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METHODOLOGICAL PRESCRIPTIONS FOR THE USE OF VIDEO RECORDING IN EDUCATIONAL RESEARCH

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Abstract. The purpose of the study is to identify some technical and methodological prescriptions to facilitate videorecording as a tool for educational research. Existing guidelines for using videos in social research are enriched with information from in-depth interview with experts, the analysis of challenges and requirements of filming during an ethnographic research in Mexican rural schools in the Mayan zone of Yucatan. In each one of these experiences, both operational and technical requirements were identified and reported with the purpose to facilitate the use of videorecording as a research tool. Pragmatic considerations on how to improve the analysis, coding and interpretation of information retrieved by video in educational research are posited. In addition, guidelines are presented on how to use the video as a final research report that reaches other scholars and the general public through social media. Finally, we assert that training is needed in educational researchers to improve the use of videorecording in educational research.

Keyword: Videorecording, research tools, video graphic data.

PRESCRIPCIONES METODOLÓGICAS PARA EL USO DE VIEDOGRABACIÓN EN LA INVESTIGACIÓN EDUCATIVA

Resumen. El objetivo del estudio es proponer prescripciones metodológicas para el uso del vídeo como herramienta en la investigación educativa. La revisión de los lineamientos existentes en la literatura, se enriquece con información de tres experiencias en torno a la videograbación. La primera recoge opiniones y recomendaciones sobre el uso del video para la colección de datos a través de entrevistas a profundidad con expertos. En la segunda, se analizan los videos colectados durante un estudio etnográfico en escuelas rurales de la zona Maya de Yucatán; y en la tercera, se reflexiona sobre los retos de elaborar un video que sirva como el informe técnico de esta investigación. En cada una de las experiencias se recuperan elementos operativos y técnicos que pudieran orientar la realización de videos para colecta de datos, así como algunas consideraciones para el análisis, codificación e interpretación de la información videograbada. Además, se presentan lineamientos técnicos, éticos y pragmáticos para difundir los resultados de investigación a través del video. Se concluye que el video es una herramienta versátil de colección de información y una forma eficaz para presentar un reporte técnico de investigación ya que facilitan la difusión de los resultados a través de redes sociales haciendo asequible los hallazgos tanto a la comunidad académica como al público

en general. Por último, se identifican necesidades de capacitación en los investigadores para el uso eficiente del video.

Palabras clave: Videgrabación, herramienta de investigación, datos video gráficos.

Introduction

The purpose of this work is to analyze the methodological and pragmatic implications of the use of video recordings for the recording of data and information in educational research. In this work, video recording, or simply video, is defined as an audiovisual record structured in a clip, which, through sequences, represents a part of reality addressed during the research process. Video recording is a mechanism to collect information and specific data useful to derive results, conclusions, recommendations and new lines of research (Ramírez & Sanchez, 2015).

Kissmann (2009) recognizes that video has played a relevant role in the development of the history of the social sciences and adds that its use as a methodological tool has greater potential, since video provides opportunities to theorize and reflect on the evidence of previously unexplored forms.

The boom in technologies has allowed a previously unimaginable use of videorecording of everyday events, both spontaneous and planned. Payant (2014) recognizes that the applications available on the web have reduced production costs and times and that video is used much more in educational research. In addition, the presence of video cameras in the street, school, home and institutions make the review of audiovisual records a natural action since they capture moments of reality whose analysis allows a better understanding of social dynamics.

Goldman, Pea, Barron, and Denny (2006) state that the use of video as a data collection instrument has increased significantly, particularly in multidisciplinary studies where various researchers coexist and integrate through video, each one analyzing and interpreting the same register of reality from his point of view. The essence of video's contribution to research is the information encoded in images that provides a detailed record of the observed phenomenon, providing more detail, depth and repeatability, which does not exist in direct observation.

Mcbride (2020) warns that using video to collect information in the social sciences can represent a considerable investment of time, but that it is profitable, since it allows recording information and preserving it for analysis in a much better way than other fieldwork methods.

