



Digital Documentation of School Practices: A Research Project

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Abstract

The essay presents the results of the “Documentary research of teaching practices” realized by the National Institute of Educational Documentation, Innovation and Research (Indire). This research aims to understand the documentation practices of Italian teachers and to design a digital format to help and support teachers in documenting their activities, providing them with standard tools for analysing and sharing good practices. The first part of the essay focuses on the results of the online questionnaire that Indire presented to Italian teachers between 2018 and 2019 in order to gain an overview of how school teachers currently document their teaching practices. Teachers from primary and secondary schools of I and II grade were involved and over 2000 answers were collected through a non-probabilistic sample. The empirical analysis of the questionnaire represents the starting point for the second part of the essay that presents the iterative process of designing and testing a digital audiovisual format which represents a guideline for the production of teaching supports and customisable infographics¹.

¹ Paragraphs “Methodological Outlines, “Documentation Habits in Italian Schools” and “Documentation Tools” were written by Francesca Davida Pizzigoni; paragraphs “From the analysis of the practices to the identification of teachers’ documentation needs” and “Participatory design of a digital format for the documentation of good teaching practices” were written by Domenico Morreale.

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Introduction

Indire, the National Institute of Educational Documentation, Innovation and Research, is the research institute of the Italian Ministry of Education, founded in 1925 in Florence. Since its inception, one of its institutional aims has been documentation, having been built on the basis of materials collected for an exhibition commissioned by Lombardo Radice to document pedagogical activism in Italian schools. At that time, in fact, materials produced by schools (drawings, photographs, exercise books, educational essays, objects and much more) at every level were sent to Florence with the explicit aim of "illustrating and documenting the renewal of teaching in Italy". (Calò 1925). This documentation went from being a temporary exhibition to becoming a permanent museum dedicated to the history of schooling, as well as a study centre, without ever forgetting its nature as an institution that documents school life and collects traces of what happens in the classroom. This aspect that has been well explained by the name of the institution since 1953 (when, after having been the National Education Museum and the National Education Centre, it was named the National Education Centre for Studies and Documentation), a name that has been maintained until today (switching from 1974 to 2001 to the name of the Pedagogical Documentation Library). (Giorgi 2010).

Linked closely to its identity and its institutional aims, Indire's lines of research include documentation at school, and now, just like at the very beginning, it seems appropriate to study the subject by approaching schools directly.

Methodological Outlines

The methodological framework of the research projects refers to Trinchero (2002) and aims at analysing our reality in order to plan effective actions.

The basic questions in the "Documentary research of teaching practices" are: *how does Italian school teachers provide records today? Which are the main tools? Which are the main aims? Which are the main needs regarding documentation?* Thus, in order to fulfill the cognitive objective, it was made a preliminary examination of the most recent literature regarding this topic (Antonietti 2011; De Rossi and Restiglian 2013; Biffi 2014; Perla and Riva 2016). Came to light that there were no updated data concerning the direct expression of teachers on these topics, this is the reason why we proceeded with this collection. It was used a non-probabilistic sample that allowed the identification of population trends and the employment of a highly structured questionnaire. Finally, it was added a single and final open question in order to collect the teachers' spontaneous definitions regarding the macro-theme of the documentation.

The questionnaire was designed in four sections, each dedicated to a specific aspect of documentation to be observed: habits, the documentation tools used, use of documentation produced by others, and documentation requirements.

Once the structure of the questionnaire and the contents of all its parts were finalized, it was transformed into an online questionnaire (using "Lime survey" as a specific tool) in order to easily reach the sample and to be able to use automatic data analysis systems (SPSS software)².

