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Content curation in distance education: challenges of educational management in higher education

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Abstract

Given the constant challenges of educational management in higher education, managers must always be aware of current information and communication technologies, as well as being increasingly able to develop their multidisciplinary teams through innovative methodologies that provide meaningful learning. In the context of Distance Education, curating content is one of these challenges. Thus, this paper aims to present the perception of educational managers from higher education institutions and EdTech companies regarding the difficulties of carrying out this curation in educational spaces while contemplating a plurality of professionals and processes involved in its practice. The study carried out is an empirical corpus investigation based on the qualitative application of theory and interviews with different educational stakeholders. The results present categories that evidence that educational management needs to distinguish content production from content curation and improve the process of conducting content curation for the distance modality, differentiating it from existing methodologies in the in-person modality..

Keywords: Distance education. Higher education. Educational

management. Content curation..

1. Introduction

The impact of Information and Communication Technologies (ICT) in the educational field has been increasing considerably, influencing academic and school practices in both the private and public sectors. As a result, Distance Education (DE) has shown significant growth in terms of adherence to this modality. According to the analytical report from the EAD.BR Census 2021, published by the Brazilian Association for Distance Education (ABED, 2021), the growth in enrollments in distance education has been substantial in recent years. As stated by the EAD.BR Census 2021, the number of students enrolled in distance undergraduate courses in Brazil grew 45.2% between 2019 and 2020, increasing from about 1.5 million to over 2.2 million. This growth signals the strength of ICT in Education, particularly in DE, and the significant movement of the information society (CASTELLS, 2002, 2003; GOUVEIA, 2018).

Given this scenario, it is inevitable to say that technological evolution has affected all areas of scientific knowledge, as well as the business market. In Education, it could not be different: with every transformation brought about by technology, we are all impacted. In higher education, these impacts have led to discussions that range from the process of online content production (FILATRO, 2018) and the implementation of new methodologies through the use of ICT (BACICH; MORAN, 2018; MOORE; KEARSLEY, 2013; SECURATO, 2017) to concerns about the student's learning experience, respecting the different ways of learning (BATES, 2017; BEHAR, 2019).

In this context, we focus our attention on the ecosystem of professionals that constitute DE, as alongside the mentioned issues, there is an increasing need to understand the characteristics and criteria of content curation for this mode of teaching, mainly by managers and teachers.

For this, we utilize the term "content curation for DE" as a hybrid concept that encompasses the theoretical foundation of both content

curation (KANTER, 2011; PENNOCK, 2007) and digital curation (ABBOT, 2008). We understand, therefore, that content curation for DE extends to the concept of digital curation and merges with it, approximating the practices of content selection in DE.

Since the said curation includes different stakeholders from various fields of knowledge who work in distance higher education, we have here a vast field of approach. In the study, we explore the perception of educational managers of Higher Education Institutions (HEI) and EdTechs about the challenges of practicing content curation in educational spaces, contemplating the plurality of professionals involved and the existing processes for such action.

2. Content curation in the educational scope

The characteristics of the information and knowledge society have brought about significant changes in Education. Distance education has taken shape and strength with ICTs, going beyond traditional concepts and translating learning in an innovative way. The effects of technological advances, such as the speed of information exchanges and the dynamism of complex communication networks, firstly addressed by Castells (2002, 2003), not only produced a new generation of students but also unsettled generations of teachers and educational managers, who needed to reinvent themselves.

In this sense, curation, which also has solid and ancient origins in the history of Arts and Museology, as described by authors such as Altshuler (1994), Braga (2010), Cintrão (2010), Greenberg, Ferguson, and Nairne (2005), and Obrist (2010), faced these changes and adapted to the digital format. According to Chagas (2018, p. 86, own translation), "the concepts and practices of curation in the field of art can contribute to the characterization of a concept of curation in the field of education," as they involve criticality in the selection of content and knowledge regarding what is being curated and its target audience.

Therefore, understanding content curation requires the articulation between seminal concepts of art curation and contemporary authors

who have been studying the subject from different perspectives. In the educational scope, this understanding needs to also consider the main values and roles involved in curation practices, which can be understood through the systematization of published research. In order to understand what these are, we conducted a survey of studies on the terms "curation," "content curation," and "digital curation," even if they originated from other areas (such as Communication), considering them important markers for the perception of their applicability and adaptation to the Education scenario. We used three repositories, two Portuguese — B-On and Scientific Repositories of Open Access of Portugal (RCAAP) [1] — and one Brazilian — Portal of Journals of the Coordination for the Improvement of Higher Education Personnel (CAPES)[2] —, establishing a time cut of 16 years (2004-2019). We found 194 works and selected 9 for in-depth reading. It is important to stress that, of the total located titles that included the above-mentioned concepts, the selected works represent an approximation between two research lines: education and technology. The results are shared in Tables 1 and 2. Table 1 synthesizes the analyzed concepts of curation and content curation.

Table 1 — Concepts of curation and content curation circumscribed by author

Author	Concept
Pennock (2007)	**Curation** maintains a reliable set of digital information for both present and future use, adding value to it. It is an active management, with the evaluation of digital information throughout its entire lifecycle. On the other hand, content curation is a process of segmenting and filtering content for its subsequent selective dissemination through accessible environments and channels.
Obrist (2010)	**Curation** is the act of creating connections between cultures, objects, visions, and discourses.
Bhargava (2011, p. 4, own translation).	"**Content curation** is the act of finding, grouping, organizing, or sharing the best and most relevant content on a specific issue."