Carey (2012) assures that video is an aid for the recording of reality that allows the approach to the data collected in an intentional way and that allows the information to be reproduced on multiple occasions. For example, in visual anthropology it is intended that the researcher carry out a discourse analysis that gives meaning to the image (Martínez 2009). This can be applied to educational research whose purpose is to understand the nature of the educational act, focusing on students and teachers in the school context.

The video recording of the educational act allows to return to the source and review, reconsider and amend any detail that could have escaped the researcher at the

time of observing live, such as: an expression, a body posture or a gesture. This is an easy way to share information, store these digital recordings and play them back in sequence, and facilitate multidisciplinary research. However, there are few recent publications and studies that weigh the uses, advantages, limitations, ethical implications and other relevant aspects to consider in the educational research process.

In order to use video in research, it is necessary to consider recording techniques, times, costs, permits and consents, as well as to foresee some of the effects of the registration itself, on the behavior of the participants, together with the indexing and disclosure of these data, their own of video graphic data. Video is an auxiliary for the recording of reality, which, when captured and reproduced and that allows the information to be controlled and reproduced on multiple occasions, facilitating the researcher "... gain analytical and reflective distance by being able to control both the composition, the recording and the reproduction of information" (Goldman, Pea, Barron, & Denny, 2006, p. 46).

Visual recording in the school setting is facilitated with state-of-the-art mobile or high-definition portable cameras. Likewise, on the web there is free access to applications to edit from a personal computer, or to analyze the evidence collected in the field using any of the video graphic data analysis programs. Digital technology allows the speed of video recording to be manipulated to give it its apparent naturalness in the recording of events, from different perspectives (Hubert , Bernt , Raab , & Soeffner , 2006)

Before choosing video recording as a tool, it is worth asking yourself: When is it necessary to use video to record evidence? How to use video in a research project? What methodological proposals are relevant to analyze the records? What are the ethical implications of the use of video graphic evidence? Is this the best way to present the educational research report?

Method

Information is collected on video recording in the educational research of three experiences. In the first phase, six in-depth interviews were conducted with three researchers from Mexico, France and Colombia.

The second phase consisted of analyzing the video graphic evidence of a research project and documenting the filming during an ethnographic study in schools in the Mayan area of the state of Yucatán (Gómez, 2010).

In the third phase, the process of preparing a video that would serve as a final report of the investigation was made and documented.

From the records, reflections and analysis of the discussions of these phases, a series of prescriptions for the use of video in educational research are derived, which are discussed below.

When to use video in educational research?

The consensus of the interviewees in the first stage recommends the use of video recordings to the extent that it contributes to recording the facts and helps to produce knowledge about the nature of the educational act, since it captures a structural sequence

in real time that can characterize an interaction among educational actors. Then it is possible to capture the interaction of the characters, the evaluation of the phenomenon in time and sharpen the observation of spaces, facets or specific acts of the educational phenomenon analyzed.

Downing (2008) affirms that the primary purpose of video recording is the retrieval of visual information, and Pink (2001) recommends that it is possible to use video when “it becomes a tool that helps informants to produce narratives that intertwine the visual (gestures, attitudes, postures, configuration of space) and verbal representations” (p. 66). Video is used essentially for the study of the learning environment, school life and typical instruction, allowing the researcher to capture the time and the achievement of structures, characteristics, actions and interactions.

For example, to observe how teachers work for their improvement, so-called micro-teaching has been used. In this technique, the teacher is filmed and then the video is presented to him to discuss the characteristics of her performance. For example, Calandra, Brantley-Dias, Lee, and Fox (2009) document their experience filming teachers giving real or fictitious classes and providing feedback on their performance. They point out, however, we must consider biases in the performance of teachers when they are aware of being recorded (Carey, 2012).

Derry (2012) refines micro-teaching by generating a data bank that she calls video-ethnographic and provides a broader idea of teaching in a school.

