

## TEACHERS' IMPROVEMENT IN EDUCATIONAL AND LEARNING DESIGN FOR SLIDES PRODUCTION<sup>12</sup>

### *APERFEIÇOAMENTO DE PROFESSORES EM DESIGN EDUCACIONAL E DE APRENDIZAGEM PARA PRODUÇÃO DE SLIDES*

### *MEJORA DEL PROFESORADO EN EL DISEÑO EDUCATIVO Y DE APRENDIZAJE PARA LA PRODUCCIÓN DE DIAPOSITIVAS*

Renata de Oliveira SBROGIO<sup>3</sup>  
Vania Cristina Pires Nogueira VALENTE<sup>4</sup>

**ABSTRACT:** The present study shows the results of an Action-Research carried out with teachers from private and public education, working from kindergarten to high school in Brazil. The course based on physical attendance and on-line involvement which was entitled "Education and Learning Design: Production of Learning Objects" was performed in 2019, and its main objective was to teach general concepts and fundamental principles related to graphic and learning design for slides. We believe that these factors lead participants to a new perspective about the content production routine, which is more visually exciting and suitable for their students' learning. We chose an Action-Research methodology because it was possible to analyze more subtle nuances of advances that occurred among the observed teachers. The improvement in the visual communication promoted by the learning objects produced by the participants, especially the lesson slides, demonstrates that the knowledge related to education and learning design is essential in teaching practice.

**KEYWORDS:** Teacher education. Educational design. Learning design. Slides.

**RESUMO:** O presente estudo apresenta os resultados de uma pesquisa-ação realizada com professores do ensino privado e público, atuantes do Ensino Infantil ao Médio. A formação continuada semipresencial intitulada "Design Educacional e para Aprendizagem: a produção de Objetos de Aprendizagem" foi realizada durante o ano de 2019 e teve como objetivo principal o ensino dos conceitos gerais e dos princípios básicos do design gráfico e de aprendizagem aos professores, conduzindo os participantes a um novo olhar sobre a rotina de produção de conteúdo (slides), que sejam visualmente mais interessantes e adequados à aprendizagem de seus alunos. A escolha da metodologia da pesquisa-ação possibilitou observar e analisar nuances mais sutis de transformações ocorridas entre os envolvidos. A melhoria da comunicação visual dos objetos de aprendizagem produzidos pelos participantes, em especial os slides de aula destes educadores, demonstra que os

<sup>1</sup> CAEE: 01875018.2.0000.5663

<sup>2</sup> This paper was conducted with support from the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brazil (CAPES) - Funding Code 001

<sup>3</sup> São Paulo State University (UNESP), Bauru – SP – Brazil. PhD in Media and Technology. ORCID: <https://orcid.org/0000-0003-2243-9535>. E-mail: [renata.sbrogio@unesp.br](mailto:renata.sbrogio@unesp.br)

<sup>4</sup> São Paulo State University (UNESP), Bauru – SP – Brazil. Associate Professor. Doctorate in Civil Engineering (USP). ORCID: <https://orcid.org/0000-0001-6563-2402>. E-mail: [vania@faac.unesp.br](mailto:vania@faac.unesp.br)

*conhecimentos relativos ao design de aprendizagem e design educacional são essenciais na práxis docente.*

**PALAVRAS-CHAVE:** *Formação docente. Design educacional. Design de aprendizagem. Slides.*

**RESUMEN:** *El presente estudio presenta los resultados de una investigación-acción llevada a cabo con profesores de escuelas privadas y públicas, que trabajan desde la primera infancia hasta la escuela secundaria. La formación continua semipresencial titulada Design Educacional e/para Aprendizagem: a produção de Objetos de Aprendizagem (Diseño Educativo y/para Aprendizaje: la producción de Objetos de Aprendizaje) se realizó durante el año 2019 y tuvo como objetivo principal la enseñanza de conceptos generales y principios básicos de diseño gráfico y de aprendizaje a los profesores, llevando a los participantes a una nueva mirada sobre la rutina de producción de contenidos (diapositivas), que son visualmente más interesantes y adecuados para el aprendizaje de sus alumnos. La elección de la metodología de la investigación-acción permitió observar y analizar matices más sutiles de las transformaciones que ocurrieron entre las personas involucradas. El mejoramiento de la comunicación visual de los objetos de aprendizaje producidos por los participantes, especialmente las diapositivas de clase de estos educadores, demuestra que los conocimientos relacionados con el diseño del aprendizaje y el diseño educativo son esenciales en la práctica de la enseñanza.*

**PALABRAS-CLAVE:** *Formación de profesores. Diseño educativo. Diseño de aprendizaje. Diapositivas.*

## Introduction

The present social and technological moment, engendered in the global action of access to information, of the Knowledge Era and the Information Society (CASTELLS, 1999), makes the teaching functions unlimited if compared to the old context of the traditional and conservative approach, plastered to the textbook. In this sense, the teacher assumes the center of the educational process, and his performance as a content producer (teacher-author as it has been called), both for the construction of his own didactic material in the form of learning objects and for the extensive performance of his formal work environment, as an educational and learning designer, for distance or semi-attendance courses, is a reality in the educational environment.

