Revista de Estudos e Pesquisas sobre Ensino Tecnológico

ISSN: 2446-774X

Whiteboard Animation (or Whiteboard Drawing): an educational product to disseminate the Access to Information Law in Integrated High School

Animação Whiteboard (ou Desenho no Quadro Branco): um produto educacional para disseminar a Lei de Acesso à Informação no Ensino Médio Integrado

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Abstract

This article emphasizes the importance of educational practices directed to the activities of search and use of information in the context of the Federal Institute of Education, Science and Technology of São Paulo (IFSP). The research problem addresses the contribution of libraries to stimulating student informational behavior aimed at building knowledge from the perspective of polytechnic. The stages of construction and evaluation of an educational product are presented. It is a whiteboard animation (or drawing on a white board) whose central subject is the Access to Information Law (LAI) – Law 12.527 / 2011. It is defined as a descriptive and applied research, using mixed methodology. Knowledge Diagnostic Test and Questionnaires (both online) are used to collect quantitative and qualitative data through simple random sampling. Data are analyzed using descriptive statistics and textual discursive analysis (ATD). The results obtained show that the students evaluate the educational material in a positive way. After watching the video, most of the group realized that the denial of the right to information prevents the generation from acquiring new knowledge. Students intend to use the LAI to search for future information. It is concluded that the library, seen as a non-formal teaching space, is capable of providing educational information and materials capable of directly contributing to increase the quality of the search and informational processes among students.

Keywords: Pedagogical animation. Access to information. School library.

Resumo

Esse artigo salienta a importância das práticas educativas direcionadas às atividades de busca e uso da informação no contexto do Instituto Federal de Educação, Ciência e Tecnologia de São Paulo (IFSP). O problema de pesquisa aborda a contribuição das bibliotecas ao estímulo de um comportamento informacional discente direcionado à construção do conhecimento na perspectiva da politecnia. As etapas de construção e avaliação de um produto educacional são apresentadas. Trata-se de uma animação *whiteboard* (ou desenho em quadro branco) que elege, como temática central, a Lei de acesso à Informação (LAI) – Lei 12.527/2011. Define-se como uma pesquisa descritiva e aplicada, com utilização de metodologia mista. Utilizam-se Teste Diagnóstico de

Conhecimento e Questionários (ambos, *on-line*) para coleta de dados quantitativos e qualitativos, por meio de amostragem aleatória simples. Os dados são analisados por meio da Estatística descritiva e da Análise Textual Discursiva (ATD). Os resultados obtidos mostram que os educandos avaliam o material educativo de maneira positiva. Após o contato com o vídeo, a maior parte do grupo percebeu que a negação do direito à informação impede a geração de novos conhecimentos. Os alunos pretendem utilizar a LAI para buscar futuras informações. Conclui-se que, a biblioteca, vista como um espaço não formal de ensino, é capaz de oportunizar informações e materiais educativos capazes de contribuir diretamente na ampliação da qualidade dos processos de busca e uso informacional entre os discentes.

Palavras-chave: Animação pedagógica. Acesso à informação. Biblioteca escolar.

Introduction

The school library is considered an important locus of information in educational institutions. Osoro-Iturbe (2006, p. 70, our translation) points out that it "[...] must be the heart of the school, [...] a fertile soil over which the most exuberant forest may sprout if properly watered by teachers, parents, students, and librarians". Therefore, such spaces are attributed with great potential to disseminate good practices for processes of search, selection, and use of informational content among leaners.

The research problem exhibited herein throws light on the potential educational role of libraries in institutions of Vocational and Technological Education (Professional and Technological Education) (EPT). Specifically, we investigate how libraries could encourage the information behavior of students towards the construction of knowledge in the perspective of polytechnic education. Our investigation process proposes to elaborate a specific educational product – a video in the format of a graphic animation – to support the routine of services and educational actions developing in these non-formal learning spaces.

Our research design establishes that the subject of the educational product would also be defined by the leaners. For this particular group of students, many subjects would be regarded as relevant, such as: the use of CAPES Periodical Portal, guidelines on reading techniques, standardization of literature citations, search strategies on Google, elaboration of bibliographic references, standards for presentation of academic papers etc. However, they indicated a general ignorance and, at the same time, a significant interest in learning about the Law 12.527/2011, known as Access to Information Law (LAI) (BRASIL, 2011). Thus, the group decided on this specific subject to base the animation in question.

The main purpose of this educational product is to demonstrate and stimulate a practical integration between the process of search/use of safe information and the potential to generate social intervention. Such demand proves especially relevant because of the recent expansion of information volume available, as well as the popularization of access to Digital Information and Communication Technologies (Digital Technologies of Information and Communication) (TDIC's), in addition to the need of teaching and learning actions targeting at improving the increasingly demanding search and use of information.

After this brief presentation, we suggest that the reader takes a time to get to know the whiteboard animation produced to better understand the description of the stages of production, certification, use and achieved results. The educational material is available for visualization and download on the Portal EduCAPES

(SOUZA; MOSSIN, 2019) – a repository of open educational resources for students and teachers in basic schooling, higher education, and graduate programs. The access to the material is available on: https://educapes.capes.gov.br/handle/capes/432909

2. Theoretical and thematic context

The whiteboard animation in question was elaborated by approaching the theoretical concepts of two specific dimensions: development of digital media and EPT conceptual bases.

The conceptual contribution about digital media was based on the work of DocComparato, who, after 30 years of a broad professional practice, illustrated in a theoretical and practical way how the process of building an audiovisual product requires specific analysis and stages. Comparato (2016) reinforces the importance of writing the reality in the dramaturgy scope. A reality often conflicting and filled with common drama experienced by common people, that is, the unfolding of daily life as a golden opportunity to identify ideas, conflicts, and characters that deserve personification and voice.

The production of an educational video is driven by the same goal: develop a material for the worker (teacher, librarian, and remaining education practitioners) as well as individuals undergoing their process of comprehensive training. It seeks to demonstrate how a relevant, consistent information can become a non-alienated knowledge targeting the emancipation of the common man, their current work, and community.

