



## The technical constitution of the Tatu Digital Repository<sup>1</sup>

A constituição técnica e teórica do Repositório Digital Tatu

La constitución técnica y teórica del Repositorio Digital Tatu

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### Abstract

This article aims to problematize an initiative developed within the scope of the research project "Education, History and Policies in the area of coverage of the Federal University of Pampa" and refers especially to the process of creation and development of a digital repository. The proposal to create a virtual space capable of storing and sharing collections is based on the need to preserve the sources and the possibility of access for various researchers interested in exploring the possibilities contained in documents, journals, educational periodicals and other materials belonging to the collection. Thus, this article deals with the course of creation of this digital repository, through the process of treatment of the sources, its digitalization and organization of the repository that can be accessed through the electronic address <http://sistemas.bage.unipampa.edu.br/tatu/>, highlighting the potential in the interchange between areas such as information technology, education and history, to create versatile solutions.

**Keywords:** Historical collections. Digital Repository. Education.

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## Resumo

Este artigo tem como objetivo problematizar uma iniciativa desenvolvida no âmbito do projeto de pesquisa “Educação, História e Políticas na região de abrangência da Universidade Federal do Pampa” e refere-se, especialmente, ao processo de criação e desenvolvimento de um repositório digital. A proposta de criação de um espaço virtual capaz de armazenar e compartilhar acervos apoia-se na necessidade de preservação das fontes e possibilidade de acesso para diversos pesquisadores interessados em explorar as possibilidades contidas nos documentos, revistas, periódicos educacionais e outros materiais pertencentes ao acervo. Assim, este artigo trata do percurso de criação deste repositório digital, passando pelo processo de tratamento das fontes, sua digitalização e organização do repositório que pode ser acessado por meio do endereço eletrônico <http://sistemas.bage.unipampa.edu.br/tatu/>, destacando o potencial no intercâmbio entre áreas como a tecnologia da informação, educação e história, para a criação de soluções versáteis.

**Palavras-chave:** Acervos históricos. Repositório Digital. Educação.

## Resumen

Este artículo tiene como objetivo problematizar una iniciativa desarrollada en el marco del proyecto de investigación "Educación, Historia y Políticas en la región de cobertura de la Universidad Federal de Pampa" y se refiere especialmente al proceso de creación y desarrollo de un repositorio digital. La propuesta de creación de un espacio virtual capaz de almacenar y compartir acervos se apoya en la necesidad de preservación de las fuentes y posibilidad de acceso para diversos investigadores interesados en explorar las posibilidades contenidas en los documentos, revistas, revistas educativas y otros materiales pertenecientes al acervo. Así, este artículo trata del recorrido de creación de este repositorio digital, pasando por el proceso de tratamiento de las fuentes, su digitalización y organización del repositorio que se puede acceder a través de la dirección electrónica <http://sistemas.bage.unipampa.edu.br/tatu/>, destacando el potencial en el intercambio entre áreas como la tecnología de la información, la educación y la historia, para la creación de soluciones versátiles.

**Palabras clave:** Acervos históricos. Repositorio Digital. Educación.

## Introduction

This article has the main goal to suggest a reflection about the importance and the challenges of the constitution of digital collections to preservation and sharing of sources in history of education, considering that sources are the historian's raw material and a possible path to unfold the facts of the past and look for the answers to the questions on the present. Combined with the argument that historical documents may suffer with the action of deterioration carried out by time, in addition not to always have easy access. In this context, the historical research and the teaching of history of education from historical sources become difficult and limited due to the unawareness of available documents and also for the inadequate cataloguing and conservation to which they are exposed. As an alternative, the digital repositories emerge as important spaces of sharing and preservation, which is the case of the work developed by the "Group of Studies in Education, History and Narrative" of the "Federal University of Pampa" (Unipampa), at campus Bagé/ RS, where the Digital Repository Tatu<sup>2</sup> was created.