Another use of video recording in school is the analysis of the development of the class group. Mehan (1974) was a pioneer in this dynamic, his methodology consisted of filming a class for a year “with the intention of describing the natural environment of the students” (p. 4). The analysis, organization and categorization of the data collected, constituted an unpublished methodological corpus for the time. Its object of study was the behaviors of educational actors, their levels of epistemological understanding and their critical thinking dispositions.

It is difficult for a teacher to obtain a photograph of the interior of the group that shows the interaction of the students and how the presence or absence of the teacher influences it. Bowman (1994) affirms that video recording allows the teacher and the researcher to gain a look at the interrelation with the students, which makes it “a powerful research tool (p. 3).

Video recording can also be used to record the operation of an institution. However, the methodological, ethical, and legal difficulties of recording what happens in institutions are not few (Raddon, Raby, & Sharpe, 2009). In summary, the recognized traditional uses of the grapevine in school can be summarized in 4 broad categories.

1. *Videos that produce data from the teaching-learning process and whose source for obtaining data is the classroom:* The objective of this research is to help researchers understand and design formal learning environments.
2. *Video collections that produce data for research observing children's interactions with adults in non-formal learning contexts:* The aim of this study is to help researchers understand informal learning environments that occur in various contexts, designing tools to facilitate the informal environment.

3. *Research oriented on how people learn in and with video:* The objective of this research is to help researchers design learning environments.
4. *Production and use of video as a facilitator of professional development:* Video can be used in various fields, such as medical research, teaching and education. In the case of educational research, the aim of these videos is to record professional practice for later analysis in discussion circles.

But there are other uses that have not been widely considered and that merit a little more thought. For example, video recordings as replacement or reinforcement of notes, logs or field diary.

The video recording can become a field journal, the researcher's log is transformed from traditional notes or notes to multimedia formats. As documented by the study by White (2003) who highlights the advantages of video as a field diary in the evaluation of health programs in marginalized communities.

As a field diary, video recording implies a natural record of observed events and focuses on the description of structures highlighting the dynamics that highlight the social organization and the mechanisms that help organize and control the behavior of social groups. This use of video helps us to record what happens in a given context and how these structures give meaning to the social order.

In this dynamic, the camera is used in a casual way, recording daily life and causal interviews with researchers. This natural use of video implies a decision regarding the form and the background, which the researcher will take into consideration when placing the camera, the focus, when to stop and how to monitor the subsequent sequences.

How the participant reacts in front of the camera is analyzed. However, the power of video to record events in video graphic data as all partial data includes and excludes certain elements. The video focuses on the material world, which makes visual records and the recording of events instruments partially relegated strictly to the observation of the events that the objective provides, such as: peripheral vision, limited mobility, blur and viewing angles.

Finally, the video can be used as a record of the interactions and the information derived in interviews and focus groups. The possibility of consulting the video as many times as necessary and of showing it to other actors is invaluable to stimulate and promote reflection on the object of study. According to Thereau (2009) this process can occur in three ways: a) Reconstruction of the situation b) Reconstruction of the actions that took place in the discussion group c) Construction of the reflections of the present and forecast of future actions.

Technical requirements

Videography, field diary, focus group registration, micro ethnography and all the possible uses of video in research have a phenomenological character, that is, video is a means of recording and analyzing the object of study that leads the researcher to derive results, conclusions, and reflections on the object of study. Therefore, video recording requires certain technical and conceptual considerations, as well as intentionality. Here are some recommendations (Carey, 2012) (Derry, 2012).

1. The operator must be "invisible" and take the relevant distance to make their searches.
2. The investigator must pause the recording depending on the needs.
3. It must be intentional and use zooms and close ups and stop focusing on particular elements.

4. It will be necessary to use two cameras in confined spaces or when there are multiple sound sources.
5. The process of storage and indexing of the material is important, so it is necessary to protect the materials and backs in different spaces and formats.
6. The selection of the events to record requires prior planning.
7. It is necessary to verify the operation of the cameras, the accessories, and ensure that there is electricity or a replacement battery for the estimated recording period.
8. The operator may or may not be the researcher himself.