This study highlights some of the vast theoretical background composing the EPT conceptual bases, such as integral education, omni-laterality, and polytechnic education. Integral education is grounded on the defense of an education in which professional training and human formation are inseparable. It seeks to break away from a reductionist logic that controls education, especially in the secondary school, targeting exclusively at market insertion. This means that integral education opposes to duality by responding to a convergence between manual and intellectual labor, promoting the formation of the omnidirectional man. This individual “[...] is not defined according to what you know, master, enjoy, experience, let alone to what you have, but to your wide opening and availability to know, master, enjoy, experience things, people, anyway, realities – the most varied [...]” (PEREIRA, 2008, p. 286, our translation).

The subject chosen for the graphic animation produced differs from the most common pattern of educational videos available on the web, especially considering the content addressed. Its script expresses the interface among science, work, culture, and technology, aiming at manifesting a non-hierarchical nature between knowledge scopes, that is, adopting the perspective of polytechnic education “[...] in the direction of overcoming the dichotomy between manual and intellectual labor, professional training and general instruction” (SAVIANI, 2003, p. 136, our translation).

This said, understanding the fundamental concepts of the EPT is vital to reflect on the development of research and educational product adjusted to the struggles of the working class. A product aligned with the pillars of polytechnic education, whose

main axis is working practice, avoiding in the future practice serving as instrument to enlarge worker exploitation. As pointed out by Souza Júnior (2008, p. 177, our translation) “[...] more than ever, the ontological centrality of labor consolidates itself as a fundamental dimension of human formation. Knowledge and information are products of labor and not the other way round”.

The concept of information is the common thread overpassing the entire script of the educational product developed. Therefore, we regard the concept of information as a data set significantly organized. According to Setzer (1999, p. [2], our translation), information is “an informal abstraction [...] that represents something meaningful to someone through texts, images, sounds or animation”. Thus, the relationship between humans and information is clear, which means that human intervention is indispensable for mere data to be relevant and become actual information. In this sense, information depends directly on the cognitive process developed from human analysis and interpretation.

The set of information introduced by the Law 12.527/2011 is the materialization of one of the fundamental rights expressed in the article 5 of the Federal Constitution of 1988. It settles the procedures for citizens to access public information of their own interest in a simple and dynamic manner.

The goal of the LAI is to promote the maximum disclosure of public information, thus encouraging the processes of active and passive transparency by public bodies. The petitioner of public information – either a legal or natural person – is not bound to explain the grounds to the information request. Information is regarded as a right and does not demand to declare motive. Additionally, access to data is free and encompasses information from all bodies and government agencies, namely: Union, States, Cities, and Federal District (BRASIL, 2011).

The Federal Government has released some material to increase the propagation of the LAI in the national scope. However, the purpose of this material is not educational, but informational, and often does not become largely understandable by the general public. In this context, developing an educational product targeting at the teen public and approaching the matter in a more attractive and intelligible manner proved pertinent and necessary.

3. Methodological analysis

We adopted a mixed-type research methodology, considering that the combination of methods establishes whenever “[...] collection or analysis of quantitative and qualitative data in a single study, in which the data are collected simultaneously or sequentially” (CRESWELL et al., 2003, p. 212, our translation).

It is worth highlighting that the qualitative nature of research presented a transformative profile, for it sought to “[...] produce the changes defended for the group in study” (CRESWELL, 2014, p. 63, our translation). These changes refer specifically to the informational behavior of the students in the Integrated Secondary School (EMI) of IFSP/Campus Jacareí.

It is also worth clarifying that the research in question has a reflexive, interpretative, comparative nature, that is, the data collected sought to understand the sense of the research questions investigated. In addition, they allowed to compare some of the

characteristics of the participating students before and after the application of the educational product developed.

For a more accurate determination of the quantity of participating students in the research, we adopted statistical procedures to establish the sample size for the known populations (finite). To represent the population of 200 students in the EMI of IFSP/Campus Jacareí (at a confidence level of 90% and an error margin of 10%) 51 participating students were needed. These students were selected in an unbiased manner through a simple random sample (spontaneous decision to participate) among students in the 1st, 2nd, and 3rd years of the EMI.

We used two collection instruments for primary data: Diagnostic Test of Knowledge (online) (mainly to investigate the type/format of the educational product and subject preferred by the group) and two Questionnaires with mixed questions (one to identify the information behavior of the group and another for the students to evaluate the educational product produced).

The system SurveyMonkey (available on: https://pt.surveymonkey.com/) was used to collect and tabulate the data. It automatically informs the researcher when each test is completed. Being aware of the completion at real time benefits the effectiveness of applying sequential research instruments. In the end of the collection, the data become available and tabulated in the system.

The data of quantitative nature (either categorical or quantifiable) were analyzed through instruments of Descriptive Statistics and tabulated by building layouts in the format of tables on a computer. The process of data tabulation was conducted automatically through the system SurveyMonkey.

In turn, the data of qualitative nature were analyzed through Discourse Text Analysis (ATD) – based on the theories of Moraes and Galiazzi (2011), which considers the content explicit by the participating students, but elaborating interpretations and understanding to unfold a collective voice. Thus, the ATD is guided by the tabulation of the initial research *corpus* (complete data tabulation), unitization (moment of data deconstruction), categorization (grouping of terms in similar categories), and metatext production.

The result of the ATD is the construction of a metatext that can be defined as "[...] a text resulting from several relations established among the categories obtained about the subject to be analyzed. [...] It expresses the essence of the researcher's theorization" (PAULA; MENEZES; GUIMARÃES, 2015, p. 28, our translation). It is a text (built from the researcher's interpretation) that encompasses all open answers to a given question and the expression of the attempt to give voice – collectively and simultaneously – to all respondents in a single text.