Rosenbaum (2011)	**Curation** is a way of selecting, organizing, and presenting content amid the abundance of information in the digital medium.
Kanter (2011)	**Content curation** is the process of sorting through the vast amount of content on the web and presenting it in a meaningful and organized way around a specific theme. The work involves sifting, sorting, arranging, and publishing information.
Ferreira, Saraiva e Rodrigues (2012)	By **curation**, we can understand the set of actions that ensure a dataset is genuine, allowing its use by others than its producers. **Curation** can involve actions of data description, linking these to others that make them intelligible, recording their uses and the results they have yielded.
Carr (2012 apud OVADIA, 2013, p. 58, own translation).	"The idea behind **curation**, sometimes called aggregation, is to link and extract the work of others."
Lopes, Sommer e Schmidt (2014, p. 61, own translation).	"**Curation** is a common practice in the field of arts and has been specializing over history. It has its own methods that include research and in-depth selection of works related to a thematic field — a subject or a historical period —, to an artist, group of artists, or school. [...] **curation** performs a pedagogical function in favor of the apprehension or learning about a work of art, collection, or exhibition."
Steimer e Crippa (2017).	Etymologically, the term **curation**, from its Latin origin in *curare*, means to care for, look after, or treat. However, the term can also be understood from its origin in Tupi-Guarani, where *curare* means a paralyzing poison, with a lethargic and cathartic effect, used for hunting. Beyond this curious etymological differentiation, it is also possible to attest a semantic polysemy, as the term **curation** acquires different meanings in each area of knowledge, according to the context in which it presents itself. Beyond organization, **curation** can also be a unique and specific creation, spun from a thought or worldview, also capable of impacting communities in different ways, based on distinct principles.

Source: Developed by the authors

It is noted that there are similarities between the definitions of both terms: when addressed autonomously, curation synthesizes a historical reflection focused on values that permeate the action of selecting, managing, and categorizing reliable material; when specified as content curation, there is an emphasis on criteria, stages, and processes. From Table 2, in turn, it is observed that the concepts of digital curation complement the technical specifications of content curation presented above, which govern our object of study.

Table 2 — Concepts of digital curation circumscribed by author

Autor	Conceito
Beagrie (2006, p. 6).	"**Digital curation** pertains to the maintenance and creation of value in reliable sets of digitized information for current and future use (own translation)."
Pennock (2007)	**Digital curation** is the active management of digital information throughout its entire lifecycle, for both current and future use.
Tibbo, Hank e Lee (2008, p. 40, own translation).	"**Digital curation** is a relatively new concept that incorporates aspects of the terms data curation and digital preservation, used respectively by the scientific community and electronic or digital libraries."
Abbot (2008)	**Digital curation** is the set of all activities involved in data management, from planning to digitization (in the case of analog materials) or creation (for materials already generated electronically), aiming to ensure their availability and suitability for future retrieval and reuse.
Higgins (2011)	The focus of **digital curation** is on managing the entire lifecycle of digital material so that it remains continuously accessible. Expanding the data retrieval capability and access to them are the information models, expressed by metadata, which are also important tools for authentication control procedures.

Yamaoka (2012)	**Digital curation** allows for: maintaining the document intact and accessible; extracting new knowledge; preserving societal memory; and avoiding the rework of creating already produced data. It also involves sharing and interoperability between systems, the reuse of digital information, and adding value to digital documents. The main focus of digital curation is to ensure current and future generations of users have access to the information.
Sayão e Sales (2012, p. 185)	"**Digital curation**, in summary, ensures the sustainability of data for the future, while also giving immediate value to them for their creators and their users. The strategic resources, methodologies, and technologies involved in digital curation practices facilitate persistent access to reliable digital data through the improvement of the quality of these data, their research context, and authenticity checking. [...] Digital curation emerges as a new area of practices and wide-spectrum research that dialogues with several disciplines and many types of professionals."
Jorente, Silva e Pimenta (2015, p. 130, own translation).	"The action of '**digital curation**' is an umbrella term that contains various nomenclatures and levels of action: 'information curation', 'content curation', 'knowledge curation', and 'data curation'."
Araújo e Valentim (2019, p. 250, own translation).	"**Digital curation** can be defined as the practice and study of the processes of selection, preservation, maintenance, collection, and archiving of digital data, with the consequent creation of repositories and/or participatory digital platforms. Its origin is related to the perception of the importance of reliability certification, obsolescence, and the evolution of formats (with the risk of loss due to technological development and the fragility of digital media)."

Source: Developed by the authors

Content curation for distance learning encompasses, therefore, the concept of content curation and incorporates the most relevant

contributions regarding the concept of digital curation. In essence, "the term itself highlights this, a special concern, a 'care' (for data fragility, for the possibility of improved use and reuse, etc.) that leads to a more comprehensive consideration of processes and phenomena" (ARAÚJO; VALENTIM, 2019, p. 250, own translation).

In a "world of excess" (BHASKAR, 2020), the role of content curation becomes indispensable in the educational field. Teachers, administrators, and other professionals in the field need to constantly enhance their skills and competencies in order to curate content for distance learning comprehensively, considering different dimensions and forms of learning. This includes knowledge of knowledge management, content production, and the content curation process itself.

Thus, the role of content curation is fundamental in the information society, where knowledge has become intertwined with information, and the excessive and the essential are separated by an increasingly thin line—especially in the realm of distance learning, where the student is the protagonist of their learning, has infinite access to information, and seeks much more than just knowledge. Bhaskar (2020, p. 89, own translation) asserts that "the value you add is not only about adding. It is about excluding what is not important or valuable." Exclusion also requires the skills to sift, evaluate, and organize content, which highlights the breadth of the content curation approach and the competencies necessary for its implementation in the educational field.

3. Methodological Procedures

From the perspective of research objectives, this study falls within the descriptive field, which, according to Prodanov and Freitas (2013, p. 52, own translation), "seeks to discover the frequency with which a fact occurs, its nature, characteristics, causes, and relationships with other facts." In this sense, understanding how educational managers conceptualize, understand, and characterize the content curation process and its relationship to the different dimensions that permeate quality control is a goal that justifies the empirical context.

