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# Editors' Perspective on the Use of Visual Displays in Qualitative Studies

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## Editors' Perspective on the Use of Visual Displays in Qualitative Studies

### Abstract

Research indicates that visual displays in qualitative research are under-utilized and under-developed. This study aimed to reach a clearer understanding of this fact by learning from the perspective of seven editors in qualitative journals. Using a qualitative descriptive design this study explored what constitutes an appropriate and helpful use of visual displays, including examples from current practices, and recommendations in the use and creation of visual displays. This paper reveals new insights by experts and very knowledgeable personalities in the area of qualitative research. The experts' vision provided information that favors inclusion of visuals in qualitative studies as well as reckons the need for enhancement of curricula in qualitative research education to involve teaching about and practicing alternative representations of data analysis including the use of visuals. This paper concludes with a new classification of visual displays based on their occurrence within a research report, and a list of the main criteria points used by editors for assessing the validity of visuals in qualitative research articles. Additionally, we include implications for qualitative researchers and educators interested to increase the use of visuals in qualitative articles.

### Keywords

Visual Display, Qualitative Research Editors, Visualization, Qualitative Data Analysis, Images, Interpreted Visuals

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## Editors' Perspective on the Use of Visual Displays in Qualitative Studies

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*Research indicates that visual displays in qualitative research are under-utilized and under-developed. This study aimed to reach a clearer understanding of this fact by learning from the perspective of seven editors in qualitative journals. Using a qualitative descriptive design this study explored what constitutes an appropriate and helpful use of visual displays, including examples from current practices, and recommendations in the use and creation of visual displays. This paper reveals new insights by experts and very knowledgeable personalities in the area of qualitative research. The experts' vision provided information that favors inclusion of visuals in qualitative studies as well as reckons the need for enhancement of curricula in qualitative research education to involve teaching about and practicing alternative representations of data analysis including the use of visuals. This paper concludes with a new classification of visual displays based on their occurrence within a research report, and a list of the main criteria points used by editors for assessing the validity of visuals in qualitative research articles. Additionally, we include implications for qualitative researchers and educators interested to increase the use of visuals in qualitative articles. Keywords: Visual Display, Qualitative Research Editors, Visualization, Qualitative Data Analysis, Images, Interpreted Visuals*

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“Data visualization offers us the ability to view data in different ways and gives us a better chance of detecting obscured patterns and connections” (Azzam & Evergreen, 2013, p. 3). Data visualization has been broadly used to represent quantitative data results, different from what happens in qualitative data representation, where visuals are under-utilized and under-developed. Previous research on data display in qualitative analysis (Verdinelli & Scagnoli, 2013) shows the scant use of visual displays in qualitative journals, even when the utilization of Computer Assisted Qualitative Data Analysis Software (CAQDAS) has been largely promoted among qualitative researchers. Although some authors highly recommended using different displays during data analysis (Bazeley, 2009; Miles, Huberman, & Saldaña, 2014), research kept showing little use of data displays in published academic articles (Scagnoli & Verdinelli, 2015). Interested in learning if the lack of visuals was due to qualitative journals limitations or editors' preferences, this research study sought editors' perspectives on the issue. The inquiry furthered into editors' views on what constitutes an appropriate and helpful use of visual displays with the aim of being able to provide information to researchers regarding the criteria used to judge visual displays in qualitative articles.

Considering that new generation of researchers and learners are part of the so called “You tube generation” (Duffy, 2008) we predict that more users will demand or include visuals in qualitative research studies. To reach that state we believe that more education on the creation and use of visuals for qualitative studies is needed as well as more explicit criterion and standards for their inclusion in publications. We hope that this study will contribute with

the information needed to guide and encourage researchers to enhance their qualitative studies with visuals that illustrate authors' interpretation and analysis.

### **Researchers**

Norma I. Scagnoli has been exploring the affordances of technology applications in education, communication and information venues since 1998. She has been interested in the human interaction with visuals in different formats and its exponential growth given the increased access and affordability of technology gadgets. As a qualitative researcher, she has developed research studies on the use of multimedia and video lectures in education, and teaches about the production and educational uses of multimedia. Knowing that the production of good quality visuals is no longer in the realm of people with professional training, and convinced that anyone with a digital camera or low cost cell phone can produce visuals that will enhance any information or communication piece. Dr. Scagnoli teaches her students to be producers of information using a balanced mix of text and media to inform and educate. She believes that the world of publishing still has to catch up with the affordances of technology and is interested in learning what the barriers that prevent a faster adoption are. Her interests have led her to investigate the use of visuals to communicate information in areas where visuals are not easily conceived, like in qualitative analysis, but can make a difference when produced and added to a narrative. She thinks that bringing more awareness of the possibilities of use of visuals in providing and simplifying access to information, and representing knowledge, will benefit qualitative research and welcome innovations brought by new generations to the field.

Susana Verdinelli has been teaching qualitative research methods for the last decade. She became interested in the use of visuals early on but found lack of direction on how to create useful visual displays to represent qualitative research findings. Early experiences in submitting interpreted visuals for publication as part of her qualitative studies ended in deleting the visual display due to editors' recommendations. Although a little discouraged by the lack of interest journals demonstrated on the use of visuals, she began exploring the topic and teaching herself how to create meaningful visuals. She believes that we are living in a visual world and younger generations use visuals as part of their interpretation of the world. The field of qualitative methods needs to find ways to incorporate guidelines that will encourage and regulate the use of visuals. Dr. Verdinelli and Dr. Scagnoli's research aims to provide information so that visuals are more widely adopted.

### **Methods**

#### **Design**

This study used a qualitative descriptive design (Caelli, Ray, & Mill, 2003; Sandelowski, 2000). This design is used when descriptions of specific phenomena are desired. This design seemed the most appropriate considering that our goal was to bring to the forefront the experiences and perceptions of experts challenging their standard assumptions regarding norms and criteria for including visuals in qualitative reports. In depth interviews, follow up conversations and discussions on documents that show visuals served as data sources for this paper.

