Information management and digital content creation in the prosumer of the millennial generation

Gestión de información y creación de contenido digital en el prosumidor millennial

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Keywords
Digital competences, data literacy, digital content creation, millennials, higher education

ABSTRACT

This research analyze the processes of management of information and digital content creation in university students of a public institution in the state of Oaxaca, México. The design of this study was mixed ethnographic and the methods of data collection were: a survey, group interview and participant observation. In classes, the participants designed his electronic portfolioes in Blogger. The results revealed emptinesses in the competences information and literacy data, principally in the means of searching, filtering data and evaluation of the quality of the content. Likewise, basic digital competences were identified in creation of contents to the moment to develop contents in different formats and platforms, problems like that with the skills of critical thought on having transformed information into knowledge. The principal deficiencies were located in the managing of the copyright and licenses, as well as in the functions of programming. It is accepted the supposition of investigation, indicating that the deficiencies in data literacy and digital competences of the students affects in the quality of the content that they produce in his environment of digital learning. As a conclusion, it was obtained that the lack in data literacy and digital competences places the individual in a position of digital oppressed.

Palabras clave
Competencias digitales, alfabetización informacional, creación de contenido digital, millennials, educación superior

RESUMEN

Esta investigación analiza los procesos de gestión de información y creación de contenidos digitales en estudiantes universitarios de una institución pública en el estado de Oaxaca, México. El diseño del estudio fue etnográfico mixto y las técnicas de recolección de datos fueron: encuesta, entrevista grupal y observación participante. En una experiencia educativa, los participantes construyeron sus portafolios electrónicos en Blogger. Los resultados revelaron vacíos en las competencias de información y alfabetización informacional, principalmente en los medios de búsqueda, etapa de filtrado y evaluación de la calidad del contenido. Asimismo, se identificaron competencias básicas en la creación de contenidos al desarrollarlos en diferentes formatos y plataformas, así como problemas con las habilidades de pensamiento crítico al transformar la información en conocimiento. Las principales deficiencias se ubicaron en el manejo de los derechos de autor y licencias, así como en las funciones de programación. Se acepta el supuesto de investigación, en el que se señalan las deficiencias en las competencias informacionales y digitales de los estudiantes, las cuales afectan la calidad del contenido que producen en su ambiente de aprendizaje digital. Como conclusión, se obtuvo que la falta de competencias informacionales y digitales colocan al individuo en una posición de oprimido digital.

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INTRODUCTION

Over the last two decades, several proposals have emerged describing the individuals who are now part of the university community. Based on generational criteria, Howe and Strauss (2000) have proposed using the term "millennials" or "millennium generation" to identify people born between 1982 and 2000.

This millennial segment consists of techno-social individuals for whom the Internet and the use of digital devices (smartphone, tablet, among others) are crucial elements in their everyday life. It should be noted that their digital competences are not homogeneous given the level of access to information and communication technologies (ICTs) and the skills to use them (Area Moreira, Borrás Machado and San Nicolás Santos, 2015; Howe and Strauss, 2000; Pedró, 2006; Romo González and Tarango, 2015).

The term "prosumer" proposed by Toffler (1980) has been used to describe the participation of the user on the Web, i.e., to explain the role transformation: shifting from consumer to prosumer (consumers and generators of contents) active participants in the construction of knowledge. Hence, a better access to network resources creates conditions for informal, continuous and lifelong learning (Siemens, 2010; Marín, Lizana and Salinas, 2014).

The transformations of today's modern society should motivate any learner to migrate from a purely consuming position to a new role that combines the action of consuming information and generating knowledge on a same plane. Embedded in a productive position, the university student requires competences to manage information and produce knowledge in digital environments (Marín, Lizana and Salinas, 2014).

The prosumer position has increased with the emergence of the Web and the current of self-construction of contents, from the do it yourself plane (DIY) as well as from the user generated contents. Every day, the net is fed with information of different nature, hence, the challenge is crystallized in a social, open learning based on a conscious participation and the quality of knowledge being constructed, distributed and disseminated (Cobo and Moravec, 2011; Dabbagh and Kitsantas; 2012; García Manso and Díaz Cano, 2011).