The corpus that underpins the qualitative application is derived from the theoretical framework and the conduction of interviews, reinforcing the mixed approach, in which qualitative and quantitative research are not opposites but rather complementary, providing different perspectives. In this article, we chose to present only the qualitative results focusing on the interviews. Interviews, according to Marconi and Lakatos (2017, p. 88, own translation), are "a procedure used in social research for data collection or to assist in the diagnosis or treatment of a social problem." As a significant part of the data collection, the interviews were conducted based on two semi-structured scripts.

In the construction of data collection instruments, we opted to conduct an exploratory questionnaire. The main results of the exploratory questionnaire were published by Rocha and Gouveia (2020) and highlighted the following: the indication of quality as the most relevant characteristic of content curation; the lack of clarity in quality indicators and the lack of comprehensive consideration of the target audience (the students); the need for a better understanding of the term "content curation" in the field of education; the limited involvement of librarians in the distance learning modality, although this category enriched the questionnaire with technical aspects; the reinforcement of managers' awareness of the need for parameters that can help them train their teams and ensure the provision of quality curation.

These questionnaire results drove the creation of the final instrument for this study, the semi-structured interview guide. This instrument was previously analyzed by the Ethics Committee of the Fernando Pessoa University and the Plataforma Brasil, both of which issued a favorable opinion regarding the Free and Informed Consent Form presented to the research participants.

The selected stakeholders are higher education institution (IES) managers and EdTech managers. We opted for semi-structured interviews, where the questions are prepared in advance but allow the interviewee the "freedom to develop each situation in any direction they consider appropriate" (MARCONI; LAKATOS, 2017, p. 89, own translation).

In July 2020, a total of 15 interviews were conducted, with 11

interviews conducted with IES managers and 4 with EdTech managers. The selection of these stakeholder profiles was based on their frontline roles in educational management and their responsibility for content curation for distance learning with their teams. IES managers, concerned with overseeing the entire curation process, strive for the desired quality and provide resources for faculty work. EdTech managers, on the other hand, are attentive to the market and constantly contribute tools that can support content curation. They also face challenges related to the adoption of these tools and faculty training for their use.

Given these characteristics, we created two distinct interview scripts, one for IES managers and another for EdTech managers. Both scripts include an introduction, read at the beginning of the interviews, which explains the purpose of the study and the seminal concept of digital curation from one of the main authors cited in the research. This introduction clarifies the focus of the conversation and the concept being explored.

The interview with IES managers was conducted with professionals holding positions and experience in educational management, some with a pedagogical or business emphasis. The initial approach to introductory data aimed to confirm their experience in the educational field and academic background. The subsequent sections consisted of five questions in total.

Question 1: Does your institution engage in content curation for distance learning? If yes, please explain how this process is carried out. If not, please provide a justification.

Question 2: What are the main difficulties encountered in the content curation process?

Question 3: Considering the four dimensions through which the content curation process needs to pass (curatorial, pedagogical, technological, and quality), which ones are the most challenging for curators to identify/understand? Why?

Question 4: What are the benefits that the institution gains when implementing a content curation process for distance learning?

Question 5: If there were a reference model for the quality of content curation in distance learning, which elements would be essential to assist the institution in this task?

The questions 3 and 5 are intentionally the same in both interview scripts so that cross-referencing the data can contribute to the analysis of stakeholders' opinions.

The interview with EdTech managers was conducted with professionals who have experience in the educational market and have worked or are currently working in educational solution companies, particularly with content platforms for higher education. The initial approach to gathering data also aimed to confirm their experience in the educational field and their academic background. The subsequent sections consisted of five questions in total.

Question 1: What are the main characteristics of higher education institutions (IES) that acquire content from educational solution companies?

Question 2: Are there any differences between IES that perform content curation after acquiring content from educational solution companies? If yes, what are these differences? If not, please provide a justification.

Question 3: Considering the four dimensions through which the content curation process needs to pass (curatorial, pedagogical, technological, and quality), which ones are the most challenging for curators to identify/understand? Why?

Question 4: What are the benefits that an IES gains when acquiring educational solutions from a company that already has a structured content curation process for distance learning?

Question 5: If there were a reference model for the quality of content curation in distance learning, which elements would be essential to assist the IES in this task?

Due to the pandemic, the interviews were conducted online and synchronously, according to scheduled appointments, using the web conferencing platform Blackboard Collaborate. With the stakeholders' authorization, the interviews were recorded for subsequent transcription

of the information. Data analysis was performed using content analysis (BARDIN, 2016, p. 125, own translation), which brought greater conciseness to the study, considering the stages of "pre-analysis, exploration of the material, treatment of results, inference, and interpretation".

4. Presentation and Analysis of Results

As described earlier, the 15 interview participants were divided into two groups: one consisting of 11 IES managers and another consisting of 4 EdTech managers. Table 1 provides a summary of the interviewees' profiles, recording percentages related to gender, academic background, years of professional experience, and current positions.

Table 1 — Summary of the interviewees' profile

Stakeholders	Gender*	Academic education	Professional experience	Cargo
Managers IES	F: 82% M: 18%	Specialist: 18% Master: 36% Doctor: 46%	11 to 15 years old: 36% Over 20 years: 64%	Coordinator: 36% Manager: 18% Director: 46%
Managers EdTech	M: 100%	Specialist: 50% Master: 50%	6 to 10 years: 25% 11 to 15 years: 50% 16 to 20 years: 25%	Manager: 50% Director: 50%

*The abbreviations F and M refer to the female and male genders, respectively.

Source: Prepared by the authors.