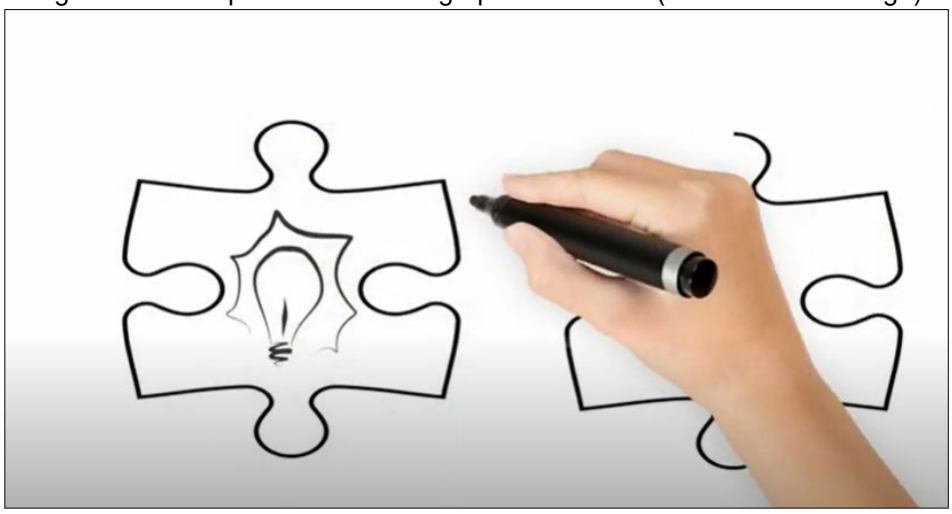
Therefore, knowing the methodological trajectory delimited for the research allows to recognize its specific characteristics of application, that is, the production and development of the educational product.

4. Production and development of whiteboard animation

Whiteboard animation can be defined as a type of animation with emphasis to hand drawing that generates designs on a white base delivering a message through an instructional audio. Such graphic animation style does not require the video producer

to have design skills. In fact, the designs are inserted in vectorial format (.svg) and the software simulates image construction through manual design, according to illustration in Figure 1.

Figure 1 – Example of whiteboard graphic animation (or whiteboard design)



Source: https://www.youtube.com/watch?v=K3czACoageg. Access on: May 14, 2020.

These animations describe the process of drawing pictures on a whiteboard, and as the images are developed, the voice of a narrator is used to guide the viewers in the mental construction of the concepts presented. Frequently, a human hand is used as a signaling effect and/or to direct the student's attention. Additionally, this graphic resource tends to feature some common characteristics, such as dynamics and humor (TÜRKAY, 2016).

4.1 Educational product design

The elaboration and application of a Diagnostic Test of Knowledge as the primary research instrument seeks to elucidate the background knowledge profile of the EMI students in the IFSP/Campus Jacareí. Otherwise, for a proper definition of the subject of the educational video developed as educational product, it is fundamental to highlight the main difficulties, interests, and preferences expressed by the analyzed group.

The Diagnostic Test of Knowledge was elaborated considering the main informational demands that reached the library between 2017 and 2018. The following main subjects were surveyed in person by the students over the period in question: use of CAPES Periodical Portal, request of orientation on reading techniques, literature citations, search strategies on Google, sources of information, elaboration of bibliographic references, standards for the presentation of academic papers, accuracy of information/news, access to public information, librarian activities, among others. These were the demands that helped in the elaboration of the Diagnostic Test of Knowledge.

In turn, Questionnaire 1 is the instrument of data collection used to characterize the group of EMI students in the IFSP/ Campus Jacareí and its informational behavior. Furthermore, the characterization of group profile and information behavior

supported the development of the animation script proposal. The identification of this profile allowed to define the scenarios and characters in the video. As an example, we highlight the need to place the librarian as a professional available to help in the research process. One of the questions in Questionnaire 1 revealed that most of the group (61% of the students) do not ask for help from others when searching for information. In addition, if the individual search process was not successful, a request for help was directed to friends. Requesting help from a professional librarian was among the last options listed by the group. Thus, the construction of the librarian character and its support to Paula's research imposed.

Briefly, the Diagnostic Test of Knowledge provided the participating students with the choice of type (video), format (graphic animation), and subject (Access to Information Law) of the educational product, while Questionnaire 1 enabled to identify the information behavior of the group and guide the scenarios/characters in the script to contribute to the indicated needs.

4.2 Description of the creation process of the educational product

The possibility of choosing the characteristics of the educational product proved a challenge. Since the researchers did not have background knowledge on media development, we selected a simple, intuitive software, but able to offer a result of effective quality. Initially, in order to overcome the present limitation, we performed a study and a brief comparison of the three software programs that, in that moment, best fit the demand indicated, namely: PowToon, Renderforest, and VideoScribe.

After analyzing the capacities and limitations of each software, we decided on the use of VideoScribe, significantly based on the efficiency of the software, potential quality of the video produced, possibility to adjust the video time frame according to the demands of the research, data storage capacity, and cost (in case the user choose the paid version).

Furthermore, there are many tutorials featuring tips on the use of VideoScribe available on YouTube, which facilitates the familiarization with its tools. Additionally, the possibility to access the tools in Video Scribe is a major differential, especially for the immediate access to a large library of images and songs with open use rights, no need for broadband connection to build the video, and easy file exportation, including via YouTube.

In terms of the software potential, some limitations had to be overcome, such as the possibility of free use only for 7 (seven) days. For this purpose, due to the size of the video produced and for the watermark (present in all videos elaborated using the free version) to be excluded from the final material, we decided to pay for the full access within the period of 30 (thirty) days.