Wheeler (2016), in his digital literacy model, identifies three dimensions: personal, social and knowledge management. The first refers to the personal organization of space, digital identity and personal brand. As for the externally oriented social component, it integrates the action of sharing content, the participation on social networks as well as the personal brand valued from the social spectrum. Regarding knowledge management, it involves the filtration and selection of information, the creation of some product and the action of sharing. This dimension

integrates informational and digital competences, encourages revising the information management and digital content creation processes.

Wheeler (2016), in his proposal, addresses the topic of transliteracy, understood as the "skill of being able to present ideas, connect and manage presence equally well regardless of the selected tools and technologies" (§ 3). Likewise, he proposes a component that integrates the action of reusing, remixing and restructuring content. This model in construction shows three standpoints on how to address the content creation skill.

When approaching the Web for learning purposes, it is important to consider two positions. On the one hand, digital tools allow sharing a great number of files with countless people in a matter of seconds, a situation that satisfies the need of the individual to be seen and heard (Kulakli & Mahony, 2014). On the other hand, this action causes an information overload of the Web. In view of this fact, Aguaded and Romero Rodríguez (2015) point out that a balance must be achieved between the quantity and quality of contents being accessed; hence, the motivation of fostering the development of informational and digital skills as well as promoting content curing practices and healthy media behaviors.

As for Area Moreira, Borrás Machado and San Nicolás Santos (2015, there are five digital literacy skills: instrumental, cognitive, communicative, axiological and emotional, which are all involved in the creation of contents; e.g., the instrumental skill is linked to the technical domain of technologies; the cognitive skill refers to the ability of converting the information into knowledge. The communicative skill is related to knowledge and skills to express oneself in different languages and technological means. On the other hand, the axiological skill is understood as the ethical and democratic use of the information being shared. Lastly, the emotional dimension is conceived as the behavior developed in virtual environments, i.e., the management of emotions when interacting on the network.

Both the Wheeler's model (2016) and the classification of Area Moreira, Borrás Machado and San Nicolás Santos (2015) of digital literacy allow explaining all the dynamic that is implicit to the content creation activity, from knowing how to select the information that will be transformed into knowledge, having the means to carry out the production, as well as having the skill to transmit and share the content; in addition to being aware of the interactions being generated on the network through this action.

Kulakli and Mahony (2014) claim that, through the use of web tools, contents of different types: textual, hypertextual, audiovisual, iconic, audio, multimedia, among others, are created and shared. This action can be reflected by participating on social networks, managing a personal website, creating contents on blogs, sharing online photographs, writings, stories, poems, uploading music, video files or any other creation (Blank, 2013). This information is considered the raw material of the society of

knowledge; hence, university students require skills to produce, disseminate and consume information to face today's challenges (Area Moreira and Guarro, 2012).

It is important to point out that the creation of contents can be generated both online and offline and be developed in formal, non-formal or informal environments. It is important to comment that the level of connection can determine the action of creating contents (Kulakli & Mahony, 2014).

As for digital skills, the common framework of digital teacher skill identifies five areas: information and informational literacy; communication and collaboration; creation of digital content; safety and problem solving. For the purpose of this research, it is important to focus on two of these areas: the information and informational literacy and the creation of digital content. The first focuses on assessing the activities of browsing, filtration, assessment, storage and recuperation of the information, data and digital content. As for the production of contents, it involves the development of material, the integration and reworking of digital contents, copyrights and license management, as well as programming aspects (Ferrari, 2013; Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado [INTEF] [The National Institute of Educational Technology and Teacher Formation], 2017).

From the standpoint of informational literacy Área and Guarro (2012) point out that digital information can be found in different forms: textual, hypertextual, audiovisual, iconic, multimedia, among others. As a result of the foregoing, information consumption behaviors have transformed due to the immediacy, ubiquity, interaction and, in some cases, to the gratuitousness of the information.

Therefore, media or digital skills and informational literacy are the two factors taken into consideration when analyzing information management on the network, (Aguaded and Romero Rodríguez, 2015). The Association of College & Research Libraries explain informational literacy as "the set of integrated skills that comprises the reflexive discovery of information, the comprehension of the way such information is produces and assessed, as well as its use to create new knowledge and to participate ethically in learning communities" (Association of College & Research Libraries, 2016, p. 3).