The collecting of sources, the scanning and the online posting started in 2015 through the project "The Public Policies of Teacher Training in Pedagogical Printed Materials<sup>3</sup>: The case of the Teaching Journal of Rio Grande do Sul (1951-1978)". At this point, the investigations were linked to discussions regarding public educational policies of teachers training between the period of 1951 to 1978, having as field of analysis the materials, orientations, ideas, pedagogical guidelines and methodological suggestions present in the editions of the Teaching Journal of Rio Grande do Sul (1939-1994), that belongs to the collection of the Central Library of the "University of the Campanha Region" (Urcamp), at campus Bagé/ RS. All the journals in the collection were photographed, received proper image treatment and were posted on the website <http://porteyras.s.unipampa.edu.br/projetorevistadoensino/>.

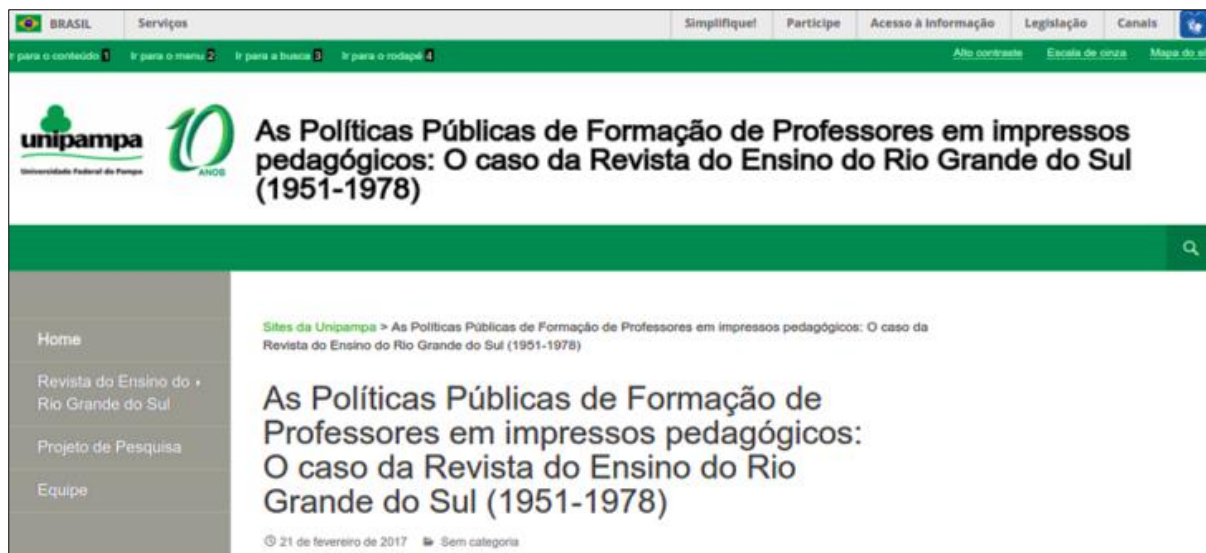
With that, the website stores the journal editions in a digital format, Portable Document Format (PDF), which is used to exhibit and share documents in a compatible way, regardless of software, hardware or operating system. This website is the result of an institutional answer developed by the Information Technology (IT) Department from Unipampa, which consists on the creation of websites with the standard institutional design, used to publicize and share products created by research groups, courses, events and other activities. Nevertheless, this answer presented its limitations concerning the design pattern already existent in the system, the size of the files to be downloaded and the disk space. Temporarily, this solution was extremely satisfying on achieving the goal to make public the scanning of the Teaching Journal of Rio Grande do Sul.

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<sup>2</sup> Available at <http://sistemas.bage.unipampa.edu.br/tatu/>.

<sup>3</sup> A governmental initiative very popular in the past that aimed at helping teachers improve their teaching skills. The material, usually in the shape of a journal, contains suggestions of activities, topics and materials to be developed with the students along the learning process.