Documentation Habits in Italian Schools

The survey was carried out in December 2018. Thanks to the support of the Regional Schools Departments, the questionnaire circulated throughout Italy to teachers at all levels, from pre-school to secondary school, and collected a total of 2,008 answers (considering only complete questionnaires) divided territorially as follows: 44% of responses from teachers in service in

² Francesca D. Pizzigoni, Manuela Repetto, Alessia Rosa worked on the design and development of the questionnaire. The technical realization of the online survey and its management (dissemination of the questionnaire, contact with schools, monitoring of the replies, etc.) have been done by Michela Bongiorno and Sara Di Falco. Data processing and their graphic form was developed by Caterina Mazza. The set of the activities related to the questionnaire "Documentation at school" was coordinated by Francesca D. Pizzigoni.

Northern Italy, 33% in Central Italy and 23% in the South, with a prevalence of responses in Piedmont, Lazio, Abruzzo and Calabria.

Primary school teachers (32%) and high school teachers (31%) showed most interest in the topic proposed by the questionnaire, followed by 24% of junior high school representatives and 13% of pre-school teachers.

With regard to the subjects represented by the teachers who answered, most were humanistic (39%), followed closely by the scientific-technological area (30%).

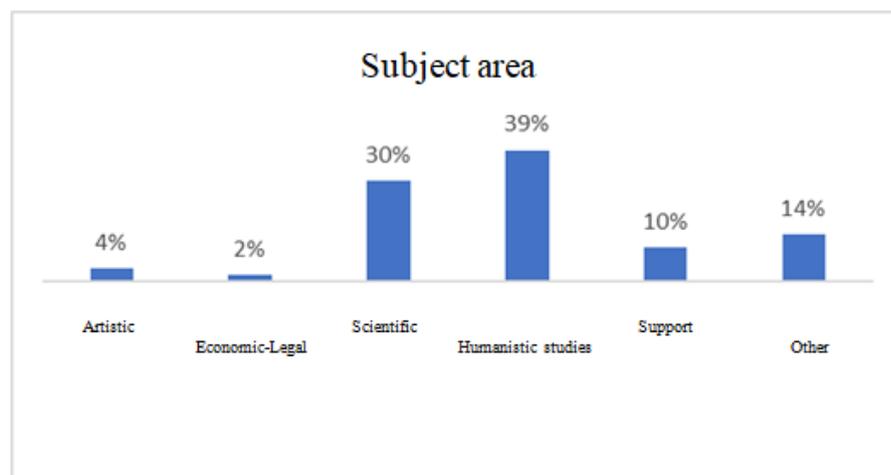


Figure 1. Breakdown of respondents by subject area (Database: 1,949 respondents).

The question on the years of teaching of the respondents revealed that a significant majority of teachers (63%) had more than 15 years' teaching experience and this was not secondary in the evaluation of the possible meanings of the data that emerged³.

When the sample was expressed, 43% of the total number of respondents stated that they "always" document, because "they consider it an essential part of their professional approach", while 26% stated that they do so only when they carry out an activity that they consider particularly significant or innovative. Minimum percentages declare that they document for essential needs such as the reporting of a project (9%) or a decision by the Teaching Commission (4%). From these first answers it seems that the documentation action is spontaneous and intrinsic to the teaching action, considered as a significant part of professional practice. In order to better understand the answer to the question, we asked respondents to indicate the percentage of their working time dedicated to documentation activities. The following graph shows the answers and reveals that almost 30% of respondents say they devote 30% of their time to documentation activities, while 21% devote as much as 40% of their time and 20% of respondents dedicate up to 50% of their total work commitment to documentation.

³ This data can certainly also be considered in relation to the characteristics of the teaching staff in the country, considering that according to the data available on the website of the Ministry, published in February 2018 and relating to academic year 2016/2017, among tenured teachers, the age group most represented is over 54 (40%), followed by teachers aged 45 to 54 (37%). On the other hand, 21% of tenured teachers belong to the 35 - 44 age group, while only 3% of tenured teachers are under 34 years of age. See the General Schools Data Website (Portale Unico del Dati della Scuola), <http://dati.istruzione.it/opendata/opendata/catalogo/elements1/?area=Personale%20Scuola>.