Videographic data analysis

Derry, recognizes that it is not possible to speak of a specific method to analyze the video: “but rather, it is possible to speak of a heuristic system of recommendations that can be useful in the use of video in research” (2012, p. 147), for this he proposes to differentiate observations from inferences: If the materials collected in the field will later serve to provide information that will be treated as research questions, then, it is necessary to distinguish what is observed and how. On the other hand, it is necessary to know why this happens and what it means. In another sense, due to the excess of material that can be had, it is pertinent to distinguish the analytical notes, from the descriptive notes of the events. The analysis is built gradually, and it is not recommended that the data collection process conclude, to start the analysis.

Narrative selection

Some digital ethnographers choose a narrative perspective in which, as White mentions: "Selection is directly related to the process of creating a story, as it unfolds in the mind of the researcher" (Goldman, Pea, Barron, & Denny, 2006, p. 23). This procedure occurs throughout the project, where the researcher makes narrative decisions about the order of the video with respect to the narrative structure that emerges in the course of events. Researchers must put aside technical aspects regarding image and audio quality when conducting the investigation.

The video represents events that are recorded and stored in video clips for later analysis. The selection of these determines which elements the researcher is focusing on for further analysis. In the case of video, these can be represented in independent periods of time (Sharp, 2007).

In short, the video can be structured and categorized into scales and its analysis can be enriched with the opinion of participating students and teachers.

Indexación de datos videográficos

It is necessary to use an indexing system that allows to select and take notes of the material that is analyzed at the time of the recording. It is also necessary to have a registration form that allows us to take notes for subsequent analyzes. In addition, it is important to try to narrate the actions from the recordings themselves, since in this way the researcher will be able to return to the material that people wish to give more weight within the research process.

Check list

Goldman, Pea, Barron, and Denny (2006) have developed a list of items to consider every time the videotaping has concluded and the materials are ready to be used

in the analysis phase. Next, some of the main aspects to consider in educational research are rescued.

1. *Narrative integrity*: Refers to the need to ensure that the video is sufficiently detailed, audible, and understandable. The video must be presented in such a way that the context in which it was recorded is fully understood. These annotations can be made in writing.
2. *Perspective*: It refers to how the video is used to make the point of view of the participants clear. The use that has been made of technology to partially address a panoramic view of others, which means capturing the interaction within the context from different perspectives through the implementation of different cameras in the classroom (Hoffert, 2009). A part of this video can also be used to select an important event within this interaction.
3. *Authenticity*: The research video opens the field to new interpretations that are developed in the field, with the rigor of looking for new connections in visual materials.
4. *Chronological plausibility*: The use of video to represent the order of events does not necessarily represent the chronological order in which they occurred, instead they enable the viewer to understand the events in a logical rather than strictly real way.
5. *Commensurability*: Video as a research tool offers a toolbox that allows the recording and sharing of beliefs, attitudes and pedagogical practices. Researchers must learn to describe the context.

Ethical aspects

A video is a record of partial data, it includes and excludes certain elements, therefore, the video does not represent reality, but an approximation to it. Regarding the deontology of video as a tool, its ethical implications must be aligned with the prescriptions that guide the use of any other tool to collect information in the social sciences.

Since the video records only some aspects of the complex real world, these evidences are subject to distortions and biases: they are also influenced by the sequence developed, the interaction with other researchers and the passage of time. Therefore, it is important when to consider some ethical aspects both to maintain the confidentiality of the filmed subjects, and to guarantee the veracity of the information in terms of the context. Although the discussion on these aspects is not free of controversies, two ethical safeguards seem to be investigated: informed consent and action protocols.

Informed consent

Academics from Stanford University proposed a series of rules to consider and the need to have an informed consent of the videotape subjects. These rules ensure that the people recorded understand the purpose of the investigation and that the payment terms, risks and uses of video recording are clarified (Stanford, 2003). At times, participants' faces can be digitally hidden to achieve an "anonymous" video.