In the group of IES managers, there was a predominance of female respondents who were non-doctors (54% were masters and specialists), with over 20 years of professional experience, and holding positions in directorial and coordination roles. In the group of EdTech managers, there was a predominance of male respondents with a balanced distribution between specialists and masters in terms of academic background, 11 to 15 years of professional experience, and an equal distribution of roles between managerial and directorial positions.

In the following analyses, we interpret the responses of these stakeholders to the semi-structured interview questions. The inference stage of Bardin's content analysis (2016) contributed to the identification of the highlights reproduced below. According to the author, it is during this stage that the researcher, having at their disposal "significant and faithful results, can propose inferences and advance interpretations related to the intended objectives—or that are relevant to other unexpected discoveries" (BARDIN, 2016, p. 131, own translation).

The relationship between the theoretical framework, interpretation, and inference enables a consistent analysis capable of understanding the interviewees' perceptions and points of convergence and divergence regarding the object of study. Based on this, we created categories to contextualize the interview responses, considering a complete content curation cycle within the four dimensions of the proposed model.

Considering that categories are "labels or classes that bring together a group of elements under a generic title, grouping these elements based on their common characteristics" (BARDIN, 2016, p. 147, own translation), we gathered the respondents' positions on six aspects: the role of curation, the curator's profile, the definition of criteria and instruments to be followed, the resources and tools to be used, the aspects related to learning, and financial considerations.

To connect the interpretation to the theory, our discussion begins with the selected excerpts, relating them to the six categories identified in the analysis. Among the main responses obtained from IES managers in the interviews, Question 1 ("Does your institution engage in content curation for distance learning? If yes, please explain how this

process is carried out. If not, please provide a justification.") resulted in 5 professionals stating that their IES does not engage in the curation process, while 4 understand that their IES does work with this methodology. Additionally, 2 of the managers perceive that they adopt a similar procedure, but not in its entirety as presented in the interview.

In Question 2 ("What are the main difficulties encountered in the content curation process?"), 10 managers indicate that there are difficulties, while 1 manager states that there are none. Among the professionals who acknowledge facing difficulties, four recurring justifications are identified: concerns regarding copyright issues (3 responses), delivering content suitable to the students' profile (2 responses), lack of specific teaching competencies for distance learning to avoid a direct transposition from face-to-face to online mode without connections between the content and the students' profile (8 responses), and financial constraints of IES in compensating faculty members for their curation activities (3 responses).

In Question 3 ("Considering the four dimensions through which the content curation process needs to pass (curatorial, pedagogical, technological, and quality), which ones are the most challenging for curators to identify/understand? Why?"), the pedagogical dimension stands out as the most challenging, identified as the primary choice by 7 managers, followed by the curatorial dimension, mentioned as the main challenge by 2 managers. The technological and quality dimensions are mentioned as the first choice by 2 managers and as the second choice by the others.

In Question 4 ("What are the benefits that the institution gains when implementing a content curation process for distance learning?"), 5 managers mention quality as the primary benefit of having a content curation process within the institution. Other respondents highlight benefits such as productivity, reinforcement of the institution's identity, building a multidisciplinary team, understanding the investigative role of teachers as curators to identify the appropriate teaching profile, content updates, innovation, content production focused on student learning, time and cost savings.

In Question 5 ("If there were a reference model for the quality of content curation in distance learning, which elements would be essential to assist the institution in this task?"), the most prominent items, mentioned in 9 responses, are understanding the student profile, how they learn, and relating the content to learning objectives. Content quality is mentioned in 6 responses, with 3 of them emphasizing the importance of copyright considerations and faculty training. Content updates are mentioned in only 2 responses.

Although not repeated in more than one response, items such as streaming curation, use of technological resources, clarity of assessment instruments from the Ministry of Education (MEC), accessibility, evaluation methodology, humanization, indexing platform, and collection management tools are important as they reinforce or complement the more commonly mentioned aspects.

Regarding the responses obtained from EdTech managers, in Question 1 ("What are the main characteristics of higher education institutions that acquire content from educational solution companies?"), it is observed that the main characteristic mentioned by the four professionals interviewed is financial, linked to the "management vision" and knowledge of the institution's core business. The opportunity to achieve growth by offering a mode of education beyond the traditional face-to-face format and the pursuit of innovation, recognizing contextual changes and focusing on transforming students through the use of current methodologies, are also highlighted characteristics mentioned by these managers.

In Question 2 ("Are there differences between HEIs that curate content after acquiring it from educational solution companies? If yes, what are these differences? If not, justify."), the four interviewed managers agree that there are differences between HEIs that curate content after acquiring it and those that do not. The justifications are related to the changing role of the professor and the customization given to the content due to concerns about the complete student experience.

In Question 3 ("Considering the four dimensions through which the process needs to go (curation, pedagogical, technological, and quality), which ones are the most difficult to identify/comprehend for curators? Why?"), EdTech managers present divergent opinions. The most complex dimension is curation (with 2 indications), followed by pedagogical (with 1 indication) and technological (with 1 indication). The second most complex option is technological (2 indications), followed by pedagogical and curation (both with 1 indication each). The dimension of quality is the least mentioned by the managers.

In Question 4 ("What are the gains that HEIs have when acquiring educational solutions from a company that already has a structured content curation process for distance education?"), all 4 interviewees highlight that there are gains. Time is mentioned by 2 of them, and other indicated gains include institutional maturity, flexibility, quality, and cost savings.

Lastly, in Question 5 ("If there were a reference model for content curation quality in distance education, what items would be essential to assist HEIs in this task?"), the managers indicate that essential items for a reference model are tagging, classification, and indexing methods (in 3 responses), followed by faculty training (in 2 responses). The relationship between applied use of technology and learning also stands out, as well as caution regarding copyright issues.