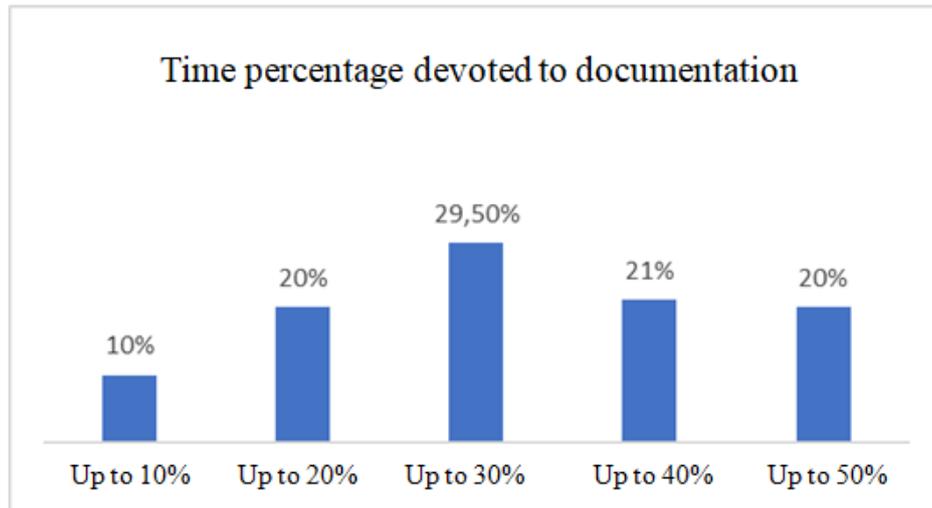


Figure 2. Time dedicated to documentation in relation to school commitments (Database: 1,687 respondents).

It is interesting to note that this perception is substantially shared among teachers at different levels of schooling, as shown in Figure 3.

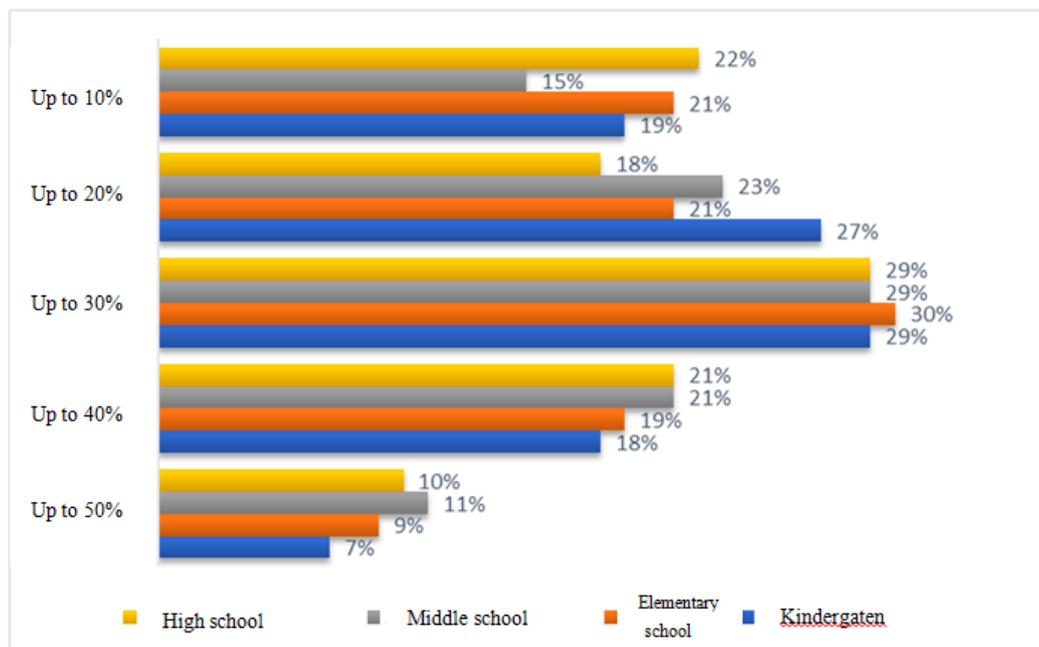


Figure 3. Time spent on documentation by level of schooling (Database: 1,687 respondents).

