literacy rates, and this leads to the idea of transmedia navigation as an ability or competence. The same author (Jenkins, Purushotma, et al., 2009, p. 46) states that transmedia navigation should be understood as: "the ability to deal with the flow of stories and information across multiple modalities". Hence, we can deduce that transmedia arises as an ability or a form of literacy (a new language that must be learnt and whose rules must be understood) linked to the processing of new types of stories and arguments. These new types emerge as a result of the

conditioning factors in the new social environment, such as cultural convergence, which we have mentioned above, collective intelligence (Jenkins, 2006) and participative culture (Jenkins, 1991). An almost sociological reflection is called for here (one deeply-rooted in education) that links with the essence of new citizens - the millennials - whose relationship with culture and democracy is different to that of earlier generations; here citizen participation is, essentially, media-based (Álvarez Monzonillo & de Haro, 2017; Lenhart et al., 2005).

Nonetheless, beyond this reflection on the competence profile of the new, participative citizen and on transmedia navigation, the intrinsic nature of transmedia materials themselves means they are widely used in education. The idea of do it yourself and do it together (Jenkins et al., 2016) mentioned earlier in reference to *The Matrix* and Wikipedia has meant that storytelling-based strategies, whose end product is a transmedia document, are widely used and have provided proof of their usefulness in learning. This idea of navigating across a range of media thanks to a narration fosters motivation and reflection on the learning of the student in formal education (Jenkins, Purushotma, et al., 2009; Raybourn, 2012; A. Wiklund-Engblom, Hiltunen, Hartvik, & Porko-Hudd, 2013).

In the end, there can be no doubt that both facets (transmedia as a concept or as a process) are two sides of the same coin and should interest those who research how new students learn. Neither can there be any doubt that this should be a cause for inspiration and reflection for those who design learning situations for these students, which is something to ensure in the future.

a. Limitations

One of our limitations comes from the exclusion of works that may be conceptually following to this concept of transmedia but does not use that term. In part, this constraint was necessary to achieve manageability. The second one refers to the use of only one database as a source of information. We decided to focus our research on the ERIC database because it is an authoritative database of indexed and full-text education literature and resources. Our focus was not on the term transmedia, but on the relationships between transmedia and education.

b. Identified gaps and future research

The review undertaken provides us with a closer view of the current situation, as well as identifying those aspects we feel warrant further research. It is firstly necessary to operationalize the idea of transmedia competence (transmedia navigation) so that it becomes one that can be assessed and promoted in formal learning and teaching contexts. We also feel it necessary to understand the 'subject' of transmedia, by which we mean the profiles and social and cognitive characteristics of those people who are prosumers and not mere consumers of cultural content; teaching strategies have to be developed using a range of media with a common goal, normally an interest. Finally, we believe that the challenge still exists of designing and implementing environments and practices that, through the possibilities of transmedia storytelling, connect those learning experiences that take place both inside and outside the school context. This would place it in line with current research on teaching and learning processes across settings and time with the goal of creating more equitable opportunities for the development of expertise and interest-driven learning (Barron & Bell, 2015; Esteban-Guitart, 2016; Gee, 2017; Lee, 2017).

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