

Design Thinking as a Methodological Path for Educational Product Construction: an experience in the Professional Master's in Teaching Area

Design Thinking como percurso Metodológico para Construção de Produto Educacional: uma experiência no Mestrado Profissional na Área de Ensino

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Abstract

In this paper, we report an application of Design Thinking (DT) as a methodological path for the conception of an educational product (EP), within the scope of a Professional Master's Course, in the Teaching area. The theoretical backgrounds present the DT phases and techniques, followed by their practical application in the development of guidelines that teachers can use to develop learning scripts that guide students' autonomous study. This work directly contributes to: (i) to demonstrate the application of DT in EP generating, in scientific research in the teaching area; (ii) to expose "comings and goings", often necessary to conceive a successful solution to a research problem; and, (iii) to show the dual role of a postgraduate student in the professional modality - that is, the scientist and the product designer.

Keywords: *Teaching-Learning Techniques. Research Techniques. Educational Product.*

Resumo

Neste artigo, apresentamos uma aplicação de *Design Thinking (DT)* como percurso metodológico para concepção de um produto educacional (PE) no âmbito de um Curso de Pós-Graduação, na modalidade profissional, na área do Ensino. Os fundamentos teóricos apresentam as fases e técnicas do DT, seguidos de sua aplicação prática na construção de um guia didático que tem por finalidade orientar professores na elaboração de roteiros de aprendizagem para guiar o estudo autônomo dos alunos. Este trabalho contribui diretamente para: (i) demonstrar a aplicação de DT na geração de PEs, no âmbito de uma pesquisa científica na área do Ensino; (ii) expor as "idas e vindas", muitas vezes, necessárias para conceber uma solução bem sucedida para um

problema de pesquisa; e, (iii) destacar o duplo papel de um aluno de Programa de Pós-Graduação na modalidade profissional – o de pesquisador e de projetista de produtos.

Palavras-chave: Técnicas de Ensino-Aprendizagem. Técnicas de Pesquisa. Produto Educacional.

Introduction

The *Strictu Sensu* Post-Graduate Programs in the professional category have as one of its objective to capacitate qualified professionals in advanced, innovative and transformative practices of work processes, aiming to suppress social, economic and organizational demands of different economic sectors (BRASIL, 2019).

In these programs, the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES) requires the presentation of a Course Conclusion Paper, that can be presented in many ways (dissertation, article, among others) and, the development of a product derived from the research is mandatory (software, score, game, etc.). This product should be a separated gadget from the dissertation and should allow its targeted audience to use it autonomously. (BRASIL, 2019; CAPES, 2019).

In the teaching area, which is the focus of this work, the educational products are destined to basic and higher education. Some examples are books, games, cellphone apps, educational material, teaching methodology and others, that are available at the post graduate programs websites (TEIXEIRA, 2019).

The educational product should answer a question/problem connected to the student-researcher professional practice (BESSEMER, TREFINGER, 1981). With this challenge in mind we present in this article the application of Design Thinking as a methodological approach in the establishment of a research that includes the development of an educational product in the context of a professional master's course in the teaching area.

This experience description has three main contributions: i) DTs dissemination within professionals and researchers in the teaching/educational area; given that it is more widely known and used in business, innovation and design areas ii) to reflect over the development process of an educational product and the precautions that student-researchers of professional courses should have to conceive products that answer their research's problem without losing sight of their targeted audience needs and iii) to highlight the dual role that students should assume in professional courses: as scientists and product designers.

Design Thinking: basis

Design Thinking (DT) is a process widely known in the design area, it is extensively used to conceive services and products directed to markets demand. It proposes that you should get to know the user/client in depth, and then, develop, based on research, a solution to a specific problem, a need or an



opportunity. (FARIAS, 2019).

Design Thinking emerged in the 90s, with the Californian company called IDEO¹, in Silicon Valley. In this fertile soil for innovation, DT found ways to become popular and to enter companies and colleges as a new approach to come up with solutions to emerging problems. This dissemination in the way of designing products and services focused on user/client popularized this approach and left the “hand of specialized professionals that allowed its principles to be adopted by people that act in a wide variety of areas” (CAVALCANTI; FILATRO, 2017, p. 3)

In literature, there isn't a consensus over how many DT phases there are. IDEO's dissemination process, for instance, presents DT in five stages: discovery, interpretation, ideation, trial, and evolution. Ling (2015) also presents DT in five stages: empathy, definition, ideation, prototyping and trial (free translation). However, to Vianna et al. (2012), DT is considered in three stages: immersion, ideation and prototyping, as we can see in Figure 1.