5. Final Remarks

Based on the analysis of the perception of educational managers from HEIs and EdTechs regarding the challenges of content curation in educational spaces, we have identified several categories that represent the main difficulties they face in their professional roles. Table 3 summarizes these categories.

Table 3 — Summary of data obtained by category

Category	Summary
Curator's Role	The aim is to clarify the application of the concept in the field of Education, establishing its characteristics and the value of this process when implemented within Higher Education Institutions, as 46% of the interviewed managers affirm they do not conduct the content curation process completely. It transversally adds characteristics from other categories, encompassing responsibilities concerning the clarification of copyright laws and tools that support this verification, as well as financial issues, particularly in terms of optimizing the process time.
Curator's Profile	It presents the teaching profile as the most indicated in the samples, in common agreement among the stakeholders. On the other hand, it records the difficulties in identifying and selecting teachers with such a profile within Higher Education Institutions and the need for multidisciplinary teams to operate the full process. This category, therefore, highlights the need for differentiation between the profiles of the content teacher or author and those of the curating teacher.
Criteria and Tools	It demonstrates the need for the curation cycle to establish clear criteria and tools to be used by the curators, both pedagogical and technological, and the importance of curators appropriating the specific guiding evaluation tools for distance learning. This category also gains relevance for the guidelines on the reuse of curated content, which contributes transversely to the financial category by facilitating the scalability of the process within Higher Education Institutions, an item strongly reinforced in the sample of interviews.
Resources and Tools	Identify different tools and resources that support the curator's work, as well as the usage characteristics of each of them. Strongly inscribed in the technological dimension, but deeply linked to the categories of learning and criteria and tools, as the comparison of results on stakeholders' perceptions shows that, although curators are familiar with the resources and tools and most technological barriers have been overcome, the biggest challenge is to cross their use with pedagogical aspects.

Learning	It focuses on the curators' knowledge about the students' profile and learning theories, which deal with the different ways of teaching and learning. In this sense, it also covers the need to identify the characteristics of content curation in the face of different teaching modalities, an issue highlighted in both data collection instruments. This is a fundamental category, given that the study discusses content curation for distance education.
Financial	It highlights positive points that deserve attention. Regarding the value of curation, 40% of the managers interviewed (6 out of 15 participants) consider the implementation of the content curation process in HEIs a measure that contributes to resource saving, especially when they rely on EdTechs for content delivery in portals that already apply the concept of curation in their operation, optimizing the time spent on selection. Another positive point is the fact that content curation constitutes a new opportunity for teacher performance, mentioned by most of the interviewed managers. Other aspects that deserve attention in the costs of content curation refer to the hiring of teachers possibly not yet foreseen in the budget for carrying out this process, to the hours of teacher planning (which, although already regulated and paid, do not yet have a specification for content curation, indispensable in distance education) and to the composition of a multidisciplinary support team (already present in most HEIs, but without involvement in this process). It also highlights the relevance of the distinction between content production and curation, distinct activities that should be remunerated and included separately in the course planning.

Source: Developed by the authors.

Regarding the profile of the curator, even though some managers already provide trainings that prepare teachers to assume this role, all demonstrated difficulties in pointing out the main characteristics of this professional. Santos (2019, p. 92, own translation) emphasizes that "knowing how to search for and process information online, transform information into knowledge, communicate online, produce texts in various languages and supports are fundamental skills for integration

and authorship in cyberculture". For the author, these skills related to cyberculture are also fundamental for online teacher performance, so investing in initial and continued education is essential for HEIs to contribute to the constant update of teaching knowledge. Therefore, this category is inseparable from that referring to the criteria and instruments of distance education, because training teachers and the multidisciplinary team on how to curate content is indispensable in order to contemplate the characteristics of the distance education student, which is also reinforced by the HEI managers in the learning category.

This curator's performance operates on resources and tools of the institution, and the content acquired from EdTechs presents itself as the main starting point. Knowing these resources and tools is crucial for the curator to be able to select the content considering all stages of curation, connecting technical knowledge to pedagogical characteristics through the selection of theoretical content. Manuals, tutorials, and guidelines (especially about the characteristics, functionalities, and resources of available tools) need to be at the curator's disposal, so that they can also use and correlate the platforms and select the best and main content for the objective in question.

Regarding the role of curation, EdTech managers highlighted the management profile as one of the characteristics of HEIs that acquire content from the market. The recent article by Aleixo et al. (2020) helps to understand this stance; for the authors, the "manager and information curator is nothing more than a co-entrepreneur" (ALEIXO et al., 2020, p. 57, own translation). This statement also contributes to the understanding of the responses related to finance, which, in the view of EdTech managers, is pointed out as one of the main issues that drive HEIs not only to acquire content from the market, but to increase the offer of courses and, consequently, the recruitment of new students. Given the above, we were able to confirm that the manager with a profile of information curator "uses the structuring and organization of data for decision making and creation of strategic planning and thus meet the new trends of informational behaviors" (ALEIXO et al., 2020, p. 57, own translation).

The trend of HEI managers investing in content produced by EdTechs,

in addition to demonstrating this concern with educational information curation, also reinforces an important movement in the private higher education sector in Brazil, presented in the study by Azevedo and Soares (2019). They affirm that "the segment that stands out the most is content management, with 49.2% [of the grouping of startups according to the technologies in which they operate], indicating the market's need for content production" (AZEVEDO; SOARES, 2019, p. 216, own translation). This study aids in understanding the managers' responses, pointing out the growth of the educational technology market to meet a latent need of the HEIs and attesting to the important contribution of curation in this transformation of higher education.