#### **Participants**

Seven experienced qualitative journal editors in the field were invited to participate in this study via email. The participants were selected based on experience as qualitative

researchers, and current or previous role as journal editor. Current and previous editors of qualitative research journals were invited to participate. Seven accepted the invitation. Professional email addresses were obtained from journal's contact information or school information. The names of the participants remained anonymous for confidentiality purposes.

## Data Collection

The study obtained IRB approval from the authors' professional affiliations. Both researchers conducted data collection. Data collection methodology included one initial interview and follow up communication regarding visuals or participant's review of the interview transcripts by email. Two interviews were conducted in person with the editors who lived in the same location as one of the researchers. Two interviews were conducted by phone, two interviews were conducted using Skype video and audio, and one interview was conducted by email. The editors' preference was followed in establishing the interview modality.

The semi-structured interview consisted of the following five questions:

- 1.) What is your view on the use of visual displays in qualitative studies?
- 2.) Which would be a case when it would be useful to have a visual display?
- 3.) Which would be key characteristics or features of a good visual display?
- 4.) How do you assess the usefulness or value of a visual display when you receive a manuscript? And
- 5.) Please give us examples of visual displays already published in your journal that you consider a good fit for the article. Please justify your selection.

The process for data collection started with initial contact with the editors, inviting them to participate in the study. Next, the researcher would agree with the editor on date and time for initial interview and mode: in person, by phone, via web conference (Skype), or by email. During the initial interview, editors were encouraged to think further about the use of visuals, and if they remembered or came across any visual that was not mentioned in the interview, they should save it. We promised to follow up, and request a copy or reference for sample/s of visual/s that they would like to suggest. Table 1 shows the timeline for data collection and analysis. Data constituted the content of the interviews as well as subsequent communication with subjects via email and the resources that interviewees provided in the meetings, such as references to articles or samples of visuals that were mentioned during the interview.

Table 1: Timeline for data collection and analysis.

Steps	1	2	3	4	5
Data Collection	Schedule interview	Interview	Follow up conversation by email	Participant review of text / transcript	
Data Analysis		Transcription and analysis of interviews	Additions to transcript	Review or confirmation of interviews	Thematic analysis, coding, final analysis

## Data Analysis

A general inductive approach to data analysis was conducted to report the participants' opinions on visual displays, the process of inductive analysis followed Creswell (2002) and is detailed in Table 2. An inductive approach helped to condense raw data into summary format

and establish links between research and findings (Thomas, 2003). Significant interview passages were assigned descriptive codes; a pattern coding was developed resulting from the clustering of the descriptive coding (Table 1). Main themes capturing the participants' opinions on visual displays emerged (Miles & Huberman, 1994).

Table 2: The coding process in inductive analysis (adapted from Creswell, 2002. Figure 9.4, p. 266, in Thomas, 2003)

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Initial reading/ listening interviews	Identify specific information	Label the segments of information to create categories	Reduce overlap and redundancy in categories	Create a model incorporating top categories
Script / Logs from interviews to 7 journal editors	Words, phrases full sentences on the topic of visuals in qualitative research	20 + categories	14 categories	4 categories in Classification of Visual Displays; 4 categories in Key Features of Visual Displays 6 Barriers to use of Visual Displays

Themes emerged from categories. Reducing overlap and redundancy helped identify top categories and main themes emerged from that process. After the categories and themes have been identified, we conducted a next round of reading and listening for confirmation of information and to identify possible missed topics. The whole process –identification, labeling, reducing overlap, creating themes and validating– was iterative (Braun & Clarke, 2006).

As an illustration of this process, this is an example of how we approached categories and themes. In Stage 2, when we were to identify specific information, we realized that more than one of the subjects in the interviews referred to “visuals” only as the information a researcher collects in the field: pictures, brochures, drawings, etc. We had to inquire then about the visuals that are displayed in a paper representing the analysis process. Our subjects agreed and provided rich details and ended in prolific interviews. The fact that in some cases the word “visuals” was not immediately associated with the researcher authorship through analysis, but with sources from the field, was revealing to us. Then we came to the conclusion that visuals might come from two sources, thence our choice of “source” as a theme in the classification of visuals (See Figure 1). As a result of the analysis, the results and findings are organized and presented as themes. We include details of what each theme represents and how we arrived to those in our analysis.

### *Verification of Quality*

In order to ensure quality of the research process, results were thoroughly discussed between the two authors. We use negative case analysis by analyzing negative or disconfirming evidence; rich and thick descriptions by using verbatim quotes that strengthened credibility, and clarification of researcher biases by exploring stereotypes, our previous knowledge on the topic, and past experiences that could have shaped our analysis or interpretation (Creswell, 2007).

## **Results**

Results are presented as themes that derived from the categories that we arrived at our analysis. The results of this analysis are presented in three segments under a theme: first our

classification of visual displays according to *source and target audience* (Figure 1); next, the *key features of visual displays* according to editors' views; and finally, under the theme of *barriers to the use of displays*, we classified and grouped the elements that can be considered obstacles to the use of visual displays in qualitative studies, always according to the data collected from interviews.

### Source and Target of Images

The first presentation of results refers to the classification of displays based on their origin and the audience they are intended for. The analysis of the interviews revealed that the participants referred to visuals in qualitative articles as the elements (drawing, maps, brochures, etc.) that were collected in field research, and later turned to the tables and other images that resulted from deeper analysis. Based on the participants' descriptions we interpreted that there is a clear distinction between the types of visuals used in qualitative reports, so we classified them according to the *source* of the visual and the *target audience* of the report or research article. The "source of the visual" refers to the origin and reason of the visual, the author of it, and the time when it was produced. For example, it may come from the field or as part of the data collection process, such as the case of pictures, kids' drawings, handouts; or it may have originated in the process of analysis of data, at the time when the researcher is making sense of the information collected. Such would be the case of graphics, tables, Venn diagrams, and other visuals that the researcher produces to explain or illustrate interpretation of the data. As participant 1 indicated:

There are all sorts of ways that people might use visuals images in and out themselves, like they might look at videos or look at advertisements, but they might also use them as part of interviews, and images might be brought by the researcher to the interview beforehand, or the interviewee has themselves; or the researcher asks the interviewee to create a visual as part of the research process... there are also visuals that conceptualize an analysis.