On the other hand, when addressing the creation of digital content, two aspects must be taken into account: the management of copyrights and the information licenses and the programming aspects. As for copyrights, the student must be aware of the importance of quoting sources and the effects of academic plagiarism. In the case of information licenses, all the criteria for the use of information and the rights to use the information come from three logics: Copyright(C), Copyleft (ↄ) and Creative Commons (CC). The prosumer, as producer and user, must know when the material is in

condition of being copied, distributed or reused (INTEF, 2017; Lamlert, 2014; Lessig, 2004).

Regarding programming skills, Llorens Largo, García Peñalvo, Molero Prieto and Vendrell Vidal (2017) point out the following: "... instead of teaching them only the syntax of a changing language, they must be taught the rules that allow knowing how the digital language is constructed" (pp. 7 y 8). This is an invitation to ponder on the way in which educational institutions should implement crosswise computational thinking in their academic curricula.

From an ideal scenario, the experience of creating contents collaboratively (teachers and students) in a classroom can be significant for permanent learning. Therefore, the creation of digital contents should be promoted in formal education in such a way as the teacher's scaffolding fosters good practices for future productions carried out on the network.

In contrast with the above, from a realistic approach, teachers plan their learning activities with the expectation that the student masters the following aspects: skills to use any type of media (printed, digital, audiovisual, among others) and search resources (libraries, search engines, electronic databases, repositories, content curation spaces, among others); mechanisms to filter information and avoid infoxication; criteria defined to assess the information encountered; skills of critical and creative thinking to transform the information in new knowledge; knowledge and skills to design different content formats and know how to communicate: good practices to manage licenses and copyrights; and a responsible attitude in managing information and the subsequent construction of knowledge (Weiner, 2012). Reality leads to identifying learners with gaps in informational and digital skills which translate into instrumental, cognitive, socio-communicational, axiological and emotional factors (Área and Guarro, 2012).

Given the above, the study aimed at analyzing the processes of information management and digital content creation in Mexican university students. In addition to the objective, a research assumption was considered and constructed based on the revision of the theoretical framework. The assumption developed was that the lack of students' informational and digital skills influences the quality of the content they produce in their digital learning environment.

METHOD

The methodological design was an ethnographic mixture, i.e., we analyzed quantitative and qualitative data. The information derived from the research was described in statistical and narrative terms (Creswell, 2012; Hernández Sampieri, Fernández Collado and Baptista Lucio, 2014). As research techniques we used the survey, group interview and participating observation. The information and informational literacy as well as digital

content creation were the two areas of the common framework of digital skills we considered in constructing the research instruments (questionnaire, interview script and observation guideline) (Ferrari, 2013; INTEF, 2017).

The quantitative work began in May 2016 with the survey of a 267-student sample. It should be clarified that these results derived from one of the sections of the research work, i.e., the Internet user's profile while using the web for his/her lifelong learning. The instrument used was a structured questionnaire which information and information literacy as well as the digital content creation sections consisted in seven items each. We used a five-degree Likert type scale as response scale.

After debugging the incomplete questionnaires, the quantitative study consisted in a final sample of 215 students of the bachelor's degree in tourism management of a public university in the State of Oaxaca. The participants are aged 18 to 29, of which 67 (31.2%) are male and 148 (68.8%) are female. The data were interpreted through descriptive and inferential statistics by using the SPSS version 22. The development of the qualitative phase emerged from the result of the quantitative phase and aimed at analyzing the students' processes of information management and the creation of digital contents. We used group interviews and participating observation as research techniques. The 68 participants developed their digital portfolio (blog) as part of the activities of two educational experiences during the March-May 2017 period. The key informants were eighth-semester students.

We analyzed the content of the results obtained from four-group interviews and the observation log. Each group interview was made up of 17 members. The registration was conducted through observation guidelines, narrative texts (field notes) and audiovisuals (photographs, screenshots and graphic representations).

For group interviews and observation practices on information management, we developed computer room sessions in which the students explained step by step how they sought the information on the Internet. As for the analysis of the skills in creating contents, we considered the products of their digital portfolios (http://mipleytu.blogspot.mx/2017/03/portafolios-electronicos-de-cest.html). For the activities, we analyzed the products in text, hypertext and image formats. The data were interpreted by means of the Atlas.Ti version 7software and manual coding work.