In our research, we adopted DT in three stages according to Vianna et al. (2012) because we considered that these authors capture DT's essence and also provide bibliographical material and other resources in Portuguese, which favors research's understanding by third parties. Besides, according to information gathered at the same time of this paper, by *MJVs*² website, that provides free material, there were over 100 thousand *downloads*, which shows the contents popularity, especially in Brazil.

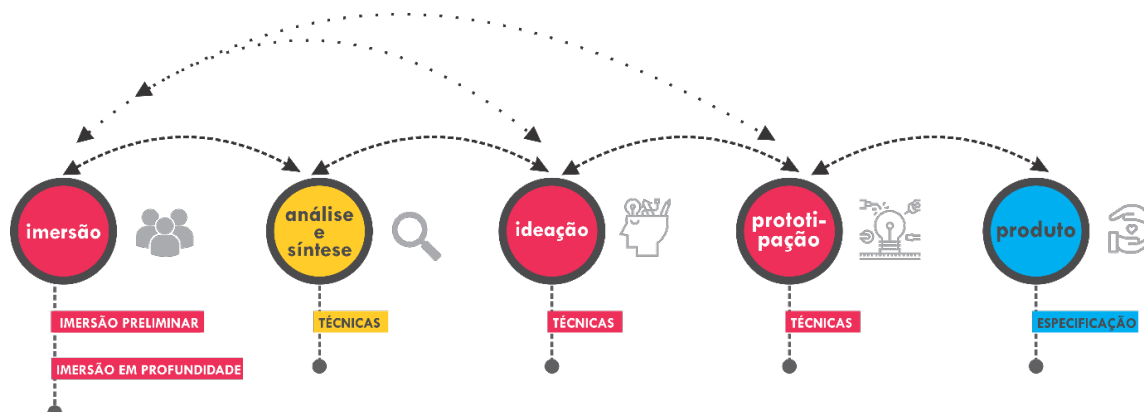
As we can see in Figure 1, DT phases – immersion, ideation and prototyping – are interactive, repetitive, incremental, flexible and adaptable. Interactive because DT requires observation of the universe that passes through the problem, and interacting with people involved in it. Repetitive because the solution requires “comings and goings” between the phases aiming to work and rework the comprehension of the problem and the development of the solution. Incremental because each phase can be reworked with new information acquired. Flexible and adaptable since there are a multiplicity of contexts and users/clients that can interfere in creating a product or service, or an action that aims to solve a question-problem (FARIAS, 2019).

¹ *Ideo* is an American Design Consulting company. It created technology icons, including the first portable computer and DT, a methodology focused on targeted audience.

² <http://www.livrodesignthinking.com.br>



Figure 1. *Design Thinking phases*



Source: Adapted from Vianna *et al.*, 2012

These phases link to a methodological path when deal with the development of a product in a Professional Master's Course, when you should get to know the problem, just like all other involved parties, to analyze and synthetize the data and to suggest a solution and, also, test it or validate it.

The immersion phase corresponds to approach and understand the problem, which is divided between “preliminary” and “in depth” immersion. The analysis and synthesis can be understood as secondary phases. In these, the data raised are analyzed and organized, offering an adequate view of how the ideation phase should be directed. Ideation is the phase when we generate ideas with possible solutions to the problem and prototyping helps in validating with the trials. Once evaluated, this prototype is made available to the user as a product (result). Each phase presents techniques that can be applied to deepen the research and to get to know the users and their contexts, favoring creative solutions and tests with the product/service.

Design Thinking: phases and techniques

According to what we saw on Figure 1, the immersion phase is divided between “preliminary” and “in depth” immersion. Preliminary immersion aims to understand the problem in an initial state, at this point, there are different techniques that can be used to this end, such as desk research, exploratory research and reframing.