Seemingly, participant 7 indicated that a visual display can "provide a visual perspective on textual data or as a data set in its own right." Regarding the target audience of the visual, we determined that some visuals used in qualitative articles or reports are meant to reach a very informed and academic-only audience, such as the reach of the academic journal; some other visuals are created to reach a larger and more diverse audience, such as visuals that are used in infographics or magazine reports. As participant 5 indicated:

Let me differentiate between academic research and commercial research. In commercial research which we don't see published in academic journals, I think there's a lot more visualization because you are presenting the results to your client; and I think, there, you see much more use of pictograms, more posters, and more visual presentations where you see cartoons and other images... you don't see this in the academic side.

Considering the source of the image, and based on what we learned from the words of the editors of qualitative journals we have classified them as *field images* and *interpretations*. Considering the target audience of the visuals, we have classified them as *academic* and visuals *for a diverse audience*. A more detailed description of these classifications follows Figure 1.

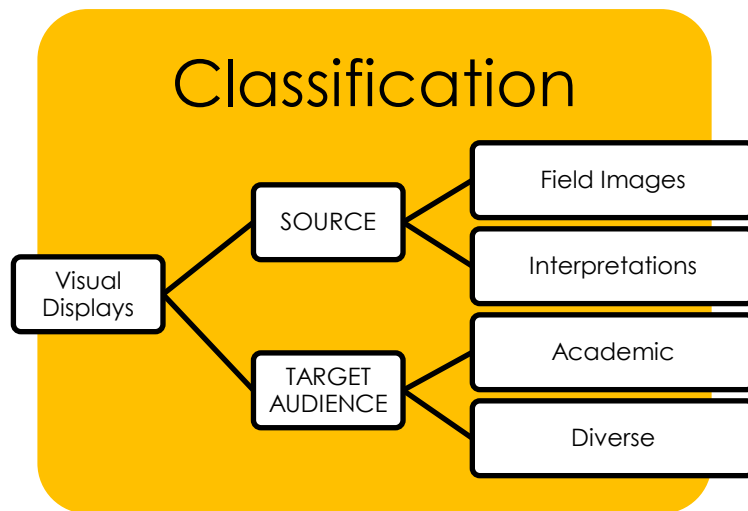


Figure 1: Classification of Visual Displays according to source and target audience.

### *Field Images*

Derived from the theme of sources of visuals, we categorized them as *field images*, or those visuals that are an intrinsic part of the research study, such as an artifact or evidence gathered in the data collection stage. Those that illustrate or show an example and/or authentic information related to the case or study being reported. For example, (a) a photograph of a place, of a community, of a situation; (b) a map or a building blueprint to show location, distribution, distance, relationship between things or spaces; (c) a kid's drawing to provide an example of the case being studied; or (d) elicited graphic productions. These types of visuals have been received with articles for a long time, and editors determine if they are valid or necessary to the story or the report, and they are usually concerned about the number of images that can go with a paper. If they add information or serve as a clear pictorial representation of the case, then they agree on the relevance of some images that go with the study. For example, (see Fig. 2) one of the editors used the article "Using Photography to Understand Change and Continuity in the History of Residential Care for Older People" (Rolph, Johnson, & Smith, 2009), to highlight the importance of the photos in that a study, "...they [the photos] gave the readers a sense of the history, of the time that the study was reporting..." (Participant 1).

The same participant indicated that "the addition of photographs or kids' drawings is attached to emotions and feelings that the author has captured in a study and it is common to see *too many images for one case*." Then editors may recommend reducing the amount or selecting the best quality pictures if there is replication or redundancy among them. Photographs are usually well received by editors in qualitative journals, most of them referred to photographs as a (sometimes) necessary element to illustrate an article. Drawings, another common visual in qualitative studies, are sometimes part of the data collection of a study. Therefore, they are used in the final report of the study as evidence of what was studied. Another editor mentioned maps or demarcation within a geographical space, "it is logical and an image will present it more authentic and accurate than just words, the image is almost necessary" (Participant 3). Therefore, *field images* serve to illustrate or convey (a) what the researcher *saw* in, or during the study, (b) the participants' work and/or productions, (c) the subjects or context of the study, its location or its characteristics.





Figure 2: Example of a field image. Adapted from “Using Photography to Understand Change and Continuity in the History of Residential Care for Older People” by S. Rolph, J. Johnson, and R. Smith, 2009, *International Journal of Social Research Methodology*, 12(5), p. 424. Copyright 2009 by Taylor and Francis, Ltd. Reprinted with permission.

### *Interpretations or Representations: Researcher Interpreted Visuals*

The second category derived from the source of visuals is what we called *interpretations* or *representations*, or the visuals created by the author/s of a manuscript to demonstrate the author’s representation of a situation, relationship, or process. They are not what the researcher *saw* or found in the study, but how the researcher interprets and wants to represent findings after deeper examination and interpretation of the data. These visuals involve analysis and actual creation of a visual that epitomizes the story as the author sees it. As participant 1 said “A visual representation that communicates the holistic meaning of their themes.” Editors shared some examples (Figures 3-7 below) that they found relevant in articles of their review. They emphasized the importance of the use of these visuals in the forms of concept maps, quadrants, networks and other shapes to show the researcher’s interpretation of relationships, processes, contextual interactions, associations among elements, and situations.

### **Target Audience**

Besides the difference of images according to the source, we also classified images according to the *target audience* and the nature of the research that the study points to. There is a difference in the use of visuals between qualitative studies that target an academic audience and those that are used to inform or appeal to a more diverse audience. Miles and Huberman (1994) provided a good framework for qualitative representation of data in terms of academic research. Today we see multiple visual representations of qualitative information for diverse audiences, including those called *infographics*, which aim to show data findings in a short and visually appealing way to the community.