By organizing the data collected, we identified the information and read it several times. We developed categories based on a cognitive process of simple classification (Mayz Díaz, 2009). For the content analysis of the interviews and the observation, we established categories in every one of the competences under study such as the information and digital literacy: Internet browsing, search and filtration, information evaluation, storage

and retrieval; as for the creation of the digital content: activities of creation of digital content and formation required for the producer of digital contents.

RESULTS

Quantitative Results

Among the media habits, the average time of connection to the Internet is approximately six hours and thirty minutes. A large proportion of the interviewees were connected from home (44.2%), followed by the option of both at home and at work or school (38.6%). The connection means mostly used was the subscription to Wifi (73.3%). A large percentage (55.3%) argues that the type of device chosen depended on the time and situation.

The reliability analysis of the 13-item scale casted a .822 Cronbach Alfa, which represented a satisfactory reliability index above the minimum established (.70) (Malhotra, 2008). As for the information and informational literacy, we observed that the items with the highest values were critical to the information found (3.62) and to the search and browsing technique (3.31). On the other hand, the minimum values were obtained by displaying strategies to retrieve content (2.22), as well as filtration and control of the information received (2.39). As for the values of the digital content creation, we found that the production of digital content in different formats (3.49) and the act of mixing existent elements to create new contents obtained the highest values (3.04). As for the use of programming languages (1.53) and the application of the types of information licenses (1.93), they reflect a lower score (See Table 1).

Table 1. The Scale Descriptive Statistics

Enunciados	Media	Desviación estándar
Información y alfabetización informacional		
Técnicas de búsqueda y navegación	3.31	.962
Filtrado y control de la información recibida	2.39	1.017
Búsqueda rápida y seguidores	3.23	1.014
Crítico(a) de la información encontrada	3.62	.833

Parámetros que deben cumplir las páginas web y la información	3.05	1.040
Métodos y herramientas para organizar los archivos, contenido	2.70	.983
Desplegado de estrategias para recuperar contenido	2.22	.919
Creación de contenido digital		
Producción de contenido digital en diferentes formatos	3.49	1.203
Emplear diversas herramientas digitales para crear producciones	2.75	1.181
Mezclar elementos existentes para crear nuevos contenidos	3.04	1.179
Aplicación de los tipos de licencia a la información	1.93	1.130
Modificación de programas abiertos	2.52	1.102
Uso de los lenguajes de programación	1.53	.874

Source: Self development.

Regarding the topics of instrument validity, the content validity is justified with the revision of the literature on digital competence and the state-of-the-art construction (Instituto Vasco de Cualificaciones y Formación Profesional [Basque Institute for Qualifications and Vocational Training], 2014; INTEF, 2017). Regarding the construct validity, we developed the exploratory factorial analysis of main components with varimax rotation based on the Kaiser criterion for every construct (Henry Pedroza, 2007). As a result, the scale showed a higher level (0.80) which meets the criteria of the Kaiser-Meyer-Olkin test (value higher than 0.05). Likewise, the sphericity test (a value lower than 0.05) and the explained variance percentages were above 50% (55.33%), satisfactory results to proceed with the factorization exercise.

The application of the exploratory factorial analysis resulted in three factors, which when contrasted with the common framework of digital competence, we observe that the items of the information and informational literacy dimension were grouped in a single factor, contrary

to what happened with the dimension of digital content creation that was divided into two categories (See Table 2). The first of these subdimensions was referred to as digital content creation activities while the other subdimension was referred to as the training required for the producer of digital contents.