The script construction followed the guidelines indicated by Girão (2005). According to the author, a video contains five production phases, namely:

a) Creation and planning = This stage encompasses a rather technical nature, including the choice of software to produce the video, familiarization with its tools, a definition of average time frame, and specific selection of content in the film.

b) Script = Script construction is one of the most complex phases in the process of developing an educational product. The main difficulties found cover the interrelationship between the EPT conceptual bases and the specific content of the

video. It took some time to find the best articulation between the EPT bases and the particularities of the LAI. Additionally, the language used (neither academic or infantilized) need to be adapted to the material in order to be at the same time intelligible and stimulating.

c) Pre-production = As the production team was composed of the researcher in question (supported by her supervisor), this stage is not included in the developmental context of this specific educational product.

d) Direction and recording = This stage concerns the effective construction of the educational product. The 11 minutes of the graphic animation were elaborated second by second. Some of the scenes were redone due to matters of technical adaptation of the script. The search for a fluent graphic result pointed out to the need to combine image synchronization and the narration of each scene carefully and precisely. Although laborious, this process generated a satisfactory graphic result. The many graphic possibilities offered by the software were applied, compared and evaluated seeking the best conceptual result possible. Effects of image construction (free hand design) and animated transition between scenes are the two highlighted resources along the recording process.

It is worth pointing out that other software or applications, in addition to VideoScribe, are also used during the recording process, namely: Flixpress (on-line resource) to create the opening spot; Voice recorder (cellphone application) to record the video narration; Music editing (cellphone application) to cut and merge recorded audios; *A voz da zueira* (cellphone application) to record the artificial voice that reads the constitutional article in the video.

e) Editing and finishing = The construction of the graphic animation unfolded in several separated parts. The goal of such division is to obtain the best control to each scene produced. The combination of all images, effects and sounds was performed in final project stage on the software Format Factory. Subsequently, the video was sent to evaluation by the research supervisor and other individuals of significant potential to contribute to the material. The finishing process also featured the insertion of background sound (through resource available in the VideoScribe itself) and subtitles (through resource available on YouTube/StudioBeta). The insertion of subtitles aims at maximizing the aspect of access to animation; therefore, it is recommendable for students with special needs, especially those with hearing impairment and/or deafness.

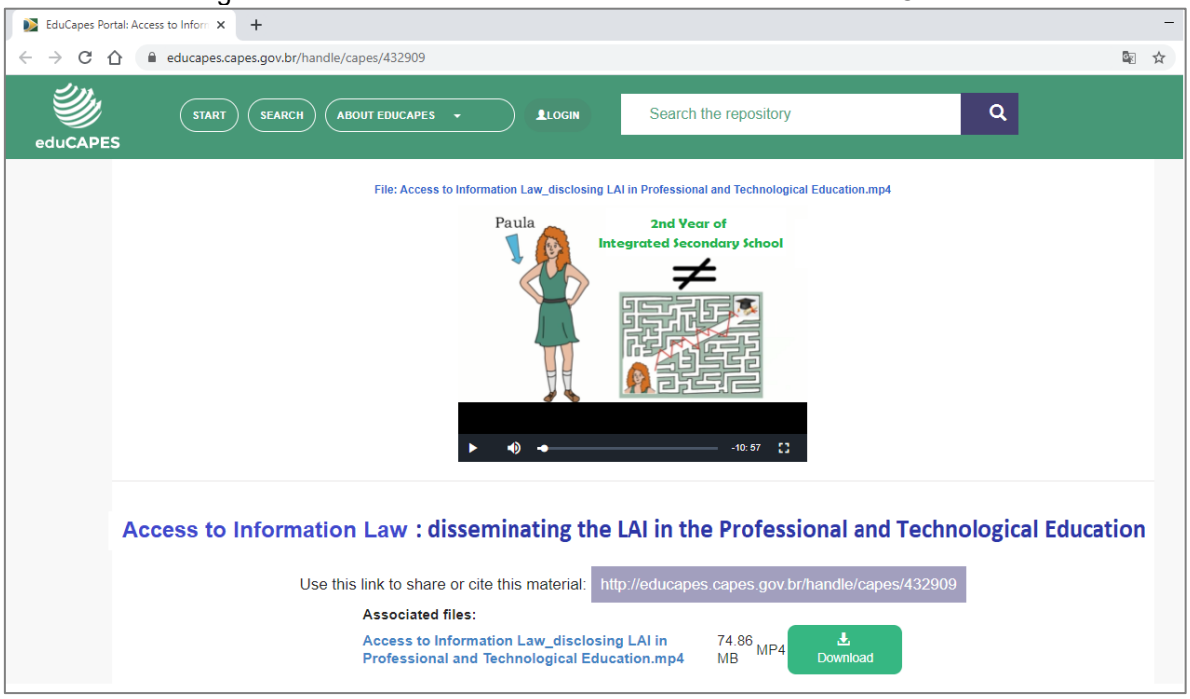
4.3 Certification and provision in the web environment

The educational product developed is registered under the licensed brand Creative Commons, category CC-BY-NC-AS, version *Attribuição-NãoComercial-CompartilhaIgual* 4.0 International. This license allows others to use (upon proper authorship attribution) and make adaptations from the licensed videos (provided it is for non-commercial purposes). In addition, new productions generated from the educational product must be shared following identical terms of open licensing.

Furthermore, we identified the possibility to obtain the Certificate of Brazilian Product (CPB) by the Agência Nacional do Cinema (ANCINE), protocol B19-002509-00000 CPB/ANCINE. This register is destined to non-advertising works performed by individual producers.

As mentioned in the introduction, the whiteboard animation produced is available for visualization and download on the Portal EduCAPES. Hosting on this repository of open educational resources is significantly advantageous for purposes of content publicity and collaboration in the process of democratization of information and scientific knowledge related to education.

Figure 2 – Access to the Educational Product on Portal EduCAPES



Source: https://educapes.capes.gov.br/handle/capes/432909. Access on: May 19, 2020.

4.4 Educational product evaluation

After the construction and application of the animation produced, the video was evaluated by the group of students through the Questionnaire 2. The questions elaborated aimed at characterizing the opinion of the students on some aspects of the material, such as: attractiveness, format, clarity, content understanding, information quantity, impact on future behavior, among others. The main data are expressed in the analysis of results.