Especially because of this context, there has long been talk about giving new meaning to the teaching work in the school space, both in initial and continuing education. As Citelli (2010, p. 13) states, there are several ways to work the links of communication with education, the latter being constantly faced with the challenge of ICTs (Information and

Communication Technologies), mainly because it affects the cultural sphere and, consequently, the way "subjects are and are in the world."

In education, the concerns of this resignification range from changes in the processes of knowledge construction and professional training, the teacher's identity, the perspective of teacher professionalization as a critical-reflective professional, among other aspects of this current condition, attending differentiated specificities (PAZ, 2017; RIVAS *et al.*, 2005.)

And, observing such issues, Rivas alerts that, in addition to understanding such processes that affect the personal and professional development of teachers, it is necessary to understand them as a subject whose profession makes them capable of producing their own craft (RIVAS *et al.*, 2005, p. 7). Precisely at this point, in counterpoint with the new demands that affect the teaching function, of its performance as a mediator of learning, in its functions as a selector/(re)mixer/producer of content and educational technologies, teacher training is still crawling, from the curricular composition of undergraduate courses to the organization and coordination of continuing education, little valued in this context.

To train these teachers, it is necessary a training, initial and continuing, articulating theory and practice in the search for problem solving, collaborative in their choices, decisions and planning (PAZ, 2017, p. 1657).

That said, this study is concerned with the training of teachers regarding the specific knowledge of educational and learning design, necessary for the practice of content production (educational objects) on slides, which are resources present in the classroom routine. Such resources, produced with text, images, sounds, and other resources possible with digital technologies, understand the need for a more developed visual literacy to compose them.

Sharing the propositions put by Citelli (2010, p. 16), we understand that the new challenges posed to education are given, especially, by the constant presence and evolution of ICTs and the unique way they affect the information and knowledge, since its elaboration, exchange and distribution, and need to be considered by the scenario designated by the communicative ecosystem, which affects, consequently, the training, performance and updating of teachers.

In this context, the concern about the importance of knowing how to "read" images comes from the assumption that we live in a "visual" world and, therefore, all our visual experience is of fundamental importance in the teaching-learning process for the understanding of the environment in which we live and react to it (DONDIS, 2007, p. 7). For Dondis, the evolution of human communication, in some way, has always been through the

visual medium, since the cave paintings, evolving to pictograms, ideograms and phonograms. Nowadays, we have added new imagetic forms, such as emoticons, for example, which are graphic representations that replace facial expressions in digital messages.

These signs (emoticons) are widely known and commonly recognized among users in computer-mediated communication (CMC), and are described as substitutes for non-verbal expressions that are missing in CMC compared to face-to-face communication (WALTHER; D'ADDARIO, 2001, p. 324).

According to Walther and D'addario, although we are unaware of the impact of emoticon usage, an experiment sought to determine the effects of three common emoticons on the interpretations of visual messages, and from the hypotheses drawn from the literature on non-verbal communication, one could see several plausible relationships between emoticons and verbal messages. The results, in this study, revealed that the contributions of emoticons were outweighed by verbal content (WALTHER; D'ADDARIO, 2001, p. 324).

Emoticons have an impact on message interpretation, being useful to strengthen the intensity of a verbal message, however, it is possible to create ambiguity and express sarcasm by varying the valence of the emoticon and the valence of the message. In any case, the authors conclude that, for the most part, emoticons have the same functions as actual nonverbal behavior (DERKS; BOS; VON GRUMBKOW, 2008, p. 379)

So is the impact of the images used in the teaching material (learning objects in the form of slides, printed activities, etc.) produced by teachers for use in their teaching practice. The images chosen, their layout and meaning, are key elements in the intensity of a message sent and, consequently, in the message received. This decoding is necessary and, if there is no understanding around the signs, there will be no understanding between subjects, making communication impossible, because intelligibility and communication happen simultaneously (FREIRE, 2013, p. 58).

Therefore, and if at all times we are guided to "read" images, in the most diverse digital devices to which we are exposed daily, the current media, visual communication predominates and the verbal adds and complements (DONDIS, 2007, p.12). It is in this context that we must consider the need for special attention in the training of teachers who are currently authors, producers, and "sharers" of educational content.