Table 2. Exploratory Factorial Analysis of the Scale

Matriz de componentes rotados*

	Componente		
	INAI	ACCD	FPCD
Técnicas de búsqueda y navegación	.685		
Filtrado y control de la información recibida	.717		
Búsqueda rápida y seguidores	.457		
Crítico(a) de la información encontrada	.539		
Parámetros que deben cumplir las páginas web y la información	.707		
Métodos y herramientas para organizar los archivos, contenido	.636		
Desplegado de estrategias para recuperar contenido	.630		
Producción de contenido digital en diferentes formatos		.762	
Emplear diversas herramientas digitales para crear producciones		.790	
Mezclar elementos existentes para crear nuevos contenidos		.790	

Aplicación de los tipos de licencia a la información	.713
Modificación de programas abiertos	.645
Uso de los lenguajes de programación	.852

Notes:
Extraction method: Analysis of the main components.
Rotation method: varimax with Kaiser normalization.
* The rotation has converged into five iteractions.
INAI: information and informational literacy.
ACCD: digital content creation activities.
FPCD: training required for the producer of digital contents.
Source: Self development.

Qualitative Results

Internet Browsing, Searching and Filtration

As part of the findings in the Internet browsing activity, we have found that most participants use Google Chrome explorer. Many of their information management activities were carried out on generic search engines such as Google. Some students also claimed using Academic Google or Google Books and, in certain cases, they applied the advanced search or entered scientific databases and repositories.

The participant observation activities were carried out in their university computer room. Two browsers, Google Chrome and Mozilla Firefox, were installed in the computers. It should be noted that during class hours, digital tools requiring a greater broadband capacity were blocked; for example, the YouTube video channel and Facebook social network.

Among the findings, we identified that a large portion of the students resorted to the generic Google search engine, and only a minority of students carried out direct searches in Academic Google; other students went directly to Google Books or databases and repositories. It should be clarified that most of the participants opted for Google Chrome browser and, only at times when the network was slow, did they use Mozilla Firefox. Basic searches were used to locate the information, i.e., the participants wrote the topic or the key words they were looking for in the search space. The filtration techniques were scarce. Some students opted to filter documents in pdf. It is worth emphasizing that the problems the students encountered in managing information was not to have a clear idea of their need for it. Such situation caused a severe infoxication (information overload) and a considerable time investment to choose the documents they needed to develop their learning activity.

Information Assessment

In this respect, different information assessment criteria were expressed. Some informants valued more the sources of information, the author, the concepts and quotes found, while others indicated if the information found was similar to that received in class, the date of publication or that the pages were secure and that they were referenced.

As for the participating observation, based on the display of the information, the students read everything the search engine recorded and they chose the information closest to their need. Some students opened tabs for every document they were interested in reading and they compared the information found; while others downloaded articles to the computer and then reviewed the information and the references used by the author.

The students claimed that when the information was not adequate, they resorted to the primary sources the author(s) used. To evaluate the information, they implemented different criteria. Some pointed out that they only chose articles from scientific journals; others mentioned looking for those documents that had enough information on the research topic; some took into consideration the year of publication and the authors. The degree of complexity of the question to research corresponded to the time the students invested in searching for information. This scenario is different when the searches are being done in spaces where the access to the Internet is unlimited.

Information Storage and Retrieval

From the interviews, in the information storage and retrieval dimension, we identified as main storage means, the USB stick, laptop, mobile phone, e-mail, social networks such as Facebook, Google Academic library, Google Drive, as well as the list of favorite browsers or, in some cases, search history.

When stored in electronic devices such as a laptop or USB stick, documents are organized into folders and are classified whether by subjects, dates or representative names. They usually support office automation documents, pdf formats, links and photographs. To avoid losing information, some students chose to back them up; others rely on Word sheets to copy and paste links. To avoid infoxication, some students debugged documents.

Among the participating observation activities, it should be highlighted that file storage, organization and retrieval was carried out mainly from the external memory, smartphone, e-mail; a minority of students resorted to the Google Drive cloud.

Digital Content Creation Activities

Students have basic knowledge in developing digital contents that allows them to meet their everyday needs within the school setting. As for the content integration and reworking, we identified gaps in the adequate management of the content intellectual property that were to be reworked; for example, to differentiate between what was a textual quotation from what was a paraphrase in the material to produce. Another aspect to consider was that students sometimes forgot to give the reference of the in-text citation. The same occurred with images since most of the students used the resources found in the generic search engine (Google images) indiscriminately, without taking into consideration the rights of use. Furthermore, a minority of students access free image banks that are available on the network.