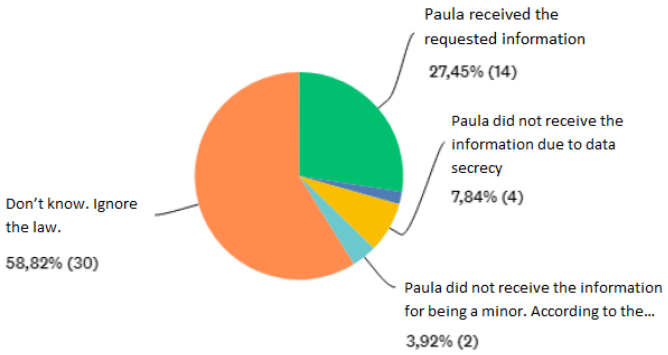
5. Introduction and analysis of results

Initially, the data resulting from the Diagnostic Test of Knowledge point out that the two subjects with the highest indices of difficulty are the access to public information and functionality of CAPES Periodical Portal. Such result exemplifies the importance of deconstructing the illusion that “the access to knowledge has been largely democratized through means of communication, informatics, internet etc.” (DUARTE, 2008, p. 14, our translation), since even an instrument of access to public information is identified as unknown by the group of students. Figure 3 clearly illustrates that the question with the lowest number of hits specifically approached the LAI.

Figure 3 – Diagnostic Test of Knowledge: ignorance of the LAI

LAI, known as “Law of Access to Information”, establishes the guarantee of RIGHT TO INFORMATION, expressed in the Federal Constitution. Paula is an integrated secondary school student and decided to use the LAI to obtain the total number of SLAVE LABOR denunciations registered in the state of São Paulo over the past five years. To reach such information, she filled a clear, detialed request on website http://www.sic.sp.gov.br. Therefore, after a few days:

Answered: 51 Skipped: 0



STATISTICS OF THE TEST

Percentage of correct answers	Average score	Standard deviation	Difficulty
27%	0,3/1,0 (27%)	0,45	1/9

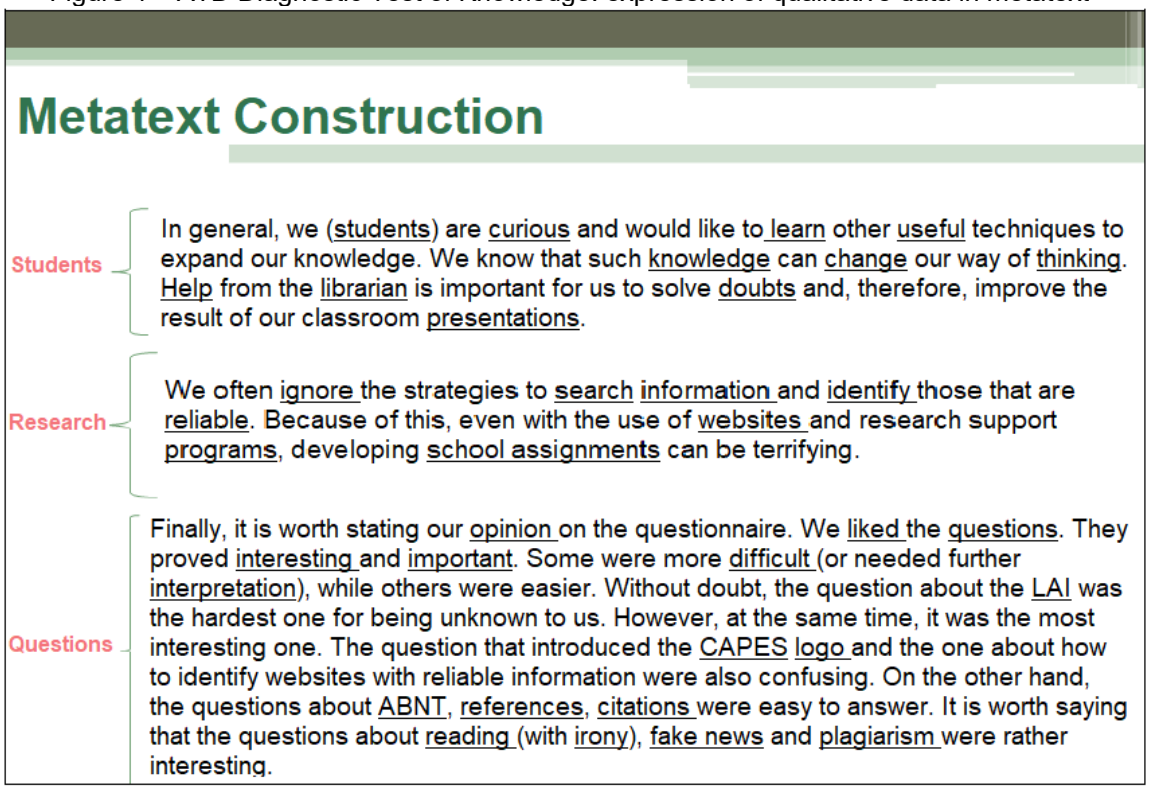
ANSWER OPTIONS	PONTUAÇÃO	RESPOSTAS	
✓ Paula received the requested information	1/1	27,45%	14
Paula received the requested information after compulsory levies payment	0/1	1,96%	1
Paula did not receive the information due to data secrecy	0/1	7,84%	4
Paula did not receive the information for being a minor. Legally, only those over the age of 18 can request to access the information	0/1	3,92%	2
Don’t know. Ignore the law	0/1	58,82%	30
TOTAL			51

Source: Developed by the author (2019).

As can be seen, the percentage of correct responses for the question reached only 27%. In addition, nearly 60% of the students indicated having ignored the law.

The definition of the subject in the whiteboard animation was not based only on the analysis of quantitative data. The metatext resulting from the qualitative data in the Diagnostic Test of Knowledge confirms the identification of the two questions with the highest index of difficulty: a question about the LAI and another about the CAPES Portal. These items are listed in Figure 4.