There is also the false idea that technologies do the work "alone", and that the many solutions in intuitive software perform activities in an autonomous way, which brings a feeling that the concepts of educational design and learning are something inherent in the composition of this software, but they are not. Therefore, the choice for an action research as

the main methodology of this research occurred because it occurs by means of needs analysis, data collection to address the problem, planning the application of the action, then the execution and a new collection, for evaluation and repetition of the activity cycle (ANDRÉ, 1995, p. 31). This direct presence and possibility to closely follow the whole process and make inferences, when necessary, made this methodological choice the right one to meet the research needs.

The application of this action research occurred as the 3rd stage of a research with a total of 4 different methodologies, in the form of a continuing education course for working teachers, so that the participants involved, cooperatively and participatively, acted in solving a problem (PRODANOV; FREITAS, 2013, p. 65), which was the possibility of improvement in Visual Communication of educational materials produced by teachers, their class slides.

It was proposed, with the use of this method, a connection between the practical experiences of teachers and the theoretical references presented to them, making the process meaningful and relevant, providing a work of lived experience (BEHRENS, 1999, p. 388). The training developed was divided into several classes, depending on the availability of the participating Teaching Institutions (TI), and carried out during the ATPC (Collective Pedagogical Work Class in a free translation) meetings, in a total of 20h/classes, with no foreseeable risks to the participants, while, as a benefit, the participants received a training that is useful during the exercise of their teaching duties.

Thus, this study starts from a continuing education for teachers acting in several levels and areas of teaching, so that the participants would learn concepts and techniques of educational and learning design to apply in the production of their class slides, resulting in the improvement of the visual communication of these learning objects produced by them.

The project of this study was evaluated and approved by the Research Ethics Committee of the entity where it was developed. The participants signed the Informed Consent Form after being informed about the objectives, confidentiality, and possible benefits and risks of this study.

The continued training entitled "Educational Design and/or Learning: the production of Learning Objects" was held during 2019, and its main objective was to teach teachers the general concepts and basic principles of graphic and learning design, as well as free technologies for the creation of better quality educational objects, leading participants to a new look at the routine of content production, which is visually more interesting and suitable to the learning of their students. In this way, it was possible to observe and analyze more subtle nuances of transformations that occurred among those involved. The improvement in

the visual communication of the learning objects produced by the participants, especially the class slides of these educators, demonstrates that knowledge related to learning design and educational design is essential in teaching practice; however, it is clear that the desire to learn and evolve is individual and non-transferable, not depending on access or availability of current training and updates needed by teachers.

### **Research-action: continuing education for teachers in educational and learning design**

In view of the above, a continuing education program was thought, developed and applied with the objective of developing awareness of the positive implications of design (especially graphic design, but not only) in the construction of learning objects (the class slides) that are used in the teachers' routine and, also, to develop technical skills so that they could apply such knowledge in their authoring materials.

The training was carried out with 4 groups of teachers working in public and private education, in a semi-attendance modality. In it, the teachers learned the basic principles of graphic and learning design, in addition to suggestions of free technologies for the creation of better quality educational objects, leading to a new look at improving the visual communication of their learning objects.

Among the objectives proposed for the training, the following stand out: investigate the possibilities of improving the visual language of learning objects produced by teachers through an intervention made with a specific training for educational design, in order to promote visual awareness in teachers, proving the need for training in the field of educational design for acting teachers, as well as for future teachers; learn to apply concepts of visual language syntax in the production of efficient learning objects, with a focus on improving the prospects of attention, understanding and student learning, as well as expanding the teaching role, beyond classroom and formal education and management of educational content.

The target audience were teachers working in various levels of education and in different areas of activity of the requirements for participation, for the participating school, it was necessary to provide the computer lab and internet access for the course and, for the participating students, it was necessary to provide a copy of a learning object (slide) made by the participant, have an email account (preferably Gmail) and basic notions of use of information and communication technologies: computer and internet.

### Sample

The intentional sample of continuing education was composed of groups of teachers working in four different schools: one private institution from Kindergarten to High School and three State Educational Institutions that offer Elementary II and/or High School (one of them with full time teaching), each with its own teaching staff.

Of the total number of training participants, 99 teachers, among the public institutions' staff and volunteers from the private institution where the training was authorized, 84 teachers (equivalent to 84.84%) also participated in the support activities on the Google Classroom platform; however, only a part of them signed the Free and Informed Consent Form (FICF) to participate in this research.