Reframing consists in looking at the theme over several different perspectives and defining the projects limitations. The process occurs in cycles of gathering data, changes made in the data when the new data is acquired and preparing to raise questions that weren't clear in the initial evaluation. The result is a precise definition of the problem, the targeted audience and the preliminary objectives to be achieved by the project throughout the research.

The exploratory research is an initial evaluation of the context that will be worked through observation with the actors involved in the context, teachers and students, for instance. In this familiarization process it is elaborated a “more assertive research to capture relevant insights in the depth immersion phase.” (VIANNA *et al.*, 2012, p. 28).

Desk research can be done in *websites*, books, magazines, blogs, articles and



other references. The objective is to map the universe of the problem and who is involved in it. “Used to gather information of other sources that aren’t the users and the directly involved actors, identifying, specially the tendencies in Brazil and other countries” (VIANNA et al., 2012, p. 32). It helps to elaborate key-topics that can be related to initiate the in depth research.

In depth immersion helps on identifying the needs and opportunities that will guide generating solutions in the ideation phase. Therefore, in depth immersion helps on “identifying extreme behaviors and mapping patterns and hidden needs” (VIANNA et al., 2012, p. 36). In this phase it is common to adopt the interview technique, that allows interaction with participants, adapting to time, space and their availability, besides it allows successive interactions.

The data obtained in preliminary and in depth research are synthetized in a secondary phase named analysis and synthesis. This secondary phase corresponds to the analysis of the data that was raised the organization of the information in insight cards, that result from the reflections made in immersion, which pointed to the projects relevant questions.

Insight cards should reflect on the relevant data of the immersion phase, so they can be easily accessed.

Throughout the desk research, anytime a relevant question to the project is identified, that question is made into a card where you entry the main finding, the source and an explanation of the subject. In field research, usually cards are generated when the research comes back home and registers what he saw and heard, writing down the questions that popped out. (VIANNA et al., 2012, p. 66).

These cards can arise throughout all of the research and, afterwards, they are organized in an affinity diagram, which agroup a great number of information that are similar among themselves. The affinity diagram crosses the data and allows the researcher to verify patterns by affinity, similarity, dependency, or proximity, this results in areas that indicate criteria for the product.

The insight cards along with the affinity diagrams result in guiding criteria that can be understood as guidelines of a project/product that arises from the analysis of the collected data during the immersion. Basically, the analysis and synthesis phase set the input to the following phase: ideation.

Ideation is the moment to deepen the ideas and verify the viability of the possible solution. The prototypes ideas arise in this phase, and they can be validated with the researches participants. In the ideation phase the common techniques used are brainstorm and matrixes.

Brainstorming is used to generate ideas of possible products that can solve or mitigate the problem identified in the research. According to Duailibi and Simonsen (2000) we need to avoid criticism and judging, so ideas can flow. All of the ideas should be written down by someone and people should be familiarized with the problem, but people who don’t know the problem can participate offering different points of view.

The actors also point out other points to be noticed on a brainstorm session: to provide a comfortable and informal place to participants, to offer food, to have a leader that guides the session, to clear out the problem, to determine an ending time, to stimulate participation and to expand on suggested ideas.

The positional matrix, is a technique employed to evaluate the generated ideas, crossing the proposed solutions with the guiding criteria. In setting up the matrix, you can stimulate an influence level for each criteria or punctuation system, so the one that presents the best result will be the one that gets prototyped. (VIANNA et al. 2012)

The third phase – prototyping aims to implement in a physical way the researches and ideas, so they can be validated by the targeted audience and the other participants. Certainly, the prototype can evolve according to the participants' feedback which improves and refines the final product.

In prototyping, besides interviews and questionnaires, we test the prototype, that “can involve the final users or not, it can be made on a lab or even at the final place where the product or service will be used. The different combinations of these elements represent the levels of context.” (VIANNA et al., 2012, p. 123).