Comparing of these two types of visual representations, we realize that the differences in display and visual quality of these data visualization rest in the skills and resources used to produce them. Visual displays in academic papers, produced by experts in a field, focus on the content and the interest in demonstrating the validity and reliability of the research, and they focus on academic audiences. Visual displays that represent findings and are used for general information (i.e., brochures for health prevention, infographics, etc.) target *diverse audiences* and have multiple objectives –including advertising– and are produced by graphic artists who interpret the information provided by the researcher and transform that in a visual message that appeals to the audience it addresses. The creation of posters by academic researchers is the closest use of visuals that target not only academics but may also reach diverse audience. It is

a labor-intensive process and to produce an appealing image is an art in itself. Academics rarely use graphic artists for the presentation of their research, and the tools in Microsoft Office are probably the most used tools to give professional looks to academic visuals, as opposed to commercially produced graphics used in infographics or visuals for diverse audiences. Participant 5 indicated the differences between the production of a visual display in a non-academic context and in the academic context.

The skill set that the commercial team will have such as graphic designers and so forth you don't see in the academic side. So what you see in the academic side, just from the software perspective, probably most likely the use of Microsoft Office, like Smart Art, basic templates to create Venn diagrams, or graphs showing relationships, or hierarchies, or those sorts of things, and maybe, some of the Adobe packages where you get something a little fancier.

### **Key Features of Visual Displays**

Understanding the criteria used by editors to determine appropriateness and relevance of a visual display in a qualitative article was one of the drives for this study. From the editors' insights, we learned that visuals that share some common characteristics and functionalities are usually considered for a manuscript. This segment displays the categories under the theme: key features of visual displays according to the editors' views, and gives insights on the process of approval of visuals in manuscripts submitted for publication. Verbatim is used to illustrate the classification.

#### *Communication and Additional Value*

When asked when it was useful and appropriate to incorporate a visual display in a manuscript or research piece, a main idea that editors agreed upon was the criterion of *communication*. The following quotes are verbatim from the interviews.

Is the visual display providing the reader something that cannot be communicated as well if we only used words? Is it just window dressing? Or is it just the same meaning as text? Is the visual capturing something that is more unique that cannot be captured just with words? A visual display is useful when it communicates something that goes beyond the text and that cannot be communicated as well with only text. (Participant 3)

Often you can accomplish a lot with the use of a drawing or a visual that is the indication of a habitat, a map, a school, something easily recognized in a visual form.... That kind of visual is particularly valuable in qualitative reporting. (Participant 4)

The use of an image that represents relationships and clarifies concepts may be very useful in qualitative analysis; usefulness has to be judged based on the *situation* or context when it is presented. Essentially, the use of any visualization has to add value to what has already been presented in words. The downside in visualization is the repetition of the information; it doesn't add any insight, any relationship or how things were clustered. Visualizations should add value, should help to communicate what the researcher produced. (Participant 5)

“In other words, the visual created based on the researcher's analysis should show a *metalevel of meaning*, a meaning that raises above the level of theme” (Participant 2).

When we think about this criterion of communication applied to the use of visual displays –something that cannot be communicated as well if we only used words–our analysis shows that this clearly applies to field images. The use of photos or drawings is relevant to put the reader in the context of the subject studied and/or the situation where and when the data was collected. For example, kids’ drawings collected in the classroom may illustrate a study about children in grade school; or images of a hospital floor plan would exemplify findings in a study about location of nurses and quality of care. Figure 3, for example, shows field images gathered by the researchers when collecting data for their study on people’s selections of avatars. Their field images were also used in the data analysis to classify their subjects: False persona, enhanced persona, and true persona; and the images illustrated the classification they created. These visual displays allowed readers to portray the researchers’ classification more easily than if they had only been presented in words.



Figure 3: Example of relevant use of field images. Adapted from “Real Projects, Virtual Worlds: Coworkers, their Avatars and the Trust Conundrum” by M. F. Lohle and S. R. Terrell, 2014, *The Qualitative Report*, 19(15), p. 12. Retrieved from <http://nsuworks.nova.edu/tqr/vol19/iss8/1> Copyright 2014 by The Qualitative Report and authors of the article. Reprinted with permission.

A much more complex task is to decide whether a researcher interpreted visual display meets any, some or all of the following purposes: (a) attain a level of communication that complements what is said in text, (b) add value, (c) reach a meta-level of meaning, and/or (d) illustrate the topic without repeating the information provided in the text. One of the editors acknowledged the difficulty in attaining the communication level. Interpretations or representations are “the ones that referees tend to challenge because they conceptualize an analysis, ... and interpretation of these representations may not be so straightforward” (Participant 1). Referees have to agree that the researcher’s representation is true and necessary to what the researcher is explaining in the paper.

### *Logical and Coherent Structure*

The study participants also agreed that another key feature that makes visual displays relevant has to do with its *structure*. “An image communicates something... Or a concept map;

there is a structure on a concept map you get to see where the circles are; and the circles have a logic,” Participant 1 said. And added that the challenge for the researcher was to use a visual to “represent key concepts and creating relationships between them, or else we get lists.”

Editors agreed that visuals need a *structure* that is logical and will make it easier for readers to interpret and understand the writer’s message as they interact with the content of a study. One of the participants gave an example as “if it is a circle, it should be clear what the different parts of that circle represent and if there is movement, it should follow a logical sequence” (i.e., clockwise, counterclockwise, does it have words, arrows for direction, etc.). She also referred to a matrix, or a quadrant, and how easy it would be to understand the words and the blanks in it for the informed or not so informed reader. To illustrate her example of a logical and solid structure, the participants selected Figure 4 in which the authors were able to include the voices of the students and the staff in relation to four elements of program theory. The participant added “it is interesting how the diagram represents both perspectives helping the reader make *comparisons* between two populations’ opinions: the students and the staff. In the inner circle, they represented the staff, and the outer area, the students’ opinions”.