Regarding the learning category, EdTech managers mentioned two relevant points that contributed to the identification of other characteristics of HEIs that acquire content and direct their internal efforts to curation: the profile of the student, who has been seeking distance education because they consider it more flexible and suitable for their needs, and the search for methodologies that can make learning more meaningful, and not just content-oriented. These are issues that point to what Securato (2017, p. 285, own translation) calls disruptive education: "you study whenever you want, whatever you choose, and from wherever is most convenient — anytime, anything, and anywhere".

The main impasses listed by the HEI managers are part of the curator profile and learning categories. The curator profile category showed the managers' difficulty in working on content curation in a specialized way for distance education, as the misunderstanding of the fundamental differences between distance and face-to-face modalities was highlighted in more than one response. As Bates (2017, p. 495, own translation) states, "in universities, the faculty is trained, up to the doctorate, to do research, but there is no requirement for their training in teaching methods" — and there is also no training focused on content curation, we might add. Therefore, defining the profile of the teacher curator was also part of the elaboration of the reference model proposed in our research, as we understand that this will help HEI managers

both to recognize these profiles (to only then involve them in a curation process) and to develop them if they present weaknesses.

The learning category recorded difficulties similar to those shared in the curator profile category, however, as an extended concern, since the managers expressed the difficulty that teachers have in correlating the process of curating content from the guiding documents of the HEI with the characteristics that this curated content needs to have to reach the dimension of student learning. In other words, understanding how learning occurs in general and, especially, in distance education, as well as knowing and understanding the curricular structure of the HEI, are fundamental requirements that must be fulfilled, but which management still finds difficult and needs support to operationalize.

The resources and tools category recorded a lack of effective alternatives and the importance of developing support channels for the instrumentalization of curator teachers. The managers reiterated the difficulties encountered in relation to the technological dimension, as the curator teachers have difficulties in using the resources and tools provided. Addressing this issue from the teacher's point of view, Correia (2018, p. 23, own translation) warns that "teachers are required to make a considerable effort to incorporate various informal digital curation tools into educational practices." Therefore, merely making resources and tools available may not be enough for the practice of content curation, which again highlights the importance of continuous teacher training and the preparation of guiding documents so that curator teachers can instrumentalize and build, within their time and space, the fundamental competencies for carrying out this activity.

Finally, the curator profile and learning categories appeared in the interviews as the most essential for the construction of the model. Going through these two issues and relating them to technology, Garcia and Czeszak (2019, p. 36, own translation) discuss the functions of this curator teacher, as:

> forming competent professionals for well-crafted curation work has been a growing concern, especially

considering the transformations that digital technologies impose on our daily lives in general and, in particular, on the educational environment, in which planning, organizing and selecting the information that accumulates exponentially, at an unprecedented rate, becomes an essential task for research and knowledge construction.

The curator's profile is therefore inseparable from the dimensions of curation and pedagogy, and the data corroborate the need to have clear characteristics of this professional to develop it through constant training that transforms him into a complete educational curator, who meets not only technical aspects, but also pedagogical ones. In this way, it encompasses the learning category, which resumes the concern about the global understanding of the different ways of learning and the knowledge of the profile of the distance education student.

The category of resources and tools also appeared more frequently in relation to these issues, confirming a latent weakness. As we saw in the previous questions, this category did not appear with such relevance in the responses; however, when provided as an option among the items that could not be missing in the model, it emerges with several indications. As Filatro and Cairo (2015) already warned, we cannot allow ourselves to be run over by innovations that distort curricular, cognitive, and instructional decisions: technologies must serve people, not the other way around. In this sense, the indication of resources and tools in the proposed model aims to filter the resources that can, in fact, contribute to content curation and guide and equip curator teachers, based on criteria of accessibility, interactivity, and reusability, to facilitate understanding of the technological dimension.

Finally, the other categories, which were less addressed in the interviews, showed that there is synergy between the responses of the IES and EdTech managers, with the exception of financial aspects. Figure 1 concludes this subsection with the total incidences recorded in each of the six categories during the five questions asked to the two groups.

Figure 1 — Total incidences by category
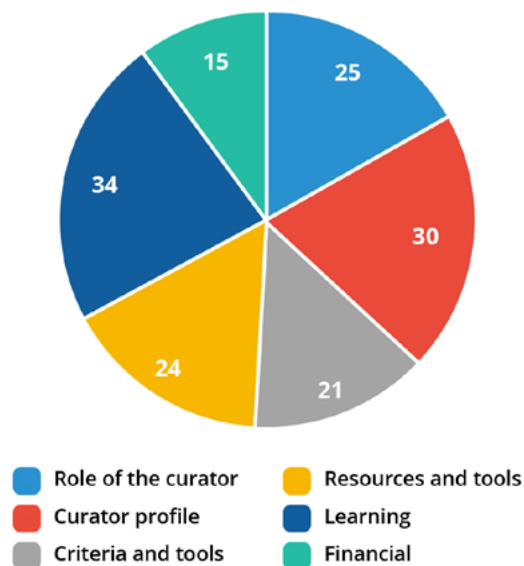
Source: Developed by the authors.

As a result of the 15 interviews conducted with IES and EdTech managers, the organization of the total incidences by category presents the diversity of items that the reference model seeks to contemplate. The proximity of the number of occurrences highlights the interdependence of one category in relation to another, portraying the necessary ecosystem for carrying out content curation for distance education.

It was possible to identify the low utilization of the concept of curation in the field of Education and the occurrence of confusion between producing and curating content. In addition, there was a clear need for diversified knowledge in methodologies on the part of curator teachers, as well as the demand for specification of the differences between face-to-face and distance teaching modes in institutional documents.