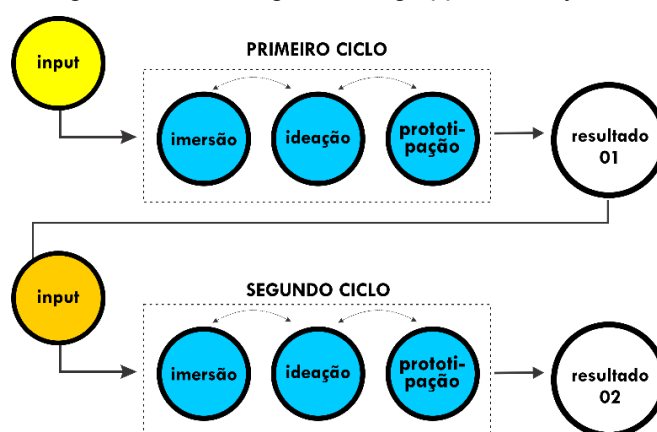
We described the phases and techniques of a DT cycle, but in our research we applied two cycles, because we noticed the prototypes results presented new data, which made it necessary to apply DT again. This was fundamental to generate a more assertive product that fits with the proposal of an educational product.

In the next session, we demonstrate how each cycle occurred, its results and the relevant points in the research using DT as a methodological approach.

Design Thinking: Applied in research and development of an educational product in the teaching area

In our research we applied DT in two cycles, as shown in Figure 2. In the first one, we considered as input (entry) the context of youth and adult education. In this scope we initiated the masters research.

Figure 2. Two Design Thinking application cycles.



Source: own authorship.

The researches initial idea was to develop tools to guide the autonomous study of EJA students, a matter that is directly related in the professional practice of the student-researcher, author of this paper. Because in teaching, it was identified in schools' routine, the difficulty of students to conduct autonomously their studies. Besides, because the student-researcher comes from the Design



area, there was a focus on a targeted audience with specific needs, in this case, EJA students, who are young and adult workers that weren't able to finish their studies in a regular time.

So, in the immersion phase we gathered data that embraced theoretical framework and papers related over a directed study, learning scripts and andragogy. Also, we visited schools that offered EJA courses and interviewed students and teachers, aiming to identify their needs and to comprehend students learning context.

Afterwards, the data was analyzed and synthesized using DT techniques, the result nurtured the ideation phase, when we came up with three suggested solutions: i) an online platform to guide and elaborate learning scripts by the teachers; ii) a website with a template script available for download and iii) a kit with guidelines on learning scripts.

A learning script³ is a tool, intentionally elaborated and planned by the teacher that aims to guide students' study. Scripts ease the engagement and students' autonomy, also it contributes to students' development of strategies that lead them up to the learning objectives proposed by the teachers (FARIAS, 2019).

It's worth noticing that, even though the target audience of this research are students, the way to access them is through the teacher. That is, the resulted product from the research should outcome in guidelines capable of guiding teachers to work with students. Because of that, the possible solutions we mentioned earlier are directed to the teachers. So, using it in the classroom, they can reach the target audience: the students.

In prototyping, we did one of the first two solution ideas. That is, we created an online platform and a website with a learning script available for download. However, the tests, in this phase, showed that the prototypes didn't meet the proposed objectives properly, they also revealed the need to reframe the researches problem and redefinition of the target audience⁴. In this case, tests indicated that it was unnecessary to restrict the product to EJA students.

Therefore, the tests results served as an input to the second cycle that required adjustments on the researches problem, objectives and target audience. This reframing nurtured the immersion phase, that now required a new gathering of data. In the second cycle, the ideation phase learned from the prototypes feedback in the first cycle and, in this phase, the ideas for the website were refined. With the products redraft, new tests were made in a workshop with nine participants. Considering the tests promising results, this research's product resulted in a website that contains guidelines for the development of learning scripts in video-classes, materials available for download and a template learning script, available in word format, that can be used to create new scripts. In this process, we also developed elements such as visual identity typology, among other elements that ease the access, readability and functionality of the product by the targeted audience.

³ The techniques of directed study application presuppose the development of tools called learning scripts (VEIGA, 1991, p. 59).

⁴ This research targeted audience are the students. However, in a school environment the products application occurs through teachers' intervention. So, the product was conceived to guide the teacher in applying the product to its students.



In the next session, we will address each cycle in more details and the results achieved in each phase of the research, using DT.