## STAFF AND STUDENT UNDERSTANDINGS OF THE NanoDARE PROGRAM

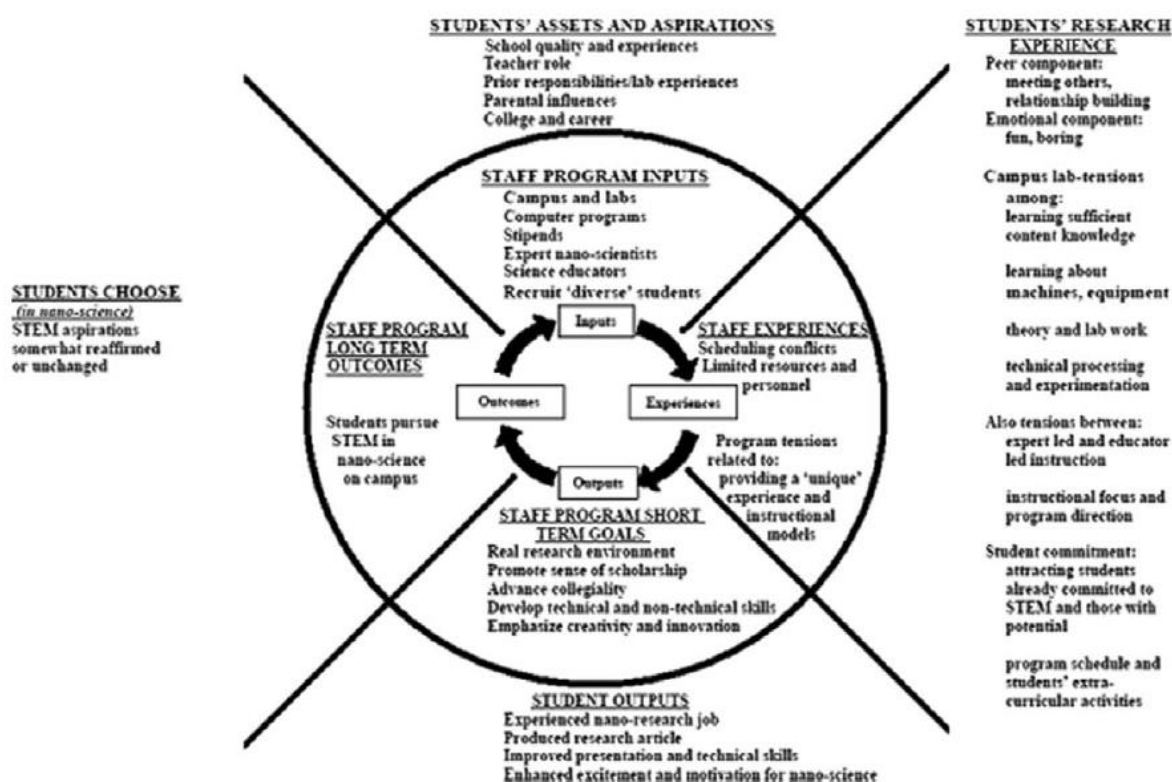


Figure 4: Example of logical and organized structure in a visual display. Adapted from Johnson, J., Hall, J., Greene, J. C., & Ahn, J. (2013). Exploring alternative approaches for presenting evaluation results. *American Journal of Evaluation*, 34, 489-503. doi:10.1177/1098214013492995. Copyright 2013 by Sage Publications. Reprinted with permission.

Figure 4 portrays a level of comparison and input from study participants in a unique diagram that combines logic sequence and organization. This visual could be classified as a modified matrix, according to Lofland, Snow, Anderson, and Lofland’s (2006) definition of matrices. This modified matrix is less static and seems more dynamic than the regular matrix.

### Aesthetics: Style and Color

Another key characteristic of visual display quality is *the aesthetics of a diagram*. “Visuals need to have a certain type of *aesthetics*: use of color and font and show some flow so that the reader can easily understand the relationship among the different elements of the visual,” (Participant 5). Often times, authors use the color more from an aesthetics point of view and maybe to show some difference, but colors are not meant for analytical difference, for example they use a blue and a red, but red does not mean something special, neither does blue. In the following example provided by participant 5, the researcher used grey, blue, light blue and light yellow with arrows in bold blue and red, the use of color creates a nice impact, but the choice of color does not hold any particular meaning.

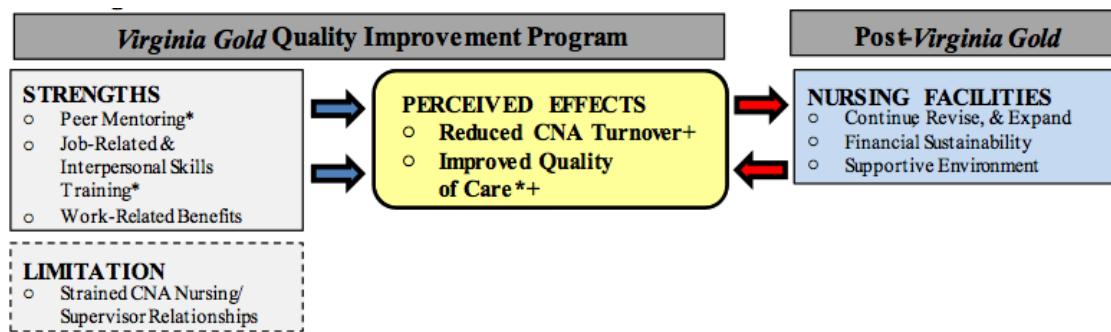


Figure 5: Example of use of aesthetics represented in the use of color, shape and movement. Adapted from “An Evaluation of Virginia Gold: A Medicaid Program to Improve Nursing Facility Quality of Care” by G. A. Craver, A. K. Burkett, and K. E. Kimsey, 2014, *The Qualitative Report*, 19(13) p.11. Retrieved from <http://nsuworks.nova.edu/tqr/vol19/iss13/1>. Copyright 2014 by The Qualitative Report and authors of the article. Reprinted with permission.

At a deeper and more sophisticated level, the color is an extra presence that contains some logic and meaning; or, at least, it guides the reader to more relevant aspects in the diagram and to pay particular attention to some specific areas. In Figure 6, one of the participants provided an example of aesthetics that shows different shades, bolded square borders, and capital letters to indicate different levels of relevance and importance.