Likewise, we observed the basic skills needed to use activities to edit and modify contents, whether in text or image format. We found that the students did more image editing when carrying out activities with social and recreational purposes (photographs, memes, among others) than activities with educational purposes.

Based on the results of the analysis of the information management process, we assessed the digital products of their digital portfolio for the course in Quality in Tourist Services. In this educational experience, text-based material, hypertext and visual representations (mind mapping, flow diagram and infographics) were designed.

We noticed that, in transforming information into new contents, problems such as the ability to analyze and synthesize arose since the mental mapping and the author comparative chart required summarizing the information found into key words. It should be mentioned that to assess digital products, a verification list for every task was developed, which served as a guide for observation activities.

As part of the analysis, we verified the sources of consultation submitted. In some cases, they used the three first sites encountered in the generic search engine as references. When assessing the quality of these sources, we realized that they were spaces with information without any reference. Some were personal blogs of students that, at some point, had constructed their portfolio and developed similar work than that that had been scheduled. As a group, they reflected upon the impact generated by using this type of sources in the document produced.

Likewise, some blog posts suggested problems with the quality of content, since they show details of syntax, spelling, quotation and reference omissions, as well as the management of the typography and the design of the post. Digital tools such as Cacoo, Canvas, Piktochart, Scribd, Google Drive, among others, were used to design some products.

Lastly, it is convenient to mention the cases that depended on the use of office resources (Word and PowerPoint). Some students chose to use traditional resources instead of Cacoo, Canvas and Piktochart when developing the flowchart and the infographics, justifying their choice with the lack of time, the in-home Internet access and not having the skills to use this type of online resources.

Training Required for the Producer of Digital Contents

Among the informants, we noticed a lack of knowledge of the criteria of intellectual property and the use of licenses for the use of information for quotation purposes. Regarding the training on the modification of open programs and programming languages, most students lack the skills to program even though we considered that, in some cases, they showed having the basic knowledge in HTML, Language C and Java.

The participating observation highlighted a lack of culture in the management of copyrights and licenses since we have found images that were not from the public domain. In regard to quoting references, as a requirement to submit their task, we ask the students to used the APA style; however, they had problems in differentiating the types of quotation (textual and paraphrase), as well as creating awareness on the topic of plagiarism.

We also considered the programming functions. It is important to comment that the activities scheduled did not involve a greater degree of complexity. The actions focused on working on the blog with the HTML code to insert images of documents stored in other spaces such as Canvas, Scribd Cacoo, to name a few. Despite the foregoing, there were students who had problems in executing this task. Based on the above, we identified that the students' main deficiencies were managing copyrights and licenses, as well as programming.

DISCUSSION

The millennial generation is a segment of the population with totally heterogeneous digital and informational competences. Our findings revealed that the students possess basic skills in the areas of information and informational literacy, as well as in the creation of digital contents.

By analyzing the process of information management, we realized that the students lack the skills to curate online contents and do not use social markers, clouds and other digital spaces to manage their information efficiently. In regard to the assessment of the information, they do not follow solid criteria to determine the quality of the information even though they perceive themselves as individuals with a critical level when validating the quality of the information found.

Millennial students develop more digital content in informal environments with social and recreational purposes. We observe a proliferation of memes and video channels that address different aspects of everyday life. When addressing the creation of digital contents with educational purposes, the participation was reduced to specific activities scheduled by the teacher.

According to Area Moreira, Borrás Machado and San Nicolás Santos (2015), students must master digital tools, levels of critical and creative thinking to transform the information into knowledge, ability to communicate in different languages and technological resources, in addition to the possibility of applying ethical and democratic criteria in managing copyrights and licenses, and comply with the behavior standards to browse the web.

The management of copyrights and licenses is converted into a training need for all the academic community (teachers and students). The topic of plagiarism and the culture of free distribution and modification of creative works are items for deep reflection.

In short, the analysis of the online information management and content creation binomial involves considering two areas of digital competences: the information and informational literacy, and the creation of digital content. The first involves the development of critical thinking to select quality information, while the second requires knowledge and ability in copyrights and licenses, as well as programming. This latter involves computer thinking processes. To develop a product, it will also be essential to consider the self-regulating level and the learner's motivation to execute the activity entrusted (See Figure).