**Figure 1:** Website homepage, “The Public Policies of Teacher Training in Pedagogical Printed Materials: The case of the Teaching Journal of Rio Grande do Sul (1951-1978)”<sup>4</sup> .



**Source:** Screenshot from the website <http://porteiros.s.unipampa.edu.br/projetorevistadoensino/>.

As one of the first results achieved it is possible to highlight the interest on the expansion of the scanning work to other collections. So, in 2018, the research project entitled “Education, History and Policies across the coverage area of the Federal University of Pampa” started to consider creating and developing a digital repository to history of education sources, including books, documents, educational journals, literacy guidebooks, images and any other significant historical sources that are already a part of the collection gathered by GEEHN and other materials yet to be discovered.

In this context, the access to the collection is open, that is, free of charge and unrestricted, using the internet in a way that anyone interested on the subject may read it, download it or reference it. In order to do so, the solution was the creation of a digital repository that gathered in an organized and categorized way, with a practical and interactive presentation of the group collection, once a digital repository is capable of providing a series of benefits to researchers or people interested in the area with the possibility of open access to the collection, as well as it will reflect on a bigger visibility and conservation of these sources, minimizing the need of physical contact with the items and also contributing to the preservation of historical memory of education. As a result, a new website was created, and received the name of Tatu Digital Repository<sup>5</sup>.

<sup>4</sup> Access on June 20th, 2018.

<sup>5</sup> Available at <http://sistemas.bage.unipampa.edu.br/tatu/>.

**Figure 2:** Website homepage, “Tatu Digital Repository”<sup>6</sup>.

**Source:** Screenshot from the website <http://sistemas.bage.unipampa.edu.br/tatu/>.

Since then, Tatu Digital Repository project is registered as an initiative of preservation and sharing of documents and historical heritage, and it also becomes important to justify some of the choices that help on the comprehension of the work that the group wants to develop.

First of all, the definition of a digital repository, understood here as a collection of digital information built of different shapes and purposes, contemplating historical productions, but also contemporary works. According with the Brazilian Institute of Information in Science and Technology, digital repositories are “online database that gathers in an organized way the scientific production of an institution or thematic area. The digital repositories store files of distinct formats.” ZUCATTO and JÚNIOR (2014) say that is possible to define a product like a digital repository when it holds the following characteristics:

To be a complete version of the work and all the additional material including a copy of the license along with it; Published with technological patterns according with technical regulations of digital preservation (such as the definitions established by the Open Archives and the OAIS templates); Held by an academical institution, scientific society, governmental agency, private sector or other organization that intends to promote access, distribution, interoperability and storing over long term (ZUCATTO e JÚNIOR, 2014, p. 4).

In the case of Tatu Digital Repository, some of the works are becoming available on their complete version and others are not due to technical issues regarding the storing of files that still need to be overcome. Besides that, the works were published more than 30 years ago, so they are copyright-free. It is important to emphasize that Tatu Digital Repository is a GEEHN initiative, maintained by an academical institution with the support of the Federal University of Pampa, that houses the researchers and technicians involved in the project.

<sup>6</sup> Access on June 20th, 2018.

Another point that needs clarification is the name chosen for the repository. It makes reference to the southern long-nosed armadillo, characteristic animal of the Pampa biome, region where the campuses of the Federal University of Pampa are located. According with the description on the repository itself, Tatu was chosen for being known by its precious nose and also for digging with its anatomically paws developed to reach the prey, being a great hunter and digger capable of locating and searching for food. Thus, he is a good representation of the work developed by a historian that looks, digs or seeks the sources and that is why he is the mascot that gives name to the digital repository.

**Figure 3:** “Tatu Digital Repository” logo.



**Source:** Screenshot from the website <http://sistemas.bage.unipampa.edu.br/tatu/>.

About Tatu Digital Repository logo it is possible to understand that the mascot, positioned between the printed book (on the left) and the digital book (on the right) works making the transition of the material. On the website (specially on the section “Digital Collection”) in which the file conversion is already finished and the item already has its digital collection, the logo loses the printed book.