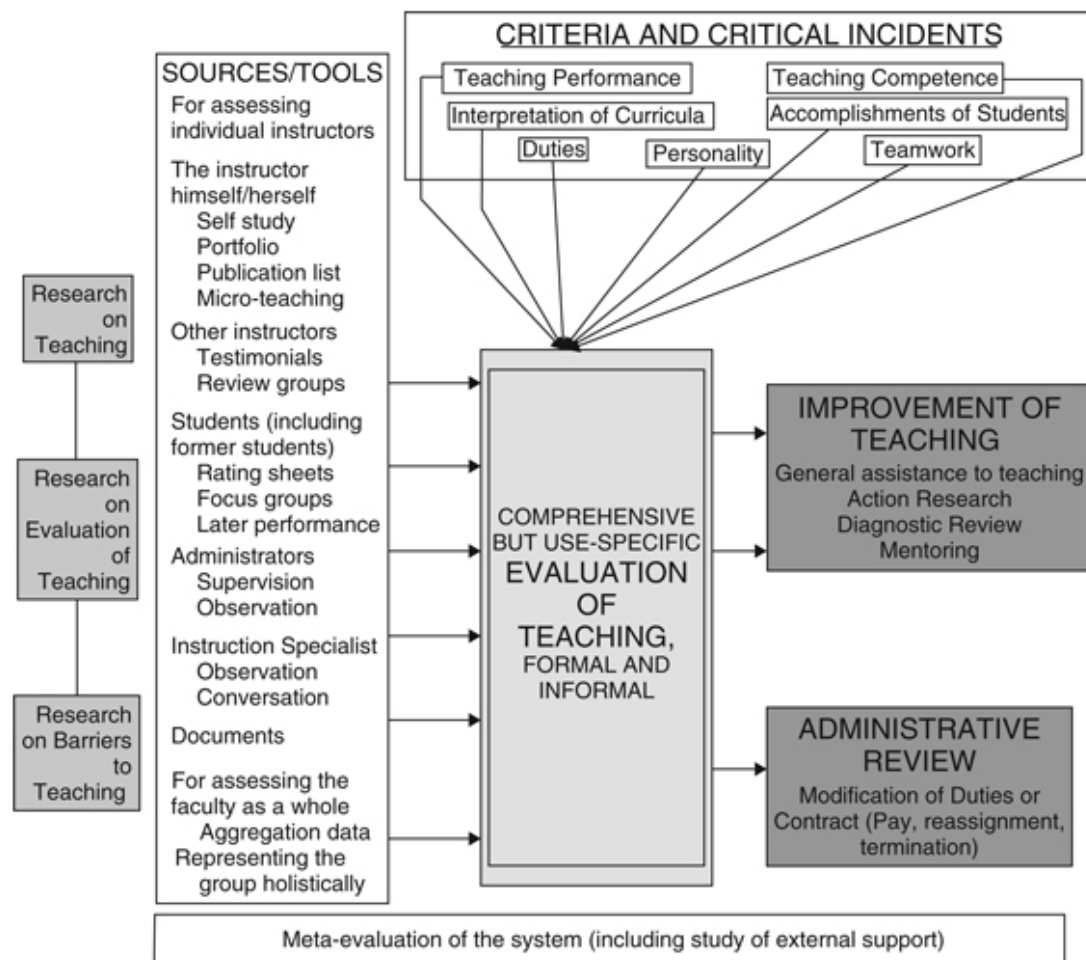


Figure 6: Example of aesthetics by use of bold, shape and shades of grey. Adapted from “Assessing the Quality of a University, Particularly its Teaching” by R. E. Stake, G. Contreras, and I. Arbesú, 2011, in C. Secolsky and D. B. Denison (Eds.) *Handbook on Measurement, Assessment, and Evaluation in Higher Education* p. 8. Copyright 2011 by Taylor and Francis, Ltd. Reprinted with permission.

### *Simplicity*

Participants identified *simplicity* as a recommended feature in visual displays. The simplicity is the “capacity to transmit easily and quickly the information the researcher wants to share with readers” (Participant 7). Visuals can be used to show progression to complexity, for example, in terms of someone’s experiences; or to show significant qualitative differences, as Participant 5 said, “visualizations work well when the author is showing synthesis or showing how the components of the results function with one another.”

As an example of simplicity, Participant 7 shared a figure to exemplify his views (see Figure 7). In his view, Figure 7 is an image that illustrates the concept of *simplicity* that he was referring to.



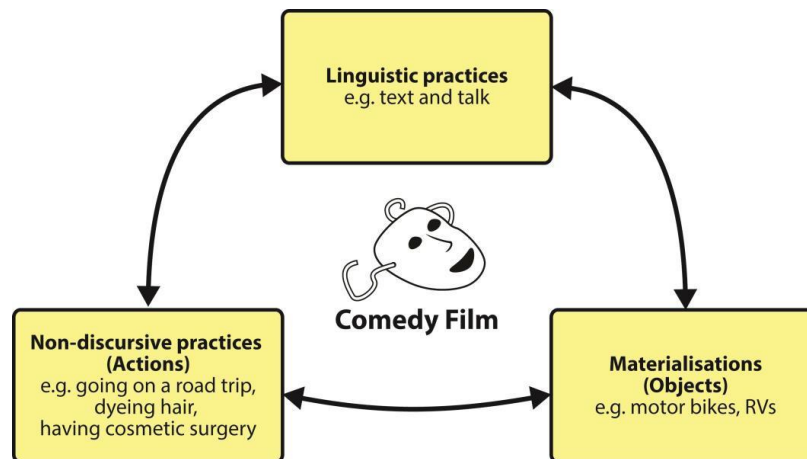


Figure 7: Example of simplicity in a visual display. Adapted from “Representations of Middle Age in Comedy Film: A Critical Discourse Analysis, by M. Gatling, J. Mills and D. Lindsay, 2014, *The Qualitative Report*, 19(23), p. 3. Retrieved from <http://nsuworks.nova.edu/tqr/vol19/iss12/1>. Copyright 2014 by The Qualitative Report and authors of the article. Reprinted with permission.

### *Judging the Use of Visual Display in a Manuscript*

When focusing on the process of judging the use a visual display in a manuscript, their views lead to conclude that making a decision and accepting visual displays is part of the multi-layered process that goes from the referees to the editor to the publisher. They agreed in the concept that the referees are the first step towards making a decision on the appropriateness of visuals in the context of a manuscript, not only the relevance in relationship with the topic, but also the amount of visuals in one paper. Then they may suggest revisions or question its use to the author. “...It is a fact that these types of conceptualizations of data will be more challenged by referees that straightforward representations.” (Participant 1).