The contributions of EdTech managers, although in smaller numbers, have enriched the analyses by bringing "outside" perspectives to the traditional operations of Higher Education Institutions (HEIs). They demonstrate how they participate in the collective construction of the content curation process for distance education (DE) in a practical manner, constantly seeking solutions that can make HEIs more efficient and technologically advanced. In general, all managers' concern with

content curation is primarily focused on student learning and achieving the maximum alignment with their profiles. This reaffirms the professionals' commitment to researching the best institutional strategies, regardless of the difficulties encountered.

In this context, we confirm the urgent need to establish references that assist managers in successfully implementing the content curation process for DE. Based on the collected data, we have identified the most significant categories for its development, readjusting the proposed dimensions in the reference model, which now consist of four: curation, pedagogical, technological, and quality. If properly connected, these dimensions can both contribute to future work that deepens and correlates the dimensions with the categories and equip educational managers with the necessary tools to handle the constant challenges of higher education management.

References

ABBOT, D. **What is digital curation?** Edimburgo: Digital Curation Centre, 2008.

ALTSHULER, B. **The avant-garde in exhibition**: New Art in the 20th century. New York: Harry N. Abrams, 1994.

ALEIXO, M. R., FERNANDES, M. J. O., COSTA, G., & RIBEIRO, H. S. (2020). O papel do gestor e curador da informação nos novos comportamentos informacionais. **Perspectivas em Ciência da Informação**, Belo Horizonte, v. 25, n. 3, p. 49-62, 2020. Disponível em: https://periodicos.ufmg.br/index.php/pci/article/view/25512 Acesso em: 13 jun. 2023.

AZEVEDO, S. B., & SOARES, M. R. (2019). As EdTechs do distrito federal e os objetivos do desenvolvimento sustentável. **Revista Negócios em Projeção**, Contagem, v. 10, n. 2, p. 208-221. Disponível em: http://revista.faculdadeprojecao.edu.br/index.php/Projecao1/article/view/1528 Acesso em: 13 jun. 2023.

ARAÚJO, C. A. V.; VALENTIM, M. L. P. A ciência da informação no

Brasil: mapeamento da pesquisa e cenário institucional. **Bibliotecas. Anales de Investigación**, v. 15, n. 2, p. 232-259, 2019. Disponível em: http://hdl.handle.net/20.500.11959/brapci/112206. Acesso em: 13 jun. 2023.

ASSOCIAÇÃO BRASILEIRA DE EDUCAÇÃO A DIST NCIA – ABED. **Censo EAD.BR**: relatório analítico da aprendizagem a distância no Brasil 2021. Curitiba: InterSaberes, 2021. Disponível em: https://abed.org.br/arquivos/CENSO_EAD_2020_PORTUGUES.pdf. Acesso em: 30 mar 2023.

BACICH, L.; MORAN, J. (org.). **Metodologias ativas para uma educação inovadora**: uma abordagem teórico-prática. Porto Alegre: Penso, 2018.

BARDIN, L. **Análise de Conteúdo**. Tradução Luís Antero Reto e Augusto Pinheiro. São Paulo: Edições 70, 2016.

BATES, T. **Educar na era digital**: design, ensino e aprendizagem. 1. ed. Tradução João Mattar. São Paulo: Artesanato Educacional, 2017.

BEAGRIE, N. Digital curation for Science, Digital Libraries, and Individuals. **International Journal of Digital Curation**, v. 1, n. 1, p. 3-16, 2006.

BEHAR, P. A. (org.). **Recomendação pedagógica em educação a distância**. Porto Alegre: Penso, 2019.

BHARGAVA, R. The 5 Models of Content Curation. **Rohit Bhargava**, 2011. Disponível em: http://www.rohitbhargava.com/2011/03/the--5-models-of-content-curation.html. Acesso em: 15 out. 2021.

BHASKAR, M. **Curadoria**: o poder da seleção no mundo do excesso. Tradução Érico Assis. São Paulo: Edições Sesc, 2020.

BRAGA, P. O curador e a galeria. *In*: RAMOS, A. D.; CHIARELLI, T. (ed.). **Sobre o ofício do curador**. Porto Alegre: Zouk, 2010. p. 65-74.

CASTELLS, M. **A era da informação**: economia, sociedade e cultura. Lisboa: Fundação Calouste Gulbenkian, 2002.

CASTELLS, M. **A sociedade em rede**. São Paulo: Paz e Terra, 2003.

CHAGAS, A. M. **A curadoria de conteúdos digitais na prática docente e formação de publicitários no curso de Comunicação Social da Universidade Tiradentes**. 2018. Tese (Doutorado em Comunicação e Educação) — Universidade Tiradentes, Aracajú, 2018.

CINTRÃO, R. As montagens de exposição de arte: dos salões de Paris ao MoMA. *In*: RAMOS, A. D.; CHIARELLI, T. (ed.). **Sobre o ofício do curador**. Porto Alegre: Zouk, 2010. p. 15-42.

CORREIA, A. P. As múltiplas facetas da curadoria de conteúdos digitais. **Revista Docência e Cibercultura**, Rio de Janeiro, v. 2, n. 3, p. 14-32, 2018. Disponível em: https://www.e-publicacoes.uerj.br/index.php/re-doc/article/view/36884/27807 Avesso em: 16 jun. 2023.

FERREIRA, M.; SARAIVA, R.; RODRIGUES, E. E**stado da arte em preservação digital**. Lisboa: Repositório Científico de Acesso Aberto de Portugal, 2012.

FILATRO, A., & CAIRO, S. **Produção de conteúdos educacionais**. São Paulo: Saraiva, 2015.

FILATRO, A. **Como preparar conteúdos para EAD**. 1. ed. São Paulo: Saraiva Educação, 2018.

GARCIA, M. S. S., & CZESZAK, W. **Curadoria educacional**: Práticas pedagógicas para tratar (o excesso de) informação e fake news em sala de aula. São Paulo: Editora Senac, 2019.