First application cycle: Detailing

As mentioned earlier, the research's initial idea (input) was to work with tools to guide EJA students autonomous study when entering the Professional Master's Course.

With this in mind, we began the preliminary immersion phase, in it we circumscribed a group of themes to be mapped – directed study, learning scripts, andragogy, tasks design, among others. The objective of this mapping is to establish and narrow the research's problem and objective, characterizing them clearly to the target audience.

In our mapping, we used desks research, identifying in literature a gap: the absence of clear and objective orientations on how to structure and develop a learning script. At this point in the research, we thought that the learnings scripts structure were directly connected to each specific modality of education. That is, we believed that the structure of a learning script should change, given the characteristics of each modality of education (for instance: elementary, middle and high school.)

There were three main reasons to focus on EJA students as targeted audience. The first one: there is a significant number of students enrolled in this kind of course. In Brazil, according to INEP (2018) data, there are over three million students enrolled in EJA programs. If we consider the state of Amazonas, there are over 87 million. The second reason: there aren't many educational products directed to this type of course, that is confirmed in our preliminary immersion (DE ARAUJO; CORDEIRO, 2015). Thirdly: The social importance of investing resources in EJA, because even though 1996s Law of Directives and Bases of National Education (LDB) (BRASIL, 1996) conceived EJA as a type of basic education, there are singularities that demand curriculum and methodological context that should take on account EJAs students specificities (PIERRO, 2017).

Besides desk research that allowed setting up a theoretical framework, we also applied participant observation in visits to the Center of Youth and Adult Education (CEJA) Prof. Agenor Ferreira Lima, in Manaus, Amazonas. The objective was to observe and identify some of the teacher's methodology and, more importantly, student's behavior in classroom and the way that they understood the tasks given.

In this observation, we noticed that DT didn't give us consistent guidelines to register and analyze the data. So, we adopted qualitative research methods, based on Flick (2008).

On reframing we narrowed the researches problem. We highlight that reframing isn't over at the preliminary immersion phase, adjustments can be made in subsequent DT stages. We know that this can occur naturally in scientific research, but in DT its registered and analyzed as part of the research and the products development.

Therefore, as a result of the preliminary immersion phase, we narrowed the research's problem and objective, and developed the written part of the



theoretical framework.

Problem: “*What andragogy task design and editorial elements can be used to develop specific orientations that help teachers in developing learning scripts to EJA students?*”

Main objective: To develop guidelines that structure learning scripts and theoretical framework to EJA students.

Theoretical framework: Themes addressed in the theoretical framework – directed study, learning scripts, tasks design, editorial design, andragogy and EJAs contextualization.

Subsequently, we did in the depth immersion through interviews with teachers and EJA students. The interviews brought up more data on the target audience, its characteristics, context, needs and singularities.

All of the information obtained in the preliminary and in depth immersion were submitted to the secondary phase of analysis and synthesis, when we created 13 insight cards, as shown in Figure 3.

Figure 3 – Example of an insight card – First cycle.

INSIGHT CARD 12

TITLE: Difficulty in developing clear objectives in the assignments.

THEME: Developing assignments.

FACT: In order to develop objectives, teachers should consider if they are measurable, viable, defined and their priority.

SOURCE: Preliminary (desk) and in depth immersion.

CHALLENGE RELATED TO THE THEME: How to establish objectives that are compatible to the cognitive and knowledge level of EJA students?

Source: Own authorship.

Afterwards, we organized the insight cards in categories that originated 14 guiding criteria, as shown in Figure 4. The guiding criteria conducted the ideation phase, in which three educational products proposals were generated (Figure 5): i) online platform to guide on the development of learning scripts by the teacher, ii) website with a downloadable learning script; and iii) a kit with guidelines on learning scripts.