Apart from the explanations about the creation and the categorization of Tatu Digital Repository, this article is also going to detail the challenges regarding the constitution of a digital collection in technical and informational issues.

### **The technical constitution of Tatu Digital Repository**

Considering the challenge to expand the digital collection of the website created in 2015 and that the solution developed by the Department of Information Technology and Communication of Unipampa would not attend the expectation of creating an attractive and efficient digital repository, the group started working with its own solution in order to fulfill the needs of a repository until the creation of Tatu Digital Repository, which would take into account some characteristics and technical requirements such as: adequacy of the digital files generated keeping the connection with the virtual space available to the storing of the files; easy consultation to the works; collection catalogued by category; friendly digital repository layout; works available in an interactive way.

With the basic needs to be considered regarding the creation of Tatu Digital Repository in hand, it was time to think about the technical issues. The main concern was to use resources such as Free Software, which defines Tatu Digital Repository as a set of multiple free solutions, capable of being replicated by other institutions interested on the project with no cost.

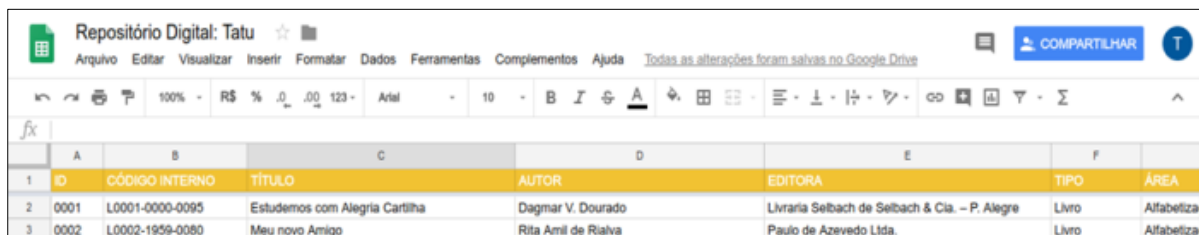
The tools and applications used on the process of developing Tatu Digital Repository also allow that the updating and growth of the collection may occur in an intuitive way, not being necessary a specialized knowledge in information technology.

Among the solutions used on Tatu Digital Repository we may highlight the following ones: the Wordpress, an application used to manage web content, written in PHP with a MySQL database, mainly used on the creation of websites and blogs on the web; the wordpress plug-in 3D FlipBook that consists on a free version of the plug-in capable of simulating the opening process (leaf through) of books; Google Drive, a service that allows the storing of files on Google's cloud; Google Sheets used to catalogue the works and to generate the catalogue card with a barcode. The application Android NoteBloc is also used, with it is possible to scan the works and automatically improve the images by doing image processing; and the LibreOffice a free text editor used to put the pdf files of the digitalized works together.

Regarding the maintenance and the updating of the website it is important to highlight that since the second semester of 2018 this part of the process is being developed by 5 scientific initiation fellows of Unipampa that work with GEEHN, once the group received a grant from the university to research groups it was possible to select the students. In order to organize their work, they were divided in three groups by areas of interest: one of them work directly on updating the digital repository along with the Department of Information Technology of Unipampa that provides the technical support to the repository; other two have the task to scan the collection and the last two to catalogue the works.

The cataloguing of the collection is the first step and in order to fulfil this part of the work, spreadsheets were created and edited on Google Sheets, that works entirely online and directly in the browser, being a tool that allows storing on the cloud for free. The spreadsheets contain information such as author, thematic areas, key-words, year, number of pages and publisher. The sheets work in a way that while the information is completed, a number of internal identification and a code bar are generated through the use of a group of formulas, these informations will be used to locate the collection. The spreadsheet also automatically generates a catalogue card to the digital version of the file.