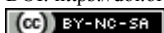
**Chart 1 – The participating institutions and teachers**

	Type of Teaching Institution (TI)	Training time	Teachers participating in the training		Teachers participating in the research
			PRESENIAL 12h	ONLINE SUPPORT PLATFORM 8h	SIGNED THE FICF
<b>TI1</b>	Privada de Ed. Infantil ao Ensino Médio	February/2019	41	40	<b>32</b>
<b>TI2</b>	Pública de Ensino Médio	March to June 2019	12	11	<b>2</b>
<b>TI3</b>	Pública (Integral) de Ensino Médio	April to August/2019	26	19	<b>16</b>
<b>TI4</b>	Pública de Ensino Fundamenta I II e Médio	July to Sept./2019	20	14	<b>18</b>
	<b>TOTAL PART</b>	<b>February to Sept./2019</b>	<b>99</b>	<b>84</b>	<b>68</b>
		<b>TOTAL OVERALL</b>	<b>100%</b>	<b>84,84%</b>	<b>68,68%</b>

Source: Research data (2019)

The low rate of teachers inclined to contribute to the research is one of the issues that need to be analyzed, and the speech of one of the teachers from the applied training gives us an indication of what may have happened to this low rate. According to her,

*As for the planning and execution of the training and research, I feel that it meets our needs as teachers to adapt to other technologies and techniques of*



*didactic exposure of the classes, however, I believe that I am part of a group of teachers quite different from me, who are resistant to theoretical and technological changes and do not understand their respective roles in collaborating effectively to the partnership between public schools and public universities (TEACHER A, 2019).*

Regarding the training offered to teachers, it is important to note that all involved in the research received the same content as training, however, in different time divisions and in different infrastructural conditions, which we will highlight in the analyses when necessary.

## Content

The content developed and proposed for the training was divided into several classes, and its application was organized according to the availability of the participating Teaching Institutions, held during the ATPC (Collective Pedagogical Work Class) meetings, in a total of 20h/classes, as shown in Chart 2:

**Chart 2** – Contents proposed in the training

Modality	Proposed Content
<b>Live Class (12h): theory and practice</b>	Presentation of the course, the teacher and the schedule of activities. Introduction to the concept of instructional/educational design; Concepts and examples of learning objects; Basic principles of design applied to learning objects (colors/shapes/diagramming); Plagiarism of content and use of images in educational objects. Presentation of free Information and Communication Technologies for the creation of learning objects.(Re)creation of learning objects (slide) individually or collectively, applying the concepts taught in the training. Application of the final research form of the training. Delivery of the remade learning object.
<b>Distance Learning (8h): support and questions</b>	Distance pedagogical support and content complementation for students in the Google Classroom environment (free online platform for setting up virtual classrooms provided by Google For Education),

Source: Prepared by the authors

The choice of Google Classroom to host the virtual learning environment for this continuing education was precisely due to the benefits of being an intuitive and costless platform to support the activities performed at a distance.

During the training, teachers had contact with the basic principles of graphic and learning design, as well as free technologies for the creation of better quality educational



objects, leading to a new look at improving the visual communication of their learning objects.

Before starting the training, as an initial step, a collection of learning objects (slides) was made by the participating teachers themselves, each one's area of knowledge being responsible for the theme. At the end of the training, the teachers delivered the object again, remade according to the concepts taught about learning design and educational design, for analysis and comparison to be performed by professionals with mastery of the subject (judges), at a later stage, still in application.

At the end of the course, the participants also answered in confidence a short questionnaire with objective and dissertative questions about their impressions from the training experience.

## Results and Analysis

We will first look at the data observed in each of the formations separately and then point out the general analyses.

### Teaching Institution 1 (TI1)

In TI 1, the only private institution to participate in the action research, 41 teachers participated in the training (only one male) who work in the areas of Early Childhood and Elementary I and II, and only 32 agreed to participate in the research, signing the FICF and answering the final form correctly. In this class, five (5) participants handed in the signed form, but separate from the form, making it impossible to identify their satisfaction, and one (1) participant handed in the completed form, but not the form. So, these six (6) members were not considered in the end-of-training satisfaction analyses.

The teachers' response at the end of the training indicates that 89% of the teachers had their expectations fully met, and only 11% had their expectations partially met.

Analyzing the data collected individually, we have, as shown in Infographic 3 (p.14)

Regarding the theme and contents addressed, 66% considered it "very important" and 34% considered it "important". None of them identified it as not very important or not important at all for their professional training. The ability to use this technology was also a differential, despite the difficulty presented by a small part of the group, which was mitigated by the possibility of cooperative work, which motivated the participation of those who had

more fear in dealing with the equipment and training activities. The good relationship of the group was providential in this process.

As in question 1, about meeting expectations, 89% of the teachers believe that, yes, the new slides, after the changes made during the training, fully meet the learning needs of their students; another 11% believe they only partially meet their expectations.