The final use of visuals in a paper, depends not only on the referees’ acceptance of them, but also on the authors’ decision to include them or not. In some cases authors feel discouraged by referees’ comments on their visuals and they decide to take the visual out of the text completely. It may be out of frustration that their representation of the situation is not clear to a reader; it may be due to lack of skills or resources to produce a more clear representation that will convince the referees of the relevance of the visual; or simply that the time that went from first submission to the moment when a second look is recommended, the researcher gets the opportunity to remove himself/herself out of the paper and judge with a more critical eye, deciding that the visual is not needed. One of the editors said “Sometimes the author is more inclined to believe that the visual is more valuable than it is. The visual may be more emotionally attached to the author than a flow chart. Although quality of visuals is often in time disappointing.” (Participant 4). At the end, visuals go through this multi layered process, that starts with the referees looking at value and relevance of the visual regarding the text, and its situation in the study that it represents; followed by the editor who will agree or recommend about the amount of visuals in a manuscript; and ends with the publisher who will deal with the clarity of the image in print or digital format.

### *Barriers to the Use of Visual Displays*

From the editors’ insights, elements that can be considered obstacles to the use of visual displays in qualitative studies were identified. Those categories were grouped under the theme of barriers to the use of visual displays. These are limitations imposed by lack of skills or

training, shortage of examples, or the type of analysis conducted by the researcher. These are the categories used to represent those barriers or limitations.

### **Skills and Training**

Editors identified the lack of skills, resources, or training as potential reasons why researchers do not use more visuals or do not create more clear representations. Our participants indicated that there is little guidance on how to construct a visual display both in formal courses on qualitative analysis, or through regular training. As one of the editors mentioned “[I] point him or her (the author) to some references. Because we need help; for most of us this is not intuitive... Not everyone feels an artist, not everyone feels they can speak in that visual language” (Participant 3). The lack of training can be related to the lack of knowledge on “graphic design” that seems to deflect researchers’ intentions of creating visual displays. Little emphasis is placed in graduate courses in this topic, “We get training on how to design a study, not necessarily on how to design the final report” (Participant 5). There is also a lack of knowledge or training in graduate school on the value or importance of displaying results graphically “... because qualitative research doesn’t use it very often, it doesn’t get the attention it deserves. If we look at the most common textbooks used to teach qualitative research we’ll see that they don’t emphasize the use of visual displays.” (Participant 2). In sum, most of the editors agreed that visual displays are underutilized in qualitative research and that lack of skills and training may be one of the reasons for that.

### **Shortage of Examples, Incentives or Models**

There is a paucity of visual displays in qualitative studies to use as a model and there are no interventions or suggestions from editors to guide in the use of visuals in qualitative research. When asked whether the editors invited authors to create visual displays of their work, they mentioned that the display should come out of the researchers’ intentions and own analytical process. Imposing the use of visuals would potentially alter the researchers’ purposes. “We respect that there is their papers that they are turning in, and now the visualizations are going to change their results, we wish they have been doing some drawing...” (Participant 5)

### **The Type of Analysis Conducted**

Participants identified that the use of diagrams and visuals to represent results is linked to the type of analysis and data interpretation conducted. When the results of a study are limited to content analysis or the creation of lists of themes, there is not much room for a representation or meta-meaning. Participants provided a constructive criticism to qualitative research that limits its scope to listing themes in isolation without providing a meta-level of interpretation and depth and without linking in a more holistic way the themes or results. Many qualitative studies include basic content analysis in which the end result is to create categories and themes. The editor-participants in this study said about this in their own words: Participant 5: Other research based on qualitative traditions such as grounded theory, ethnography or phenomenology can be more literary and the end result can be to produce a model, a theory, or more integrated results that can lend to creating more visualizations. The visualization should be built into the analysis process; then, the use of the display comes more natural. The visualization is not just a reporting technique; it is how the researcher saw the results and how the researcher organized the results.



Participant 3: Qualitative research stops short of doing its job when all we get are list of themes, we need a story we need to see how those results go together ..., we almost *need* to think of other ways of presenting what are likely complex interrelationships among various findings or themes in a study, but we as inquirers need to be challenged to do so.

Participant 2: In general, people doing qualitative research come up with themes and do *themes*. I think that the greatest weakness among people doing qualitative research and people writing articles is limiting the *interpretation* of those themes or those results; well, how do those themes fit together? Is there some way in which you can give us a list of representations of those themes? The themes are not standing alone, as they are often treated. In terms of putting together holistically, in some kind of meaning, I think that visual displays are helpful.

## Discussion

The use of visual displays in academic qualitative studies has not varied much in the last ten years (Verdinelli & Scagnoli, 2013) although there are more tools and technologies available to make that possible. In an era when visuals are welcomed by a younger generation of readers; and they have become easier to produce thanks to the accessibility and affordability of software; it was still not clear why there is scant literature or support to the use of visual displays in findings and results in qualitative studies. Through this study we realized that organized publications would take longer to incorporate more visuals in qualitative articles because it will take more education, more modeling and more encouragement. We learned that the main possible reasons for lack of visual displays in qualitative articles may be attributed to the scant training in graduate school on how to create visual displays, how to use software to generate visuals, and the lack of tradition to use visual displays in qualitative research. All participants agreed about the relevance and need of visual displays as complement of text only studies or as alternative representations of data. Some of them had already taken steps towards providing more information and education about it to their students. Some granted that they view the use of visual displays as a researchers' individual decision. In many cases, this was the first time they had a conversation regarding the use of visual displays in qualitative research, and then the reaction to that was favorable.