**Figure 4:** Google Sheets program, cataloguing spreadsheet.



	A	B	C	D	E	F	
1	ID	CÓDIGO INTERNO	TÍTULO	AUTOR	EDITORA	TIPO	ÁREA
2	0001	L0001-0000-0095	Estudemos com Alegria Carlilha	Dagmar V. Dourado	Livraria Sebach de Sebach & Cia. -- P. Alegre	Livro	Alfabetiza
3	0002	L0002-1959-0080	Meu novo Amigo	Rita Amil de Rialva	Paulo de Azevedo Ltda.	Livro	Alfabetiza

**Source:** Screenshot from Google Sheets, organized to the cataloguing of the collection.

With the catalog card done, its version for the physical collection is printed and after the work goes through a cleaning process, it is packed along with the catalogue card inside a leak-proof plastic bag such as the Ziplock kind, watching out to empty as much air as possible. Such action has the goal to preserve the work.

**Figure 5:** Catalog card automatically generated by Google Sheets.

FICHA CATALOGRÁFICA	
IDENTIFICAÇÃO INTERNA:	L0001-0000-0095 -
TÍTULO:	Estudemos com Alegria Cartilha
AUTOR:	Dagmar V. Dourado
EDITORA:	Livraria Selbach de Selbach & Cia. - P. Alegre
TIPO:	Livro
ÁREA:	Alfabetização
ANO:	Não Consta
PÁGINAS:	0095

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**Source:** Screenshot from Google Sheets, card used for the cataloguing of the works.

**Figure 6:** Photomontage of the cleaning and cataloguing process.

**Source:** Photo gallery available at <http://sistemas.bage.unipampa.edu.br/tatu/index.php/galeria-de-fotos/>.

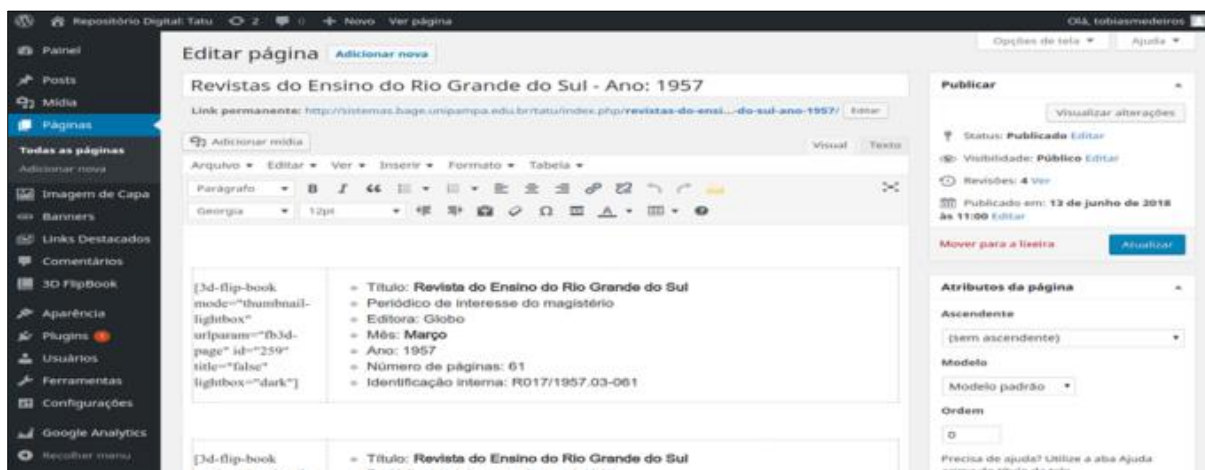
Having the work catalogued, cleaned and packed in a proper way, the scanning process begins. This part of the project is being developed by two students with the help of the NoteBloc, a free application that does the image processing while the pictures are being taken. At last, the LibreOffice free text editor is used to generate a pdf file with enough quality to provide the reading of the file but also with a compatible storing and uploading capacity to the repository server.