Figure 4 – ATD Diagnostic Test of Knowledge: expression of qualitative data in metatext



Source: Developed by the author (2019)

However, the metatext above points out to other relevant factors, with emphasis to the identification of curious behavioral profile of the EMI students, their feelings of fear and worry related to activities of research and presentation of school papers, in addition to the perception that help from a professional librarian is relevant in this context. This restates that the professional librarian who supports school education, "[...] is not a clerk or limited to maintaining a collection. He or she should be an active partner in learning. [...] [and] guides students through inquiry-driven learning" (LANKES, 2016, p. 44).

In this context, the aspects related to the feelings described by the students and the perception of the need of support by a professional librarian serve as basis to build the whiteboard animation script.

It is also worth introducing the data on the evaluation process of the educational product for revealing that the subject of the video directly influenced its attractiveness. Nearly half of the students (49% of the group) indicated that the subject about the LAI was the aspect that called the most attention to the material. The factor that explains such result is the choice based on the students' own desires (collected using the Diagnostic Test of Knowledge).

In contrast, the video length is the main criticism of the educational video – considered long – half of the students suggested to change the total length of the animation (approximately 11 minutes).

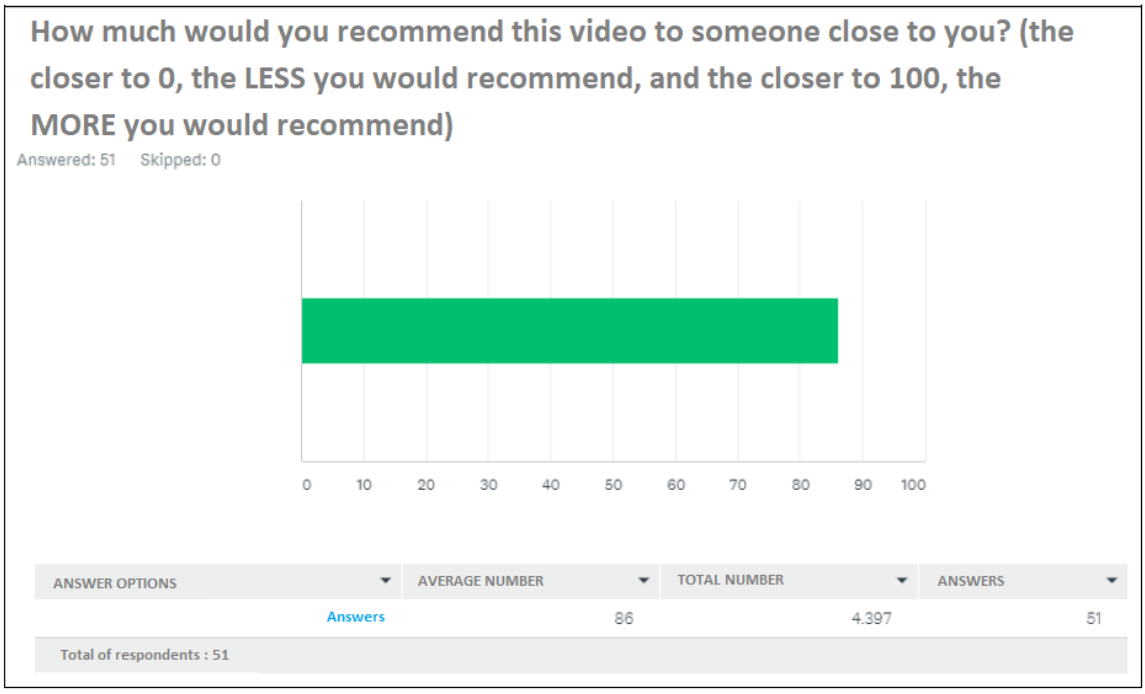
Commonly, videos produced with educational purposes have a shorter time frame. It is usual for contents to be condensed and/or summarized in order to become more attractive, especially if the material is targeted at youngsters. However, we sought the greatest informational completeness possible on the LAI by relating it to the EPT,

because “[We should] guarantee workers the best educational quality possible in the current historical conditions” (SAVIANI, 2008, p. 26, our translation). The aim is not to link a good-quality education to a content-based education, however, without a wide systematization of contents, such quality tends to be compromised.

The final length of the video proved necessary to address different subjects, such as: appreciation of the IFSP space, emphasis to the possibility of curricular integration between elementary and technical education, deconstruction of the idea of education submitting to the logic of capital (educate for the market), illustration (implicit) of the stages of requirement, search and use of information, exemplification of the importance of the professional librarian in non-formal learning spaces, reaffirmation of the symbolic value of books and reading, among others.

In general, the positive evaluation process for the educational product can be endorsed by the results presented. Figure 5 illustrates such affirmation with the potential of recommending the video to others.

Figure 5 – Evaluation of whiteboard animation: potential of video recommendation



Source: Developed by the author (2019)