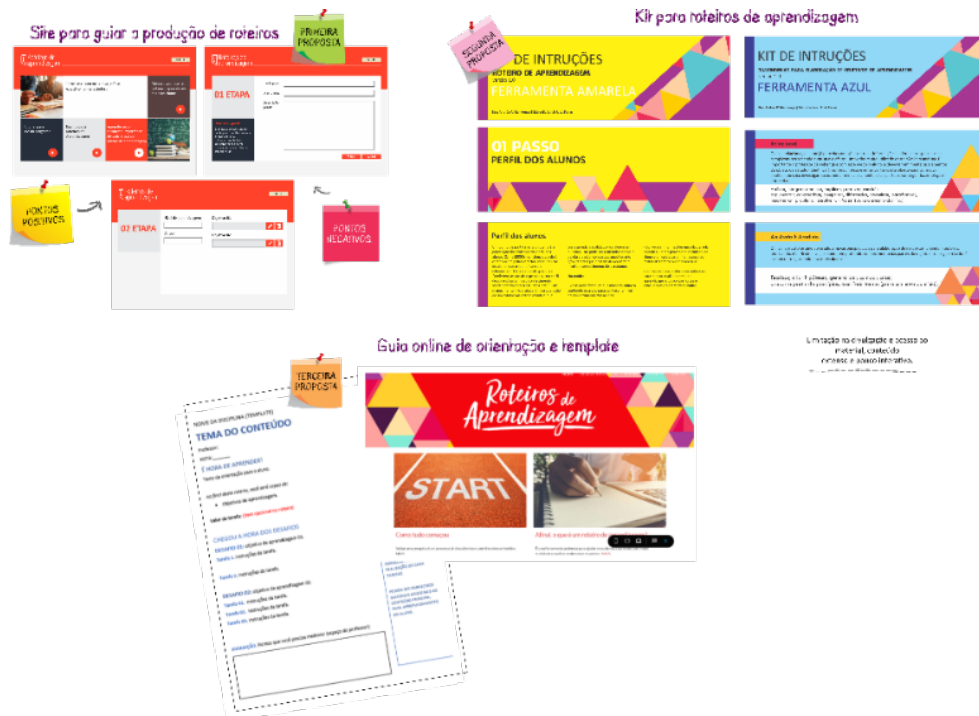


Figure 4 – Guiding criteria – First cycle.

- Criteria T01:** To organize study's implementation within class time, considering explanation, execution and assignments discussion, if applied in the classroom.
- Criteria T02:** To establish learning objectives that are viable, measurable, defining and their priority.
- Criteria T03:** To set objectives that take into account learning levels according to Solo and Lemovs (2016) taxonomy.
- Criteria T04:** To present explanatory texts with proper vocabulary in each learning scripts assignment.
- Criteria T05:** To split complex assignments in stages.
- Criteria T06:** To present an introductory text stimulating the study.
- Criteria T07:** To use Calibri typography and 12pt font size.

Source: Own authorship.

Figure 5. Products proposals



Source: Own authorship.

Using the positional matrix technique in which we point each educational products proposal from 0-3 (0 - doesn't meet the criteria and 3 - meets the criteria fully). The last two products proposals pointed the highest. Therefore, we did a prototype (prototyping phase) combining the two products. That is, we created a website and in it, we included the template of a learning script and a kit with guidelines on how to develop them.

The first prototypes test was done by the own researcher that created the learning script following exclusively the model and guidelines available at the website. This test came up with two significant results. The first one: we detected flaws in the guidelines. Secondly: the structuring guidelines and the guidelines on developing a learning script (opening text, learning objectives,



assignments and further instructions) weren't restricted to a specific target audience (EJA students, for instance). Instead, they could be applied in other modalities of teaching, it would only be necessary to add some pedagogical considerations.

This way, preliminary results in the first application cycle showed the need to reestablish the targeted audience, researches problem and objective and to review guiding criteria that guided the ideation step.

At this point, even though there was a clear need for adjustments, we could do them over the dissertation, and write the new knowledge acquired and discoveries or, we could continue with the product and indicate future improvements. But, we had the compromise of presenting the most efficient and effective product, we registered the "mistakes" and did the repairs on the second application cycle.

Second application cycle: detailing

In the second cycle, immersion didn't start with a discovery process like in the first one. Because the knowledge we acquired nurtured the immersion phase in the second cycle, so we started reestablishing the researches problem and objective, which was narrowed to EJAs students.

Researches objectives: *"What elements can be used to set specific guidelines that help teachers in developing learning scripts to its students?"*

Main objective: "To develop guidelines on the development of learning scripts".