**Figure 7:** Photomontage of the scanning process.

Source: Photo gallery available at <http://sistemas.bage.unipampa.edu.br/tatu/index.php/galeria-de-fotos/>.

In order to finish the work cycle, the scanned files are transferred to the server and the catalogue card informations are updated on the website by the fifth student.

**Figure 8:** Tatu Digital Repository, view of the updating process.

Source: Tatu Digital Repository, screenshot from the internal system updated.

After all the process (cataloguing the works with the production of the catalog cards for both the physical and digital version, proper cleaning and storing of the works, scanning, files uploading and updating of the digital repository) the website is updated and the work is available for any researcher interested to view and download in any part of the world.

Another important detail about Tatu Digital Repository are the other links available at the website. Besides the “Digital Collection” link, that gathers categories such as books, journals, pedagogical printed materials, iconographic collection (images) and academical productions, as a space to provide articles, abstracts and other productions published by GEEHN, there is also a space to publish news in which materials will be produced about the scanned works and event advertising, book launching and others related to the history of education field. Another link is reserved to the research project that guides Tatu Digital Repository, another one introducing the team through their Lattes resumé, and, at last, a link where it will be possible to get in contact with the researchers that work at Tatu Digital Repository. The idea is that this area is used to take doubts, post suggestions or solicitations, and even, to get in contact with the team to donate new collections.

Tatu Digital Repository also has a tool that allows the website administrators to check the number of accesses, and other important details such as information regarding which collections were researched. This tool will generate data that can be analyzed and demonstrate the main interests of those who are using Tatu's collection on their researches.

Currently, the Digital Repository is in process of scanning the collection in order to supply the digital collection, in an activity that has the potential to several years of research and promises to bear many fruits to the history of education of Rio Grande do Sul by its innovative character and the possibility to expand the access of sources that could be lost by the action of time.

Beyond the systematic work of organization, cataloguing and scanning of the collection to update Tatu Digital Repository, it is crucial to emphasize that the work developed is directly related with the possibility of working with scientific initiation and researchers training, specially with Unipampa scientific initiation scholars and postgraduate students involved associated with the project. With that, GEEHN's actions take into consideration theoretical reflection about the works that compose the collection, its importance, uses and the research work, as the following ones.

### **Discussions about the collection and the research group**

Looking for historical sources is an exercise that requires patience to go beyond appearances and perceive the details each source has. And if we consider that historical events should be questioned so they can be retold, the handling of sources on history of education research is an aspect to be appreciated, once the different nuances, contexts and settings that situate a historical document will allow the elaboration of the hypothesis, the material arranging and its endless possibilities of exploration.

The author Simone Burioli Ivashita (2014) while discussing the work with sources emphasizes the importance of the discussion and enlargement of the definition of historical sources in history of education and educational historiography, she also debates about the definition of source, its treatment and the awareness about the importance of conservation to the historian work. To Simone, the idea of "(re)build the past, with the certainty that history is not ready, is for the making, it is important to think that so many stories have already been told and that there are so many others yet to tell" (IVASHITA, 2014, p. 2-3) is fundamental. The author also highlights the need of a debate about the sources with the intention to think about the possible ways a historian has to research about the past, defining it as "everything that informs us about the human activity, specially while handling educational matters" (IVASHITA, 2014, p. 4). Saviani (2004) also contributes to the definition mentioned above by saying that:

The sources are at the origin, they constitute the starting point, the base, the supporting point of the historiographical construction which is the reconstruction, on the knowledge plan, on the historical object studied. Thus, the historical sources are not the source of history, that is, it is not from them that history sprouts and flows. They, as records, as testimonies of the historical acts, are the source of our historical knowledge, in another words, it is on them that the knowledge produced regarding history stands (SAVIANI, 2004, p. 5).