However, the excellent results obtained in this training, in particular, may be related to the self-critical spirit of the teachers involved, as well as to the school's infrastructure, which provided a large and comfortable room for the training, and also the Chromebooks.<sup>5</sup> Moreover, this training also had advantages in that it took place in three face-to-face meetings of 4 hours each, during three consecutive Saturdays. This favored the application of the concepts studied and the possibility of not spending too much time reviewing the content..

Another factor that we believe had a strong influence on the success of the results is the fact that, in this training, the researcher's suggestion to the institution's coordination was followed, and both the training took place outside the working hours and the ATPCG (General Pedagogical Work Classroom) of the institution, and the participating teachers were invited and not arbitrarily summoned. Thus, by forming a list of intentions, within the limits of the room offered for the training, a class was formed that was really interested in the improvement of the teachers' knowledge and skills.

## Teaching Institution 2 (TI2)

From this class, TI2, it is worth noting that all classes took the training during the ATPCG of the institutions (all public), since the coordinations did not believe that we would have supporters out of self-interest. Thus, all teachers at the institutions in question were required to attend the training. Because of this, the results, both of classroom participation and virtual learning environment participation, were lower, even though we have satisfactory results in the answers to the form answered at the end of the training, as we will see below.

In this class 12 teachers participated, and only 2 agreed to participate in the research and signed the FICF.

In the TI2 training, the attention problems during the training were intense. The training took place in the computer room of the institution. It was noted, in this class, that the ability with technologies, especially the use of Microsoft PowerPoint®, of most of the

---

<sup>5</sup> Chromebooks differ from laptops in that they start the operating system faster and are lighter and more convenient for various uses, especially for working with cloud files and various Google services (author's note).

participating teachers, was medium to low, however, the lack of interest was more dominant in this class.

It is also observed that the availability of an appropriate environment and equipment by the institution were not factors that interfered or influenced for a positive result in the training. In this class, there was a great difficulty with the essential skills in the use of technologies for the production of the slides. This may have been a factor that influenced the group's desistance in participating in the research.

### **Teaching Institution 3 (TI3)**

In TI3, we had satisfactory results in the classroom, although most teachers did not feel confident in performing the practical activities offered; the level of attention was as expected, probably because it was observed that the coordination of the institution encourages the use and the pedagogical practice with the support of digital technologies since the school started to offer full-time education, approximately 5 years ago, receiving the installation of interactive whiteboards in all classrooms.

In this class, 26 teachers participated, and only 16 agreed to participate in the research and signed the FICF. With 100% meeting expectations, among the teachers trained in this class, we highlight the speech of two female teachers. One of them states that: "The course showed how much we really don't know about Learning Objects and how much they make a difference in learning" (TEACHER B) and, the other one, attends to: "Excellent lectures and tips. I have rethought all my slides during my years as a teacher or lecturer. I believe they will be better used now, although their use is support and not focus (as highlighted well in the research/work)" (TEACHER C).

There is a balance between those who believe the training was very important or important. Among the members who remade their LO, all believe that there were improvements and that they meet the teaching and learning objectives of their subjects. There is also an excellent result in the attempt to take advantage of the knowledge shared in the training, although one teacher stated that "The training was complete and for our daily life I only took advantage of a few items" (TEACHER D).

Another important observation in this class is that the classes took place in a classroom adapted for group work and not in the computer lab, because we were informed before the training that the school had wi-fi (wireless internet connection) and that teachers had their own equipment to work with the slides. However, only a small portion of the teachers were

willing to bring their own equipment to use during the training, an average of 5 to 7 teachers in each module of the training process.

#### **Teaching Institution 4 (TI4)**

In the last class in training (TI4), we identified a considerable drop in the results achieved, both in the teachers' attention during the training and in their participation in the practical activities. Few participants were attentive, preferring to perform everyday school activities on the computers in the computer room where the training was taking place instead of using the content during the classes, even though the numbers from the survey conducted after the training did not show this difficulty: it is noteworthy that only 6% of teachers did not believe that the remade slides met the learning requirements.

Twenty teachers participated in this class, 18 of whom agreed to participate in the research and signed the FICF, constituting the best percentage of acceptance to participate in the research among all the classes, 90%. We noticed a better result regarding the awareness of the importance of the training than in the previous institution; however, we did not get the same return in personal impressions inside the classroom, and the participation rate in the practical activities was only about 13% to 18% of the participants in this training (between three and four teachers during each module), which may have influenced the results obtained.

The main differences that we can point out and that can give us guidelines to analyze these results are that: TI3 is larger than TI4, both are located in small cities, but TI4 is located in a much smaller city and with a smaller number of teachers.