Such high percentages require an effort in terms of reflection and interpretation of the data. If a teacher declares that they devote more than 30% of their working time to documentation, besides a possible misperception of the real organisation of their activities, we must draw the conclusion that they obviously consider the documentation activity as an ongoing action during all phases of their teaching practice, from planning to implementation and conclusion. In fact, 78.5% of respondents declared that they document at the same time as each phase of the teaching activity, in a specific subsequent question.

Bearing in mind that the majority of the respondent sample can be traced back to teachers with significant years of teaching experience, it is not possible to directly link this attention towards

documental practice to the initial training of teachers - in view of the fact that, in recent years, universities have devoted specific attention to the link between planning and documentation - but rather to a consolidated practice in everyday professional activity. Consequently, teachers develop specific attention to documentation throughout the course of their professional experience and in-service training, and we have seen this not as a professional obligation (imposed by project reporting or by the choices of Directors and Teaching Commissions), but as a choice.

In order to further investigate the reasons why the documentation activity is carried out, the subsequent answers show how the majority of teachers claim that it is helpful in order to understand the impact of their intervention with the class (29%) and for their future planning (24%). It seems, therefore, that documentation is mainly intended as a support for metacognitive reflection by the teacher.

Only a minimum percentage of 6 and 5 percent, respectively, claim to document in order to facilitate professional comparison with colleagues or to share materials externally: this response seems to be in open contradiction with the definitions offered by the respondents to the open question, in which references to the purpose of sharing documentary materials are recursive: "documenting is a way to share, know and reflect on the educational action produced in the classroom"; "documenting is an inspiration for other teachers so that they can adapt the idea to the context in which they work"; "documentation is a tool that facilitates the replicability of a project, to transform a virtuous experience into a resource to be systematised and shared".

The general impression that emerges from a global analysis of the answers, cross-referencing them, is that there is a gap between what can be considered theoretical aspects (in which the respondent seems to give the "official" answers) and the real professional habit. The practice of using one's own documentation is confirmed by a further question linked to the use of the documentation that the teacher produces: only 13% share their material with the entire professional community, while the majority use it for their own personal purposes (11%) or with their own class (37%), limiting disclosure of their documentation to occasions when it is required for a project (21%).

It is interesting to note that, while there seems to be little willingness to share documentation, 77% of respondents say that they use documentation produced by colleagues. In particular, the documentation of others is used with the aim of innovating their teaching practice (38%) or as inspiration for activities to propose to their class (25%).

Documentation Tools

Once the teachers' habits were known, the aim was to explore the tools they use to generate their own documentation. In the course of their activities, teachers create their documentation using the coursework of their pupils (48%), personal notes taken with paper and pencil (47%), pictures and photographs (46%), observation grids, feedback forms and journals (44%), presentations (29%) and video recordings (16%).

In order to see if today we can talk about a change in documentation habits thanks to the use of digital technologies, it was given specific attention to the relationship between the development of digital culture and documentation. More in detail, we tried to understand if the incidence of digital technologies and environments in documentation practices occurs in a transversal manner or insists on particular school groups represented by teachers.

It shows that teachers in pre-school and primary school prefer the use of photos and pictures, pupils' work, paper and pencil and/or personal notes and observation grids, compared to colleagues in high school, who make greater use of multimedia resources and presentations.

If these data correspond to a picture that is mostly already known or at least widely conceivable, it is important to emphasize the relatively limited use of video recordings if we consider the potential offered by devices now available to every student, capable, especially in high school classes, of directly engaging students in documentation practices.