While highlighting the versatility characteristic that historical sources have, Ivashita (2014) argues for the historian responsibility to handle and take an inquisitive look over them. To the author:

First of all, it is necessary to situate the research problem, delimit the research space, along with the time frame to be considered, to only then start the inventory of possible sources of information to answer the question raised. If it is the problem that guides the choosing of sources, it is possible to understand that one source can be used multiple times and for different researchers, having in mind that is the question that is going to give meaning to the investigation. This work effectively implies on the process of selecting the data and information that can be used to give meaning to the question yet to be answered (IVASHITA, 2014, p. 7).

The never ending possibilities that historical sources have require the domain of the historical content, previous methodological knowledge and usability capacity of techniques and data collection tools and also data analyses. Rodrigues (2010) emphasizes yet that “the historical process is a spiral in which the researcher is situated on the center, that is, inner the historical field” (RODRÍGUES, 2010, p. 35) he also argues for the need of understanding that history constitutes itself by ruptures and discontinuity, relying on the historian interpretation capacity to the possibility of explaining dynamical processes and social constructions.

It is fundamental to develop a methodology that allows the understanding of inner contradictions of social construction in different historical periods, with the intention to study these waves and its oscillation, making the reconstruction of relations between the structure and superstructure and the organic movement and movement conjecture. Given that history is a continuous process, built by ruptures and discontinuity, and not only a mere adding of facts, the historical study is understood as a social construction and not a linear succession of facts. Therefore, it is not about an incessant unchaining of causes and effects that happen in a given space in time (RODRÍGUES, 2010, p. 36-37).

The author also discusses the responsibility that the research groups have in contributing to knowledge production about history of education and teaching through documental sources and highlights that even though there is, nowadays, a bigger interest in developing historical researches, “in general, the archives and places where the sources are located present many issues regarding access and conservation” (RODRÍGUES, 2010, p. 38).

The cataloguing of sources, organization and analysis that allows an interpretation of the material are actions that involve both the professor and the students, providing a learning that looks for the enhancement of history and the historical collection. It also implies on the visit of many spaces that gather documentation, such as archives, libraries, collection of newspapers, audio libraries, museums and others. The handling of documental sources is a necessary tool to being able to interpret, criticize the source used in the research and also build historical knowledge (RODRÍGUES, 2010, p. 36).

The discussions listed above reaffirm the importance of the work with sources, both in the sense of its preservation and use in researches about history of education, specially, because

they highlight the role that research groups have in this context as accountable for keeping the interest of new researchers in discovering and unfolding the possibilities held by historical collections. In the same end is the work developed by GEEHN while proposing that its team stays in contact with a important historical collection that represents innumerable research possibilities, and at the same time, promotes historical reflection about the work with the sources and the research possibilities they offer.

The possibility of promoting moments of study about how does the research work on the history of education field coming from historical documents may reflect on the shaping of new researchers, aware of theoretical-methodological issues that guides the research and are capable of producing new knowledge and perceptions about history of education.

### **Final considerations**

From a solution that showed itself unable to attend all the necessities of a project in expansion, emerged an innovative proposal that takes into account areas such as information technology, education, history, communication and archive science on the behalf of preserving historical sources and the possibility of sharing collections. Tatu Digital Repository may be characterized as an innovative technological idea but also as an effective tool for teaching and researching history of education.

The technical solution package used goes beyond attending the project demands, it is innovative for using only free softwares and plugins, presenting itself as a possibility to other digital repositories to be created and join Tatu's efforts on preserving historical sources as well as on the encouragement of research.

Therefore, it is possible to say that the historian role is in constant transformation, as well as the research possibilities are infinite. And if for many years the efforts were focused on looking for sources and research possibilities, today the opportunities brought by technology cast new challenges to history of education researchers that need to work on preserving sources and making them available to other researchers, having the digital repositories allied to preservation techniques that guard the safety of the original archives as an excellent alternative to valuation policies of the document along with the historical source and the memory of a certain period, place or segment.

In that way, Tatu Digital Repository and GEEHN join efforts to preserving and promoting history of education collections, making its work and ideas available to other researchers with the expectation of collaborating with the expansion and enhancement of the research field.

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