In the second cycle preliminary immersion phase we added others research sources that we understood were needed when we did the prototypes test in the first cycle. One of the references, we added was Blooms taxonomy (FERRAZ et al, 2010) to expand the help to teachers when developing learning scripts. As can be seen in Figure 3 (criteria T03), only Solo and Lemov (2016) taxonomy had been considered to this end.

During the depth immersion, we researched the relevant pedagogical aspects of other modalities of teaching (middle and high school for instance), aiming to expand the use of the guidelines on developing learning scripts to attend a different target audience.

In the secondary phases of analyses and synthesis, the guiding criteria were reviewed and organized in categories to improve the educational product in the ideation phase. This way, we adopted three main categories: structuring learning scripts, guidelines for learning scripts and the products materialization, different from what is shown in Figure 3, which all of the criteria, independent of category were together. Criterias T06 and T07, shown in Figure 3, are now part of the "structuring learning scripts" category, while the others are part of the "guidelines for learning scripts", aiming to guide the creation of a script.

Using DT, the development of an educational product is based directly on the researches data. In other methodologies, after raising and analyzing the data there isn't a clear phase, stage or technique that demonstrates how to extract information and turn them into product development.



In the seconds' cycle ideation phase, we considered improving the products proposal that resulted from the first cycle, especially on what concerns the guidelines to establish learning scripts and the achievement and presentation of a final product. The website and the template were adjusted and we considered recording short video-classes to expose in a didactic way, the guidelines to developing learning scripts. Also, we added pedagogical orientations that aim to highlight some cautions that teachers should have towards the modality of teaching in which they act. For instance, teachers that wish to use learning scripts in the final years of middle school should strengthen assignments that lead to autonomy, while elementary school teachers should explore playful activities and consider the bigger need of children's monitoring.

Considering that recording and editing video classes takes time and resources, we first organized the content that would be presented in the video classes. We decided to test if the classes script was appropriate regarding structure, language and content before recording and editing the videos.

In order to evaluate these changes, including the videos structure we did a Learning Script Workshop, which the content was based on the videos structure.

This workshop was given by students-to-be-teachers, from different area's (Math, chemistry, biology). We chose this public because at the same time that they are students, they are teachers in the making, they will do internships in schools and will be able to integrate learning scripts in their pedagogical practice.

These tests results showed the need to focus more on the explanation of developing learning scripts. The workshop participants were unanimous in demanding a digital way, like websites or platforms, with video classes and a support material for download. This test was key to reach the researches objective and develop an educational product able to guide teachers in developing learning scripts directed to students' autonomy on the learning process.

The test on the prototyping phase is essential to validate an educational product, the results are feedbacks that nurture the process at some specific stage or that demonstrate the need to change the problem.

In the next session, we present the final product that was resulted from the research.

Results: Final version of the educational product

The educational product that resulted from this research aimed to offer mechanisms to teachers, so they could autonomously elaborate learning scripts to be used by their students.

Considering the application of two DT cycles the product was materialized as a pedagogical material with guidelines for teachers on how to elaborate, develop and apply learning scripts in classroom. This material consists on a .pdf file available for download in an accessible language, with clear explanations on the learning scripts and its parts, an editable template with the structure and exemplification of a learning script, also, three short video classes that guide the teacher to understand the script and how to develop it. The videos content



follows the script made on the second cycle and strengthen the guidelines on how to develop a learning script in points that were considered critical, which were noticed during the workshop (seconds cycle prototyping phase).

The first video deals with learning scripts concepts and structure, the second one on how to develop scripts, learning objectives and how to assign tasks to each objective; the third video brings pedagogical orientations on applying the scripts.

The product is available in its own website⁵ that has the products visual identity, aiming to promote and disseminate it in social media and other means.