The limited use of video documentation is partly justifiable in the light of the needs expressed by teachers, who state that they feel the need to strengthen the use of technological tools in the creation of their documentation (34%) and feel the need for training tools (models, tutorials ...) and digital spaces in which to find documentation produced by others.

Nevertheless, the situation seems to change when analyzing the data related to the way teachers organize their own documentation: as a matter of fact, the 62% of the respondents declare that they use multimedia resources. If the kindergarten teachers are excluded (only 35%

say they use multimedia for organizing their own documentation), we may notice that the percentages of multimedia resources use are very significant. In particular the multimedia resources use are: 60% for primary school teachers, 64% for secondary school teachers, 75% for secondary school teachers. Thus, the traditional methods (meaning textual sheets or text and images) were still preferred to create its own documentation, instead as for the material rearrangement and share, it is precisely the potential of new technologies and of the network to be used in a privileged manner.

With respect to Indire's research aims - concerned with discovering the status quo and then working to support documentation in schools and the tools available to teachers - it was meaningful to understand if a shared way of reorganizing one's own documentation through multimedia is widespread among teachers: is there a standard format or in any case a privileged and recognized model for producing their digital documents to which the teachers refer?

The answers to the questionnaire tell us that 42% of teachers create their own documentation methods, without having a reference model. This means that the product of different teachers is likely to be created using different formats and supports, which place the subjective emphasis on one aspect rather than another within a teaching practice, pursuing different goals and points of view. Regardless of the effectiveness of the individual models, it is evident that the sharing of tools is not particularly widespread and that, as a result, even the transversal study of different documentations, in search of common traits or elements of comparison between different practices, requires the user to interpret the different formats, rather than focusing solely on the content documented.

From the analysis of the practices to the identification of teachers' documentation needs

The results of the empirical analysis represented the starting point of the design of a digital audio-visual format capable of meeting the documentation needs that emerged.

By format we mean the scheme of organisation of media contents, the formula and the characterising elements that can be declined into a multiplicity of solutions united by an identifying nucleus that guarantees the recognisability of the concept. As far as television is concerned, the format coincides with the basic idea according to which an original programme is created and can be purchased by television stations to be broadcast without any alteration or after appropriate adaptations. In the same way, the idea of a documentation format wants to respond, on the one hand, to a requirement of standardization of documentation contents, with the idea that a common matrix, identified on the basis of literature and analysis of case studies, can promote communication and the dissemination of good practices; on the other hand, it intends to maintain a significant level of flexibility which allows teachers to customize and adapt the textual, graphic and audio-visual compositional elements to the needs of the project and of the class.

The aim that guided the planning phases of the format was to identify an organisational structure that would favour not only documentation but also reflection on the practice by teachers, and its communication and sharing. In this sense, on the one hand, the guidelines and indications resulting from studies on educational multimedia (Mayer 2001) have been identified, providing teachers with suggestions on the coordinated use of multiple channels of communication, and on the other, a work of synthesis and selection of documentary criteria and forms best suited to communicating the distinctive and reproducible elements of the practice (with a view to its application in multiple educational contexts) has been carried out, based on the most frequent educational situations (Nichols 1991; Valentini 1987).

In order to encourage the documentation of past experiences, for which documents and materials that are not homogeneous or were not conceived from the beginning as part of an integrated documentation process have been collected, the decision was made to move towards a format of synthetic documentation that would favour the reflection and identification of the essential components of the practice and that, from the planning point of view, would require an effort to re-elaborate the existing contents. With a view, therefore, to the "remediation" (Bolter and Grusin 1999) of the existing documentation in a new format which, on the one hand, could standardize the contents from a stylistic point of view and, on the other hand, would require a reflection on the documentation itself, through operations of analysis, selection, synthesis and recontextualization of the existing documents in the new format.