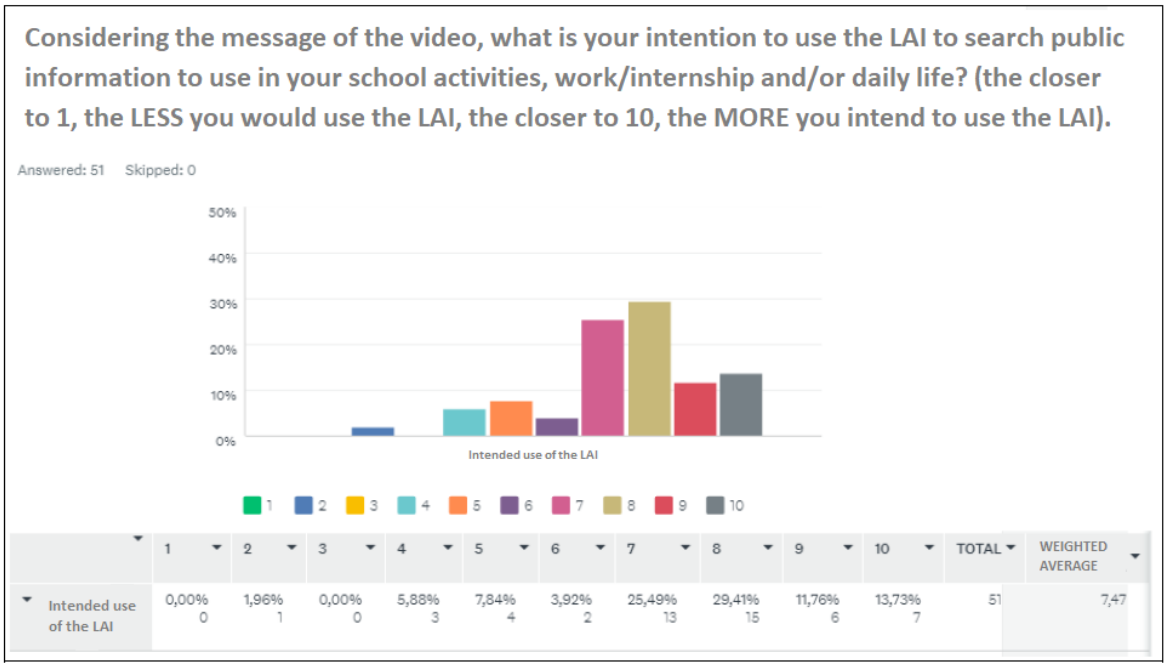
The intention of recommending the video is particularly significant. By considering that 86% of the students would share the video with friends/family, it is possible to measure the impact of the educational product on the community in question.

This impact deserves attention. As we are aware, information is the backbone of knowledge development, therefore, it is fundamental to consider the range of dissemination of the instruments available for each student to have conditions to improve the process of search/use of information in favor of the citizenship exercise, as proposed in the National Curricular Guidelines for Professional Technical Secondary Education, article 6, item IV:

> Art. 6 The principles of the Professional Technical Secondary Education are: IV – interrelation between Basic Education and Vocational and Technological Education (Vocational and Technological Education), in the perspective of **integrating specific knowledge** to **produce knowledge** and **social intervention**, adopting research as pedagogical principle (BRASIL, 2012, emphasis added, our translation).

The data of the evaluation process of the video also demonstrated that in addition to recommending the video to others, the students of the EMI in the IFSP/Campus Jacareí reiterate that intend to use the LAI instrument in their school activities, work/internship and/or daily life. Figure 6 illustrates such intent.

Figure 6 – Evaluation of whiteboard animation: intended use of LAI



	1	2	3	4	5	6	7	8	9	10	TOTAL	WEIGHTED AVERAGE
Intended use of the LAI	0,00% 0	1,96% 1	0,00% 0	5,88% 3	7,84% 4	3,92% 2	25,49% 13	29,41% 15	11,76% 6	13,73% 7	51	7,47

Source: Developed by the author (2019)

Finally, it is worth introducing the results obtained from the qualitative analysis of the evaluation data in the whiteboard animation.

Figure 7 – ATD of the Evaluation of whiteboard animation

Source: Developed by the author (2019)

As Figure 7 illustrates, both the video and subject received positive evaluation by the participating students. In addition to recognizing the importance of the LAI, they were able to relate it to the research field and the construction of new knowledge. It is also worth emphasizing that the EMI students have requested the librarian professional activities since the beginning of the Secondary School, which means that they were able to identify the potential of their in the educational process. In contrast, the data indicate the need to expand the skills of the professional librarian to the execution of the illustrations in the animation.

In short, the main results obtained from both the quantitative and qualitative data collections are: access to public information as a subject with higher index of difficulty and curiosity by the participating group; feelings of fear and worry related to activities of research and presentation of school papers; perception that help from a professional librarian is relevant; subject of the video – Access to Information Law – is associated with the attractiveness of the material; time frame of the animation is considered long; intention of recommending the video to others, students intend to use the LAI in their school activities, work/internship, and/or daily life.

6. Final considerations

The educational project preconceived and operationalized by Federal Institutes is still far too distant from the reality of most Brazilian schools. Law 11.892/2008 – establishing the Federal Network of Professional, Scientific and Technological Education – embodies a project of polytechnic education, that is, a counter hegemonic project grounded on a critical theoretical reference and an engagement with the working class. Thus, it promotes conditions to execute an education of reference, combined with research, extension, technological development, and citizen emancipation. In these educational spaces, material and work conditions of librarians are extremely distinct from the reality imposed to most Brazilian librarians.

In general, in the national scope, precarious working conditions do not provide the full performance of technical functions, let alone socio-educational functions.

Submerged in this whole context, libraries have been increasingly facing difficulties to fulfil their social role actively in the schools. Despite being pointed out as a non-formal educational space essential for the materialization of an EPT project and its significant pedagogical potential, there are no public policies to expand school libraries in the country. We highlight the urge to invest in these educational spaces and in the training of professional librarians, aligned with a perspective of technical and educational actions. Thus, these professionals, in addition to technical and managing demands, more and more have the potential to develop projects and meet demands in the social, information, and user education scopes.

In this context, research development and, above all, the challenge of elaborating an animation enabled a new perception on teaching activities in the locus of information in the library. Combined with practice, theory imposed and demonstrated at every stage how the educational research can become an allied in the process of professional and human growth. This means that the research allowed the exercise of personal transformation through/for the work.

Thus, we conclude that the educational product enabled the EMI students in the IFSP/Campus Jacareí to appropriate a diversity of previously unknown information. Potentially, such information influences students in a particular manner by offering a fertile environment for new knowledge to grow. Many have not only identified the difficulties faced to reach the full exercise of citizenship and the common good, but also perceived the importance of building knowledge engaged with the transformation of the imposed reality. Indeed, the development of the educational product contributes to expand the process of humanization of the studied group, which, in an actual, concrete context, already understands their informational rights and negative impacts derived from their denial.