#### **Training evaluation questionnaire**

The questionnaire applied at the end of the training was elaborated with 5 questions, one of them being dissertative, all referring to the training received, in order to evaluate the understanding of the importance and effectiveness of the training for the participants. We obtained, then, in the 4 objective questions, the following results:

**Chart 3** – Results of the questionnaire applied at the end of the action research

Teaching Institution	Question 1: Did the training meet your expectations?		Question 2: Do you think training is important for teachers?		Question 3: Do the remade slides improve?		Question 4: Do you intend to implement the knowledge?
	TOTAL Y	PARTIAL LY	VERY IMPORTA NT	IMPORTA NT	TOTAL Y	PARTIAL LY	YES
TI1	89%	11%	66%	34%	89%	11%	100%
TI2	100%	0%	50%	50%	100%	0%	100%
TI3	100%	0%	53%	47%	100%	0%	100%
TI4	100%	0%	81%	19%	94%	6%	100%
<b>TOTAL</b>	<b>97%</b>	<b>3%</b>	<b>63%</b>	<b>38%</b>	<b>96%</b>	<b>4%</b>	<b>100%</b>

Source: Research data (2019)

Question 5, the only dissertation, was for free expression by the participants, so that they could report some detail, opinion or criticism regarding the training received.

Among the opinions left in the "Observations" field of the final survey of the training, we found the opinion of some teachers of this class, such as: "Great classes that add to the training of teachers" (TEACHER E), "Excellent training" (TEACHER F), "It was very valuable and interesting" (TEACHER G).

Despite the positive opinions, there is evidence observed that the use of the training, in general, was not as positive or constructive as desired. The short training time was probably a determining factor for this result, since there was a need to shorten the contents and the practical activities.

Another factor that is identified as a barrier, as Citelli found in his research almost ten years ago, is that:

[...]the coexistence and/or greater familiarity with computers, the Internet, digital television sets is not necessarily integrated in the projects envisioned in the institutions destined to the formation of teachers, nor in the practices they carry out in elementary school classrooms (CITELLI, 2010, p. 24).

If this "mismatch", as Citelli considers, was one of the generating sources of problems that reached part of formal education in Brazil (CITELLI, 2010, p. 24-25), it still is! It is also noticeable that not only teachers, but

[...]the school experiences the technological resources with discomfort and insecurity, since there is a lack of knowledge of their systems and consequently of their processes. Besides the lack of mastery of non-school languages, in many or most cases, Brazilian public schools have not yet achieved the physical modernization of the classrooms, which distances the educational agents from the field of communication (COUTINHO; LOPES, 2011, p.143).

This discomfort was evident in the performance of teachers in all the training courses offered, but with greater intensity in public schools, demonstrating that many of them have not yet realized that communication processes are at the heart of their profession, and do not demand only the resources of the school, but essentially those that today are part of the teaching work tools: equipment such as computers and cell phones, knowledge of software, internet browsers, text editors, slides and spreadsheets. This becomes evident when we try to analyze the results of the action research and observe that the quantitative results do not represent the qualitative results.

Finally, it is worth mentioning that when we talk about communication processes in education we are talking about ICT and DICT (Digital Information and Communication Technologies), communicative processes and strategies, and everything else related to the area, including Educational and Learning Design. Thus, when we talk about teacher education, we have to consider all these resources as essential.

Paz (2017, p. 1666) reminds us that "The teaching profession is challenging, dynamic, constantly evolving, and its training could not go down different paths, the range of skills to teach evolves with individuals, with society." Still for Paz, whenever he develops a new skill or competence, the teacher, besides improving his qualification, also renews himself as a human being, acting in a critical and knowledge-producing way.