On the basis of the results of the questionnaire, the existing literature and scientific research were analysed to identify the appropriate linguistic and productive solutions and the audio-visual sector was identified as the solution most in line with the teachers' self-training practices. Recent research conducted by Indire has shown, in fact, that tutorial videos and webinars are among the most popular self-training tools for teachers (Bucciarelli & Taddeo 2019). As emerges from the questionnaire described in the previous paragraphs, teachers are not inclined to use audio-visual documentation tools (and they document mainly to analyse the practice rather than to communicate it). However, the fact that they make extensive use of audio-visual supports in terms of self-training and recognise their effectiveness, outlines a scenario probably influenced by a gap in skills between the small number of video-documenting teachers and the many teachers who use these videos.

This gap highlights the need to be able to use accessible tools that require only a minimum set of media production skills (in the case of other documentation tools, such as annotations or photographs, production processes are based on technical skills already possessed by teachers and on technologies that have now become part of the daily media production practices of most teachers).

Open access online contents could represent a resource for educators as long as they do not feel threatened in their role by the open dissemination of freely accessible digital content (Nascimbeni et al. 2018) and perceive the effectiveness of these tools for self-training. If these conditions occur then the same teachers can become the promoters of an approach based on the sharing of experiences through digital documentations, provided that there are no technological and technical barriers that discourage the production of contents. Therefore, a user-centred design cycle was followed (Norman & Draper 1986) in order to involve the stakeholders, the teachers, in all the development phases, collecting useful indications to simplify the documentation production processes based on their experience.

Participatory design of a digital format for the documentation of teaching practices

The data of the questionnaire allowed the identification of the design requirements that guided the design of the first methodological and technical solutions, which were then discussed with some teachers during sessions based on techniques of rapid usability. Five teachers, authors of documentation considered to be "good practices", a sufficient number, according to Nielsen (2000), to detect 85% of the preliminary design problems, were invited to observe the prototypes and reflect on the contents and production techniques.

Technical and technological solutions that, on the one hand, did not require advanced development skills and, on the other, were based on tools that were freely accessible on the Internet and could be used free of charge, at least in terms of their basic functions, have been perfected.

The results of the requirements analysis phase, of the selection of techniques and technologies and of comparison with teachers have made it possible to draw up a format proposal consisting of two components.

First of all, the compositional rules of the contents have been proposed. They are the backbone of the documentation, represented by a path that starts from the initial need, an element shared between different experiences, which can represent a cultural attractor (Jenkins 2006) for all teachers who encounter that need in their teaching activity, passes through a description of the solution identified (a maximum of five fundamental stages, i.e. the phases of practice, which can represent a tutorial in view of the replicability of the experience), and, finally, a summary synopsis. The structure wants to invite the teacher to reflect and identify the essential elements of the practice, regardless of the autobiographical and contextual aspects related to the individual experience;

The second component is represented by facilitating kits consisting of templates, graphic and infographic elements (two-dimensional pre-configured sets to contain the structural elements of the format, pointers, icons...). Teachers can use them, in digital format, or by printing them, to create their own documentation contents. The infographic kits can be integrated and customised with documentation content collected by teachers (photographs, videos, documents) and with the help of free, non-professional consumer software, animated by stop motion techniques (a series of photographs taken in sequence and combined into a video sequence) or motion graphics

(animated graphics combined with photos, videos and texts). The idea of offering a customisable repertoire for the creation of content responds both to the need for standardisation and to the demand by teachers for digital video design support tools (in this sense the sets and backdrops act as models and templates which, by placing constraints and invitations, guide and help structure the narrative). This repertoire is also a tool that can facilitate the planning of workshop activities to be carried out with students, with a view to a co-construction of documentation.



Figure 4. Frames taken from some digital videos produced using the compositional rules and infographic kits created within the project.

The format was analysed during a focus group with 12 teachers, held at Polo del 900 in Turin, and during two workshops, held at the Circolo dei Lettori in Turin and at CESEDI in Turin, with the participation of 35 and 50 teachers respectively. The aim of the focus group was to detect communicative effectiveness, attractiveness and clarity of format by discussing some prototypes. The workshops allowed the analysis of production methods to understand any critical issues in the production of documentation products. Some aspects that constitute the basis of the redesign action within the iterative design cycle have emerged.