Therefore, libraries – regarded as a non-formal educational space – are able to offer educational information and material that contribute directly to increase the quality of processes of search and use of information among students. We also highlight the potential of the instruments related to the TDIC's in the educational field.

References

BRASIL. **Lei nº 12.527, de 18 de novembro de 2011**. Regula o acesso a informações previsto no inciso XXXIII do art. 5º, no inciso II do § 3º do art. 37 e no § 2º do art. 216 da Constituição Federal. Brasília, DF: Presidência da República, 2011. Disponível em: http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2011/Lei/L12527.htm. Acesso em: 29 maio 2019.

BRASIL. Ministério da Educação. **Resolução nº 6, de 20 de setembro de 2012**. Define Diretrizes Curriculares Nacionais para a Educação Profissional Técnica de Nível Médio. Brasília, DF: Presidência da República, 2012. Disponível em: http://portal.mec.gov.br/index.php?option=com_docman&view=download&alias=11663-rceb006-12-pdf&category_slug=setembro-2012-pdf&Itemid=30192. Acesso em: 29 maio 2019.

COMPARATO, D. **Da criação ao roteiro**: teoria e prática. 4. ed. São Paulo: Summus, 2016. (Biblioteca fundamental de cinema ; 4).

CRESWELL, J. W. **Investigação qualitativa e projeto de pesquisa**: escolhendo entre cinco abordagens. 3. ed. Porto Alegre: Penso, 2014.

CRESWELL, J. W. et. al. Advanced mixed methods research designs. In: A. TASHAKKORI, A.; TEDDLE, C. **Handbook of mixed methods in social and behavioral research**. Thousand Oaks, CA: Sage, 2003. p. 209-240.

DUARTE, N. **Sociedade do conhecimento ou sociedade das ilusões?**: quatro ensaios crítico-dialéticos em filosofia da educação. Campinas: Autores Associados, 2008. (Polêmicas do nosso tempo; 86).

GIRÃO, L. C. Processos de produção em vídeos educativos. In: **Integração das tecnologias na educação**. SEED. Brasília: MEC, 2005, p. 112-116. Disponível em: http://www.pucrs.br/ciencias/viali/tic_literatura/livros/Salto_tecnologias.pdf. Acesso em: 02 abr. 2018.

LANKES, R. D. **Expect More**: demanding better libraries for today's complex world. 2. ed. [*S. l.: s. n.*], 2016. Disponível em: https://davidlankes.org/new-librarianship/expect-more-demanding-better-libraries-for-todays-complex-world. Acesso em: 12 mar. 2021.

MORAES, R.; GALIAZZI, M. C. **Análise textual discursiva**. Ijuí: Unijuí, 2011.

OSORO-ITURBE, K. **¿Qué es (o debe ser) una biblioteca escolar?**: concepto y fases del proyecto. Mi Bibioteca: la revista del mundo bibliotecario, Málaga, v. 2, n. 5, p.68-74, 2006. Disponível em: https://gredos.usal.es/jspui/bitstream/10366/120039/1/MB2_N5_P68-74.pdf. Acesso em: 10 mar. 2021.

PAULA, M. C. de; MENEZES, A. L. dos S.; GUIMARÃES, G. T. D. Análise textual discursiva: possibilidades de imersão. *In:* GUIMARÃES, G. T. D. **Ressignificando os labirintos da pesquisa qualitativa**: exercícios práticos de análise do discurso. Porto Alegre: EDIPUCRS, 2015.

PEREIRA, I. B. **Dicionário da educação profissional em saúde**. 2. ed. rev. ampl. Rio de Janeiro: EPSJV, 2008. Disponível em: http://www.epsjv.fiocruz.br/dicionario/Dicionario2.pdf. Acesso em: 29 nov. 2017.

SAVIANI, D. **Escola e democracia**: edição comemorativa. Campinas: Autores Associados, 2008. (Educação contemporânea).

SAVIANI, D. O choque teórico da Politecnia. **Trab. educ. saúde**, Rio de Janeiro, v. 1, n. 1, p. 131-152, mar. 2003. Disponível em: http://www.scielo.br/scielo.php?pid=S1981-77462003000100010&script=sci_abstract&tlng=pt. Acesso em: 06 mar. 2021.

SETZER, V. W. Dado, informação, conhecimento e competência. **DataGramaZero**, v. 0, n. 0, 1999. Disponível em: http://hdl.handle.net/20.500.11959/brapci/7327. Acesso em: 11 mar. 2021.

SOUZA, A. N. G de; MOSSIN, E. A. **Lei de Acesso à informação**: disseminando a LAI na Educação Profissional e Tecnológica. São Paulo: [*s. n.],* 2019. 1 vídeo (11 min.). Disponível em: http://educapes.capes.gov.br/handle/capes/432909. Acesso em: 11 mar. 2021.

SOUZA JUNIOR, H. P. de. Centralidade ontológica do trabalho ou centralidade da informação e do conhecimento nos processos de formação humana? **Pro-Posições, Campinas**, v. 19, n. 2, p. 163-179, ago. 2008. Disponível em: http://www.scielo.br/scielo.php? script=sci_arttext&pid=S0103-73072008000200012&lng=pt&nrm=iso. Acesso em: 08 mar. 2021.

TÜRKAY, S. The effects of whiteboard animations on retention and subjective experiences when learning advanced physics topics. **Computers & Education**, [International Journal], v. 98, p. 102-114, julho 2016. Disponível em: https://www.sciencedirect.com/science/article/abs/pii/S0360131516300550?via%3Dihub. Acesso em: 20 maio 2020.

Received: 21/05/2020
How to cite: SOUZA, A. N. G.; MOSSIN, E. A. Whiteboard Animation (or Whiteboard Drawing): an educational product to disseminate the Access to Information Law in Integrated High School. **Revista de Estudos e Pesquisas sobre Ensino Tecnológico (EDUCITEC)**, v. 7, e129021, 2021.

Authorship contribution:
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