GOUVEIA, L. B. Transformação digital: desafios e implicações na perspectiva da informação. *In*: MOREIRA, F. *et al*. (coord.). **Transformação digital**: oportunidades e ameaças para uma competitividade mais inteligente. 1. ed. Faro: Sílabas e Desafios, 2018. p. 5-28.

GREENBERG, R.; FERGUSON, B. W.; NAIRNE, S. (ed.). **Thinking about exhibitions**. 2. ed. London: Routledge, 2005.

HIGGINS, S. Digital Curation: The emergence of a new discipline. **The International Journal of Digital Curation**, v. 6, n. 2, p. 78-88, 2011.

Disponível em: http://www.ijdc.net/article/view/184. Acesso em: 15 out. 2021.

JORENTE, M. J. V.; SILVA, A. R.; PIMENTA, R. M. Cultura, memória e curadoria digital na plataforma SNIIC. **Liinc em Revista**, Rio de Janeiro, v. 11, n. 1, p. 122-139, 2015. Disponível em: http://revista.ibict. br/liinc/article/view/3637. Acesso em: 15 out. 2021.

KANTER, B. Content curation primer. **Beth Kanter**, 2011. Disponível em: https://bethkanter.org/content-curation-101/. Acesso em: 15 out. 2021.

LOPES, D. de Q.; SOMMER, L. H.; SCHMIDT, S. Professor-propositor: a curadoria como estratégia para a docência online. **Revista Educação & Linguagem**, São Paulo, v. 17, n. 2, p. 54-72, 2014. Disponível em: https://www.metodista.br/revistas/revistas-ims/index. php/EL/article/view/5331/4384. Acesso em: 15 out. 2021.

MARCONI, M. de A.; LAKATOS, E. M. **Técnicas de pesquisa**. 8. ed. 2. reimp. São Paulo: Atlas, 2017.

MOORE, M.; KEARSLEY, G. **Educação a distância**: sistemas de aprendizagem on-line. São Paulo: Cengage Learning, 2013.

OBRIST, H. U. **Uma breve história da curadoria**. São Paulo: BEI Comunicação, 2010.

OVADIA, S. Digital content curation and why it matters to librarians. **Behavioral & Social Sciences Librarian**, v. 32, n. 1, p. 58-62, 2013. Disponível em: https://academicworks.cuny.edu/cgi/viewcontent. cgi?article=1012&context=lg_pubs. Acesso em: 15 out. 2021.

PENNOCK, M. Digital Curation: A life-cycle approach to managing and preserving usable digital information. **Library & Archives**, n. 1, p. 1-3, 2007. Disponível em: http://www.ukoln.ac.uk/ukoln/staff/m. pennock/publications/docs/lib-arch_curation.pdf. Acesso em: 15 out. 2021.

PRODANOV, C. C.; FREITAS, E. C. **Metodologia do trabalho científico**: métodos e técnicas da pesquisa e do trabalho. 2. ed. Novo

Hamburgo: Feevale, 2013.

ROCHA, D. G., & GOUVEIA, L. M. B. Digital content curation for distance education: Quality, updating and teaching skills. **Iberian Conference on Information Systems and Technologies (CISTI)**, v. 15, Sevilla, Spain, p. 1-4, 2020. Disponível em: https://ieeexplore.ieee.org/document/9140942. Acesso em: 13 jun. 2023.

ROSENBAUM, S. **Curation nation**: How to win in a world where consumers are creators. New York: Mc Graw Hill, 2011.

SANTOS, E. **Pesquisa-formação na cibercultura**. Teresina: EDUFPI, 2019. Disponível em: http://www.edmeasantos.pro.br/assets/livros/Livro%20PESQUISA-FORMA%C3%87%C3%83O%20NA%20CIBERCULTURA_E-BOOK.pdf Acesso em: 27 jul 2021.

SAYÃO, L. F.; SALES, L. F. Curadoria digital: um novo patamar para preservação de dados digitais de pesquisa. **Informação e Sociedade: Estudos**, João Pessoa, v. 22, n. 3, p. 179-191, 2012. Disponível em: https://www.marilia.unesp.br/Home/Instituicao/ Docentes/EdbertoFerneda/curadoria-digital---sayao.pdf. Acesso em: 15 out. 2021.

SECURATO, J. C. **Onlearning**: como a educação disruptiva reinventa a aprendizagem. São Paulo: Saint Paul Editora, 2017.

STEIMER, I. S. G.; CRIPPA, G. Curadoria e crítica. **Revista Brasileira de Biblioteconomia e Documentação**, São Paulo, v. 13, p. 137-144, 2017. Disponível em: https://rbbd.febab.org.br/rbbd/article/view/770. Acesso em: 15 out. 2021.

TIBBO, H.; HANK, C.; LEE, C. Challenges, curricula, and competencies: Researcher and practitioner perspectives for informing the development of a digital curation curriculum. *In*: ARCHIVING, 1., 2008, Berna. **Anais** […]. Berna: Society for Imaging Science and Technology, 2008. p. 234-238. Disponível em: https://ils.unc.edu/callee/p234-tibbo.pdf. Acesso em: 15 out. 2021.

YAMAOKA, E. J. Ontologia para mapeamento da dependência tecnológica de objetos digitais no contexto da curadoria e preservação

digital. **AtoZ**, Curitiba, v. 1, n. 2, p. 65-78, 2012. Disponível em: https://revistas.ufpr.br/atoz/article/view/41313/25239. Acesso em: 15 out. 2021.

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[1] Disponíveis, respectivamente, em: https://www.b-on.pt/ e https://www.rcaap.pt. Acesso em: 18 out. 2021.

[2] Disponível em: https://www.periodicos.capes.gov.br. Acesso em: 18 out. 2021.