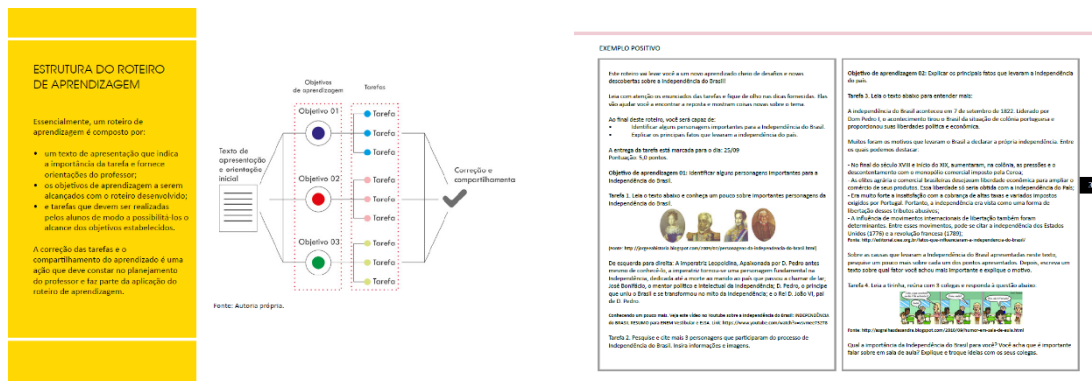
The website is responsive, which means that it adapts well to any device, tablets, cellphones or computer, and it offers mobility to the targeted audience in its access without compromising contents visualization.

The template is a way of exemplifying the structure of a learning script and make it easy for teachers to create them. Each part of the template has short instructions on how to fill the elements out: title, scripts presentation, tasks and support material.

All of the material is rich in visual elements to attract reader's eyes (Figure 6), we used short texts, with an accessible language and examples of how to make and how not make scripts. We also used QRCodes, which allows direct access to videos trough cellphones.

The material is available for download and it can be shared in social media or printed according to teachers need.

Figure 6 – Some of the educational products illustration.



Source: Own authorship

We highlight that the role of the student-researcher in a Post Graduate Program in the professional modality is also a product designer. Its practice goes beyond research and should consider the contents and target audience analysis, its needs and the development of a solution that can relieve the identified problem. Students should know and understand the possible technological means that can be used to materialize their product.

When we think in visual identity, accessibility, the student-researcher goes beyond the usual worries of a scientific research, in this case, there are worries inherent to a product designer. Even though the operational part of the process can be done by another professional, an editor, a designer, the products

⁵ www.roteirosdeaprendizagem.com.br.



conceptions can't be done by others because it's the researcher that detains the researches knowledge and the needs of the targeted audience. In this paper, we showed that DT can be a suitable methodological path to conduct simultaneously the research and products development.

Final Considerations

Even though it's still not usual to apply DT as a methodological path in researches in Teaching/Education area; we observed the adoption of design thinking methodology in Education, for instance, Design thinking for educators (2019), that proposes the use of DT to increase student's participation in solving school's problems, developing more significant projects to students, engaging them in themes that are within their contexts. Also, DT in advertisement (SOUZA, 2019) that guides advertising students in marketing campaigns development.

This paper differential was to use DT as a methodological path in teaching research, differing from traditional approaches, like ethnography, case study, action-research, among others.

Even though this article focus is the report of an educational product development its worth highlighting that DT phases and techniques supported all of the journey, allowing each phases results to nurture the research and the dissertation written part, narrowing the problem, setting objectives, theoretical framework, related works, evaluation and results discussion.

It's also worth highlighting that this paper didn't report just the "comings and goings" of developing a product, but also showed the mistakes made along the process. Tough mistakes are part of the learning path, rarely we see them being exposed before researches success. In this sense, this article report can also bring a pedagogical contribution to early Post-Graduate students when comprehending research in Teaching. In professional programs, this paper contributes on opening discussion lines on new methodologies (coming from different areas, like DT) that need to be considered on products development and the role required from students not just as scientists but also as educational product designers, and the need to see each step of the research as a stage of understanding the products demand. That is, even in the theoretical framework students should be able to extract useful information for the products development.

The results of this research and the educational product that was generated are accessible at <http://www.roteirosdeaprendizagem.com.br/>, where one can find downloadable material with guidelines on learning script and each of its parts, and editable template and three short video classes to guide the teacher on developing its own learning scripts to apply with its students. Besides, we made available a dissertation and an info graph that presents the results of each DT phase.

In future developments of this research, we intend to elaborate an e-book to facilitate learning of other interested parties using Design Thinking in a scientific research in the field of teaching and generating educational products.



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