Teaching how to create visual displays does not seem to be an easy task. Understanding how to build good visuals, and used balanced approaches in shapes and color to place correct emphasis and communicate properly takes training. For example, experts say that visuals have to "reflect a balance, a proportion, a sense of relevant scale" (Tufte, 2001, p. 177). At a basic level, the use of color provides a nice and pleasant visualization, "... color does not have a particular meaning, but it enhances the visualization; it enhances the aesthetics of the visualization." (p. 177). Some people might be more visually literate than others and could make more meaning from information presented in a form of an image (Le Roux, 2009). For the visual literates, creating their own images to convey messages might come more easily or intuitively. However, most people might not have this skill. Given the lack of guidelines and structure on how to create visuals, teaching this as part of a qualitative research curriculum may become a challenge for educators. Thus, an instructor faces two main potential challenges in teaching how to create interpreted visuals: the first challenge is how to instruct a student to generate an image that represents research findings, the creative act itself; and the second challenge is how to use specific software to portray a meticulous, clear, and quality image. The creative challenge might be the most difficult one.

We expect that the use of visuals in qualitative studies will increase significantly in the next few years given the availability of software tools for development and the familiarity that new generation of researchers will have with digital applications to create images. We believe

that future curriculum will have to include research courses that include training in higher order thinking skills to help students or researchers interpret data and to create visuals out of results or findings; as well as courses that encourage collaborative work among students from different disciplines. There is a real need to encourage academic programs to update the focus of skills and competencies that students acquire in qualitative research courses in favor of adding topics that include focus on digital literacies, use of qualitative data analysis tools, and interpretation of data through art.

Learning about key features in visual displays from the editors' insights is critical to better understand the criteria that may be used to judge their relevance and appropriateness for inclusion in a manuscript. A visual display should not be overloaded with information or small unreadable font; it should add only what cannot be shown in text. Visuals are part of a larger work and they need to complement the rest adding value (and not confusion) to help the reader see how all the pieces fit together. While working on this study, we became more aware that, not different from text, visuals also undergo scrutiny by referees who may differ in the criteria for interpreting their value to complement an article.

### Limitations

The number of participants was adequate for the purposes of our study; however, a larger sample size could have enriched our results. A higher number of participants were invited to our study, but only those who participated in this project consented to share their views. This might reveal that those who participated had an interest or awareness on this topic. Some editors might not consider this a significant topic and further research will be needed to understand this. The concept of visual display is a broad concept and participants interpreted this concept differently. For example, one participant came to the interview prepared to discuss the use of photography as one of the most relevant visual displays used in the field, but did not extensively elaborate on the use of interpreted visual displays. A varied array of perspectives on what constituted a visual display was recorded, which enhanced our findings. Further explorations could concentrate more thoroughly on each type of visual displays used in qualitative research.

### Future Directions

Our conversations with journal editors and study of the recent literature on the topic of the use of data visualization led us to the conclusion that there are several new things to look for in a near future:

**(a) Support and openness to the use of visuals by journals.** Interest towards the use of visual displays that conceptualize the discovery in the data analysis could be encouraged, given that data visualization has become more abundant in publications and the tools to produce them are more ubiquitous. Either specific software for producing the images or hardware such as scanners, cameras in your cellphone, or even touch displays in tablets or phones that allow to draw as if drawing on a piece of paper.

**(b) Replication of what is happening in the field of mixed methods** where there is acknowledgement to the use of alternative representations to capture results or analysis of mixed methods analysis (Onwuegbuzie & Dickinson, 2008). Now, due to the fact that in mixed methods there is an active intention to "show relationships between the quality and the quantity of data collected and there is data triangulation, it is more common to see visuals as a way of linking the two forms of data." (Participant 5).

(c) **A technically skilled and equipped generation** of researchers born as digital natives, who are more familiar and skilled to create images in different media and use in digital and print presentations.

(d) **Interest in taking advantage of new tools and strategies to be creative.** Qualitative researchers are starting to feel challenged to produce something more visual in an environment when almost everything is visual. “Qualitative research stops short of doing its job when all we get are list of themes, we need a story we need to see how those results go together ..., we almost *need* to think of other ways of presenting what are likely complex interrelationships among various findings or themes in a study, but we as inquirers need to be challenged to do so...” (Participant 3)

(e) **New options and opportunities** to display visuals in limited spaces. Journals are no longer limited to the printed version (Fig. 8).

Table 2. Self-strategies used by college students.

CSV PDF **Display Table**

Actively navigating the transition into college: narratives of students with learning disabilities

David J. Connor\*

DOI: [10.1080/10020780.2012.700208](https://doi.org/10.1080/10020780.2012.700208) **Published online: 29 November 2012**

Table 2 of 2  
Table 2. Self-strategies used by college students.

	Ankur	David	May
Academic experience	<ul style="list-style-type: none"> <li>Being independent</li> <li>Keeping organized (dates, times, assignments)</li> <li>Registering with the Office of Support Services for Students with Disabilities</li> <li>Using the option of extended time</li> <li>Developing an informal rapport with professors</li> <li>Self-encouraging</li> <li>Taking prescription drugs strategically</li> </ul>	<ul style="list-style-type: none"> <li>Dedicating himself to work</li> <li>Working with family and friends to help with time management and organization</li> <li>Aligning himself with professors</li> <li>Being proud of academic proficiency (papers as trophies)</li> <li>Registering with the Office of Support Services for Students with Disabilities</li> <li>Taking prescription drugs strategically</li> </ul>	<ul style="list-style-type: none"> <li>Carefully planning her own support system</li> <li>Scheduling one class at a time</li> <li>Attending The Reading &amp; Writing Center</li> <li>Securing a Reading-Writing Tutor</li> <li>Incorporating her strengths in learning styles</li> <li>Using tools, e.g. tape recorder</li> <li>Balancing time</li> </ul>

Figure 8: Example of alternative ways to display images in online qualitative journals. Adapted from “Actively Navigating the Transition into College: Narratives of Students with Learning Disabilities” by D. J. Connor, 2012, *International Journal of Qualitative Studies in Education*, 25(8), 1005-1036. Copyright 2012 by Taylor and Francis, Ltd. Reprinted with permission.

Now they have more opportunities and space to include the full version of a visual in the text, or they present alternatives to visual displays that are not embedded in the text but linked from it. In online journals, as shown in Figure 8, the journal is using the advantages of digital tools to display visuals from boxes as they are clicked on.

Note: The authors want to thank all the participants of this study for contributing their time, perspectives, and points of view on the use of visual displays. Without their interest and wisdom this study could not have been possible.

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