Action protocols

The Chicago Center for Digital Studies (<https://digitalstudies.uchicago.edu/>) suggests using two protocols, one that focuses on data collection and the other on data analysis. The first is used to build a methodological body, aimed at facilitating EI when video graphic data is available, in this it is detailed how the data will be collected, who will collect it, with what objectives and under what conditions. This must be analyzed and valued by the institution's ethics committee.

The second protocol focuses on the resulting product, detailing who and how will access the data, for what purpose, how it will be analyzed, how this information will be protected, where it is desired, and under what conditions the video graphic evidence will be destroyed (Sharp, 2007).

Banks (2007) admits that academia should be more demanding regarding the ethical conditions in which the video graphic evidence was produced to understand how narratives and chronologies were articulated.

Video as a research report

The second most important use of video recording is the dissemination of research results, this format is so accepted that the Mexican national council of science and technology accepts this format as an alternative for reporting as a closure of funded research projects.

In order to use video as a means of reporting or disseminating research, it is important to understand the cultural background of the audience to whom the visual documents are shown and to explain the contexts in which the materials were recorded.

It is also important to accompany the video with a document that describes the rationale, the fundamentals of the video and the relevant aspects of the creative process that exists behind this material to convey the decisions of form and content to the viewers. behind the audiovisual discourses that are presented in the investigation. In addition to this, the testimony of the researchers about the responses of the community to the presence of the video camera will reveal the type of relationships that were established with the community.

Banks (2007) recommends presenting the research results to the community, in a way that gives meaning and order to the disjointed narratives that are found among the members that were studied, likewise, it gives an audiovisual testimony of the scenario that was studied in a formal display. Likewise, researchers can present photographic images in a more creative and personal narrative, which, in academic contexts, this is a good opportunity for researchers to dialogue with the community and open spaces to debate on the problems that the population identified. root of the investigation.

The upload of the videos that disseminate the research on social networks also allows researchers to respond to the concerns and replies that the school community and the general public about the social representation that the video manifests.

Heras and Miano (2012) argue that it is necessary to present research materials in academic contexts through dynamic interfaces that allow integration in a structured presentation where the research is explained and that is supported by videos, recognized as a legitimate resource to transmit knowledge educational research.

Discussion

It is important to expand the theoretical and methodological guidelines that optimize the use of video recording as a tool in educational research. The continuous development of new technologies also implies new training and training needs to respond to new forms of expression. Likewise, this tool offers various possibilities for the return of information to the school community that fosters dialogue between the researcher and the subjects studied, who validate and enrich the findings based on the narratives and compositions that articulate the research report.

The proper use of video in educational research requires precise skills and techniques, mainly with the use of the video camera, knowledge of plans, framing, camera movements, image composition, as well as knowledge of editing programs. But also, of solid training as a researcher that allows to distinguish the purposes of the media, carrying out a strategic planning of the video recording to collect information according to the objectives of the research, considering the methodological and technical delimitations of this tool.

Ramírez (2015), points out that in a video there is an audiovisual discourse with an argumentative component to which a rhetorical dimension can be added, which tries to emotionally link the viewer with the problem thanks to the intentional montage consistent with the purposes of the investigation.

However, in this perspective, the objectivity of this tool remains in debate. Although video can produce and preserve reality, it can also transform the ways in which it is perceived, since the materials can be edited to give new meaning to the way the events occurred.

As a means of dissemination, video allows the transmission of messages in a synthesized way, which facilitates informing the academic community and the general public of the procedures, results and implications of educational research and gives access to the results of the research to populations and audiences previously marginalized from it.

Conclusions

The video makes it possible to integrate the data, information, evidence, testimonies and arguments resulting from an educational research project into a lasting audiovisual record. (Asan & Montagne, 2014).

Its use as a tool in educational research requires technical knowledge, familiarity with audiovisual language. The relevance of videotaping in educational research must be judged by the consistency between the video graphic products and the research objectives.

As a means of dissemination, the video makes the researcher's findings reach the community in general, thus extending the dialogue and debate on the results and processes of educational research beyond academic contexts.

The continuous development of applications and technologies also implies new training and training needs for educational researchers for the efficient use of this digital multimedia tool.

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