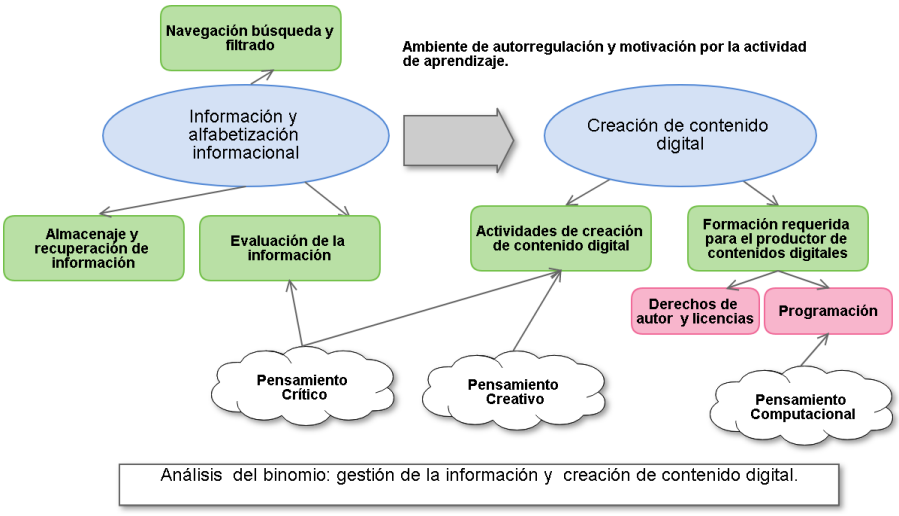

Figure. Components in information management and digital content creation processes.

When analyzing this binomial, other aspects are worth considering such as the connection to Internet, technological equipment, time availability, the learner's multiple intelligences as well as the feedback of the teacher to assess the product.

Siemens (2010) clarifies the lack of informational and digital competences that puts the individual in a position of digital oppression, without the ability to face challenges imposed by today's society. Based on the above, we confirm that the research assumption, i.e., the lack of the students' informational and digital competences influences the quality of the content they produce in their digital learning environment.

Among the limitations of this study, it should be mentioned that, while the methodological design allowed reaching the research objective, by generating a deep and direct explanation of the problem, it is necessary to provide for other aspects of interest such as the sampling in both public and private educational spaces in different regions of the country and in other fields of study. Virtual ethnography activities must also be considered to assess informal learning spaces; hence, this work presents a first approximation of the phenomenon.

Lastly, this paper brings knowledge to the educational field in the analysis of two key processes being generated in the classroom: the management of information and the creation of contents. Likewise, this redeems the position of the teacher and the learner in the scaffolding to manage information and the subsequent production of contents and adds to the theoretical baggage of the prosumer.

CONCLUSION

The millennial segment must adopt multiliteracy to pursue lifelong learning. Conducting an analysis of the processes of information management and creation of digital contents allowed the learner's informational and digital competences to become the focal point.

It is important for the learner to do away with the idea that all the information found on the Internet is of quality, free and available to use in total freedom. Promoting responsible management of copyrights and licenses is a challenge. It is impossible to counteract the practice of "cut and paste" when creating contents. Students still fully understand the effect of an act of plagiarism. As far as programming skills are concerned, it will be necessary to consider the direction that the new technological trends take since programming will become a daily practice and, hence, it will be necessary to promote cross-cutting computational thinking in formal education.

When planning his educational experience, the facilitator should consider the level of informational and digital competences that every one of the scheduled activities requires, besides having test cases about the self-

regulation and motivation mechanisms that characterize a university student. It is not possible to continue operating the classroom under the expectation that the student masters everything belonging to the millennial generation.

Therefore, the teacher's work is not limited to motivating the learner in migrating from the role of consumer of information to that of prosumer of digital contents, but rather requires a scaffolding in developing the product and have knowledge of the student's ability to address the activity requested.

Based on this ethnographic study, we were able to understand and construct meanings about the processes of information management and the creation of contents that millennial university students develop in their digital portfolios. Hence, informational and digital competences must be considered when planning learning activities. Likewise, they must value the levels of self-regulation motivation they have to develop the product besides considering critical, creative and computational thinking.

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