While the absence of the documentation of classroom practice from the format (understood as video recording, in real time, of the activities carried out by the teacher) is, on the one hand, in line with the aim of making the documentation independent of contextual aspects, encouraging reflection on the invariable elements of practice, on the other hand, it could represent a limit due to the absence of exemplifying elements. The integration of teaching materials (slides, texts, graphics complementary to the video format) that can be reused to implement the project in other contexts emerged as a possible solution.

While the absence of the “storyteller” (the teacher's voice), encourages reflection by the teacher on the practice, the identification of the invariable elements and the communication of the practice itself, it can also be a limit with respect to a potential identification of the teachers who use it with respect to the storytelling teacher.

In addition, the need to accompany the format with tutorials to promote understanding and dissemination has emerged.

The analysis has made it possible to understand how the format needs to be fine-tuned in relation to specific types of educational situations: documenting a project based on debate may require redrafting grids with a different articulation compared to a project based on online research activities.

Lastly, a theme for redesign is that of the transmedia extension of the format, i.e. the design of a narrative flow that unites different media in a complementary and coordinated way, using the most effective format for each element from the point of view of the principles of educational multimedia and communicative efficiency.

Conclusions

Starting from the direct voice of school teachers we have tried to reconstruct habits relating to the subject of documentation and to reinterpret the needs expressed in order to develop new digital tools to improve and ease documentation practices by teachers.

The results of the questionnaire have brought to light different elements worthy of interest both with respect to the broader and more general study of the subject of school documentation, and in a more specific way with respect to the ability to provide useful elements to guide the second part of the work aimed at building a documentation tool to be made available to schools that corresponded to the needs of the target to which it is addressed.

In fact, the sample allowed us to see how the documentation activity is seen as an intrinsic element and at the same time characterizing the teaching profession. The working time dedicated to the activity exceeds the expectations that could have been imagined and suggest a documentary activity carried out intrinsically to the various moments of the didactic action. This attention to the documentation seems to come from the professional experience itself, born therefore from personal considerations or in any case from a specific in-service training. What appears to be absent is a documentation culture as a tool for exchange and sharing. The answers to the questionnaire in fact strongly highlight how teachers tend to produce documentation for themselves (for personal uses or to be used within their own class). From the answers emerged that in a society where technology permeates almost all aspects of our lives and in which every teacher and every student have a device, the tools with which documentation is produced are still largely the traditional ones (photographs, notes, drawings ...). We can go so far as to affirm that the used supports confirm that the final purpose of the documentation is not that of sharing: photographs, notes and drawings are more easily destined for some paper files or to be placed in a cabinet instead of being used as sharing tools within a community of practice. Even the non-existence of shared and acknowledged documentation models shows that there is little reflection on the possible use by others of the produced documentation. In fact, dwelling on this point means questioning the purpose for which it is documented, on the specific objectives of a given documentation, on the possibility of comparing documentation of different experiences. Starting from these considerations the need for specific and standardized models arises.

From our research emerged that teachers are not inclined to use audiovisual documentation tools to share their practices but they make extensive use of audiovisual supports in terms of self-training. So the aim of the design process was to find an audiovisual solution able to provide teachers with a guiding scheme that, starting from an educational practice, suggests what elements should be documented in order to communicate and share that practice (the format). At the same time the project developed facilitating infographics kits able to bridge the gap between teachers' documentation needs and the lack of media production skills that often undermines multimedia documentation production in schools.

The identification of a digital format able to encourage the documentation of teaching practices led to an iterative testing of the format with the teachers and to the redesign of the prototype to meet the needs of the trainers. The concept has been returned to schools, testing the solutions proposed by Indire with the people directly concerned, in order to gather new stimuli and opinions for future finalisation, in a sort of continuous cycle of dialogue and cooperative confrontation between schools and Indire.

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