### **Later stage (completion of action research)**

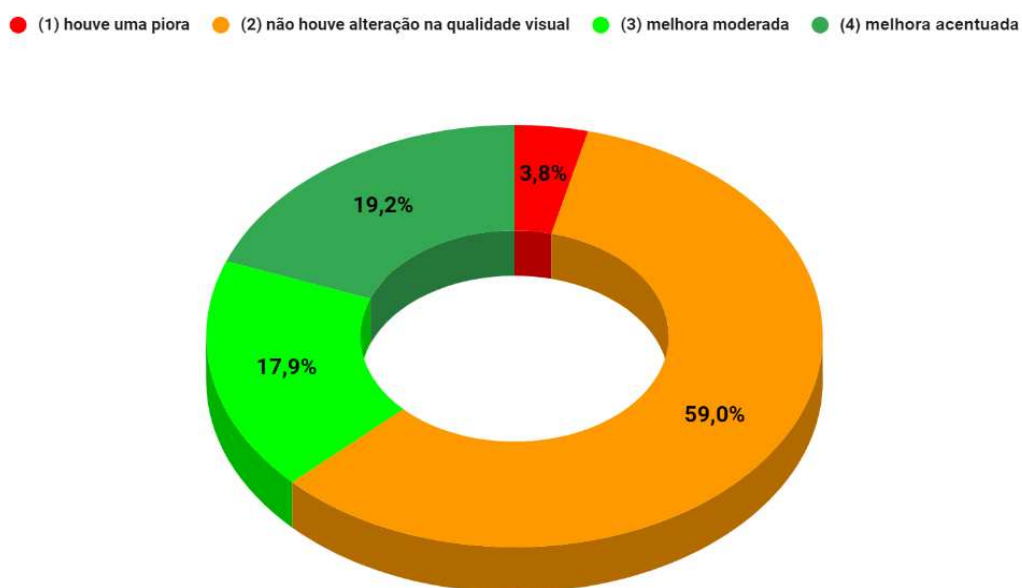
For the application of the training, the initial step was the collection of learning objects in the form of slides, prepared by the participating teachers, leaving the theme up to each one's area of knowledge.

During the training sessions applied to the teachers, modifications were made to their slides, applying the concepts taught during the classes. The participants delivered the files of their remade slides, for analysis and comparison between before and after, by professionals from the design area (graphic/educational) and related areas, in order to build a more accurate

view of the training results, identifying the effectiveness of the concepts learned and applied in the objects.

Simplifying the positive results of the training efforts, 37.1% considered moderate and marked improvements, 59% with no improvement identified, and 3.8% worsening in the reformulation of the LO, according to Graph 1, below.

**Graph 1** – Overall performance of the compared LO<sup>6</sup>



Source: Research data (2020)

With these results it was possible, within the proposed conditions, to prototype a training that is more adequate to the teaching public, to the time available for updating, and that can be applied as broadly as possible, offering conditions for Multiliteracies, especially Visual Literacy (which was the main focus of this training), to as many educators as possible.

This stage was completed throughout 2020, and the complete results are published in the thesis defended in April 2021<sup>7</sup>.

<sup>6</sup> Houve uma melhora = There has been improvement; Não houve alteração na qualidade visual = No change in visual quality; Melhora moderada = Moderate improvement; Melhora acentuada = Sharp improvement

<sup>7</sup> Thesis entitled "Design and teaching-learning: between slides and teacher training" (SBROGIO, 2021). Available at: <https://repositorio.unesp.br/handle/11449/204735>. Access on: 12 Oct. 2021.

## Final remarks

When we talk about design, instructional or educational design, learning design, or any other concept that involves "design" and education, we are dealing with a range of concepts, methods and techniques as comprehensive as the very idea of education.

The initial and continuing education of teachers, in its breadth of needs, has become increasingly unattainable, given the countless competencies and skills to deal with the demands of the digital culture, which is not a peculiarity of the Education job market only, but of all areas.

In fact, within a curriculum that requires these skills and competencies to be taught to students, it becomes impossible not to demand the same parameter of knowledge from teachers.

This study outlines just one key point of continuing teacher education, and the skills/competencies to deal with the production of educational content, the design for better targeted teaching and more effective learning, for improved visuals and content, with the use of open and free resources.

The results of this research show that this formative perspective requires special attention, both in the development of a well-selected content (theoretical and practical) and a better adequacy of the time proposed in the training, considering that the theme, in any approach, is quite broad, and the attempt to train in a short time did not bring the desired results in practical skills.

It is necessary, therefore, to think of a teacher training curriculum that effectively contributes to the development of critical competence, but also of practical skills to deal with the development of teaching materials, especially the slides they produce, which are currently one of the most used resources in classrooms, with enough time to propose the learning of knowledge and opportunities for practical experience in the construction of various learning objects, using the proposed theory. A curriculum that, already in the initial training of future educators, is better suited to the demands of the professional educational market, since the job opportunities are equivalent to the demands of the culture experienced at each moment.

**ACKNOWLEDGMENTS:** This paper was carried out with the support of the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES) - Financing Code 001.



## REFERENCES

- ANDRÉ, M. E. D. A. **Etnografia da prática escolar**. Campinas, SP: Papyrus, 1995.
- BEHRENS, M. A. A prática pedagógica e o desafio do paradigma emergente. **Revista Brasileira de Estudos Pedagógicos**, v. 80, n. 196, p. 383-403, 1999. Available at: <http://rbep.inep.gov.br/ojs3/index.php/rbep/article/view/1303>. Access on: 11 July 2020.
- CASTELLS, M. **A sociedade em rede**. Tradução: Roneide Venâncio Majer. São Paulo: Paz e Terra, 1999.
- CITELLI, A. Comunicação e educação: Implicações contemporâneas. **Comunicação & Educação**, v. 15, n. 2, p. 13-27, 2010. Available at: [https://www.researchgate.net/publication/269627286\\_Comunicacao\\_e\\_educacao\\_implicacoes\\_contemporaneas](https://www.researchgate.net/publication/269627286_Comunicacao_e_educacao_implicacoes_contemporaneas). Access on: 12 May 2021.
- COUTINHO, S. G.; LOPES, M. T. Design para educação: Uma possível contribuição para o ensino fundamental brasileiro. *In*: COSTA, M. (ed.). **O Papel social do design gráfico: História, conceitos & atuação profissional**. São Paulo: Editora SENAC, p. 137-162, 2011. Available at: [https://www.researchgate.net/publication/236681984\\_Design\\_para\\_educacao\\_uma\\_possivel\\_contribuicao\\_para\\_o\\_ensino\\_fundamental\\_brasileiro](https://www.researchgate.net/publication/236681984_Design_para_educacao_uma_possivel_contribuicao_para_o_ensino_fundamental_brasileiro). Access on: 12 Oct. 2021.
- DERKS, D.; BOS, A. E. R.; VON GRUMBKOW, J. Emoticons and Online Message Interpretation. **Social Science Computer Review**, v. 26, n. 3, p. 379–388, 2008. Available at: <https://journals.sagepub.com/doi/10.1177/0894439307311611?icid=int.sj-challenge-page.similar-articles.1>. Access on: 07 Mar. 2020.
- DONDIS, D. A. **Sintaxe da Linguagem Visual**. Tradução: Jefferson Luiz Camargo. 3. ed. São Paulo: Martins Fontes, 2007.
- FREIRE, P. **Extensão ou comunicação?** Tradução: Rosiska Darcy de Oliveira. 1. ed. Rio de Janeiro: Paz e Terra, 2013.
- PAZ, L. A. S. C. O pensamento computacional e a formação continuada de professores: Uma experiência com as TICs. **Revista online de Política e Gestão Educacional**, Araraquara, v. 21, n. esp. 3, p. 1655–16677, dez. 2017. Available at: <https://periodicos.fclar.unesp.br/rpge/article/view/10095>. Access on: 5 Sept. 2021.
- PRODANOV, C. C.; FREITAS, E. C. **Metodologia do trabalho científico: Métodos e técnicas da pesquisa e do trabalho**. 2. ed. Novo Hamburgo: Feevale, 2013.
- RIVAS, N. P. P. *et al.* A (re) significação do trabalho docente no espaço escolar: Currículo e formação. *In*: CONGRESSO ESTADUAL PAULISTA SOBRE FORMAÇÃO DE EDUCADORES, 8., 2005, São Paulo. **Anais [...]**. São Paulo: Universidade Estadual Paulista, 2005. Available at: [https://scholar.google.com/scholar?cluster=14452971462475680277&hl=pt-BR&as\\_sdt=2005&scioldt=0,5](https://scholar.google.com/scholar?cluster=14452971462475680277&hl=pt-BR&as_sdt=2005&scioldt=0,5). Access on: 07 Mar. 2020.

SBROGIO, R. O. **Design e ensino-aprendizagem:** Entre *slides* e formação de professores. 2021. Tese (Doutorado em Mídia e Tecnologia) – Faculdade de Arquitetura, Artes, Comunicação e Design, Universidade Estadual Paulista, Bauru, SP, 2021. Available at: <https://repositorio.unesp.br/handle/11449/204735>. Access on: 10 Oct. 2021.

WALTHER, J. B.; D'ADDARIO, K. P. The Impacts of Emoticons on Message Interpretation in Computer-Mediated Communication. **Social Science Computer Review**, v. 19, n. 3, p. 324–347, 2001. Disponível em: <https://journals.sagepub.com/doi/abs/10.1177/089443930101900307>. Acesso em: 07 mar. 2020.

### How to reference this article

SBROGIO, R. O.; VALENTE, V. C. P. N. Teachers' improvement in educational and learning design for slides production. **Revista Ibero-Americana de Estudos em Educação**, Araraquara, v. 17, n. 3, p. 1695-1712, July/Sept. 2022. e-ISSN: 1982-5587. DOI: <https://doi.org/10.21723/riaee.v17i3.14644>

**Submitted:** 14/01/2022

**Revisions required:** 23/04/2022

**Approved:** 17/06/2022

**Published:** 01/07/2022

### Processing and publishing by the Editora Ibero-Americana de Educação.

Correction, formatting, standardization and translation.