This paper discusses the ways in which photography was used for data generation in a 9-month qualitative study on a mixed-age elementary school classroom. Through a review of the research literature in anthropology, sociology, and education, and an analysis of the research data, the usefulness of photography for educational research with young children was examined. Observations and findings from working with the class of 40 children aged 6 to 9 years show the 4 ways photography functioned as a research tool: (1) to overview the setting; (2) to create in-depth diachronic views of the classroom; (3) to offer children the chance to express their own ideas through a visual medium (photographs they took with inexpensive cameras); and (4) to elicit responses during photo-interviews with 8 children. More than 200 photographs were taken and collected during the 9 months. (Contains 17 references.) (SLD)
Photography as a Data Generation Tool for Qualitative Inquiry in Education
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ABSTRACT

This paper discusses the ways I utilized photography for data generation in a nine-month qualitative study conducted in one mixed-aged elementary school classroom. Through a review of the research literature in anthropology, sociology and education as well as an analysis of the research data, I examined photography's usefulness for educational research in classrooms and with young children. Specifically, I investigated how photographs can be used to survey the research setting, create in-depth diachronic views of classroom processes, and begin to get at informant's understandings through photo-interviewing and native made images.
INTRODUCTION

Many visual anthropologists and sociologists trace their roots back to the photographs which emerged from the Farm Security Administration, a government funded program aiding farmers during the depression. The images captured by Dorothea Lange, Walker Evans and others produced compassionate factual records. Their subjects were the victims of terrible droughts, agricultural innovations and a troubled economy. Roy Stryker directed this vast project, briefing the photographers on socioeconomic conditions and directing them to document not only the agency's activities, but American rural life in depth (Newhall, 1982, p. 238).

Others look further back to date their origins. The photo journalistic work of Jacob Riis in the 1890s documented the plight of the urban poor. Although primarily a writer, he used photography as a tool to bring attention to his subjects in hopes of influencing social reform. At the turn of the last century, Lewis Hine photographed newly arrived immigrants in New York City. Soon, he turned his mind's eye toward capturing child labor. He created images of children at work in mines and factories. Hine's documentation of child labor is credited with mobilizing public concern and bringing about reform which led to changes in legislation.

Margaret Mead and Gregory Bateson's exploration of culture in Bali during the 1930s was dependent on visual data. It was the first anthropological study that used either still or film images in its analysis. Balinese Character (1942) provides a rich interplay of insights as one works from sets of images to words and back again (Stacysz, 1979, p. 119). Anthropologists have been working with visual imagery ever since. Both anthropology and sociology support organizations for researchers who use visual data.
Visual sociology has a journal dedicated to publishing these efforts. Researchers in education have not been as quick to accept visual methodologies as tools for inquiry. Use of still photography in educational settings has been limited (Dempsey & Tucker, 1994; English, 1988; Orellana, 1999; Orellana & Hernandez, 1999; Preskill, 1995).

This paper will draw on ideas represented in the three disciplines outlined above: education, anthropology and sociology. After an opening discussion on the nature of photography and photographers, I will explore the ways I utilized photography for data generation in a nine-month qualitative study conducted in one mixed-aged elementary school classroom. Specifically, I explore the four ways photography functioned as a tool in my research: 1) to overview the setting 2) to create in-depth diachronic views of a particular classroom process 3) to offer the children a chance to express their ideas through a visual medium, and 4) to elicit responses during photo-interviews. Through this review of the literature and analysis of the data I examine photography's usefulness for educational research in classrooms and with young children.

THEORETICAL FRAMEWORK

The Nature of Photography

Sontag (1977) reminds us that when we photograph, we confer importance (28). The act of documenting an event, a person or an object is an indicator that there is something worth recording. We photograph strong, unique, and typical subjects. Regardless of the reason we choose to create an image, it has relevance or importance, and except in the case of art, is used for another purpose.
Importance as portrayed through the lens of the camera is not an objective idea. For many, photography still carries positivist notions that it depicts an objective reality. Collier and Collier (1986) praise the camera as an instrumental extension of our senses, one that can record on a low scale of abstraction (7). They provide early examples where photography was used to clarify ideas through presentations of photographic evidence. The Colliers refer us to the work of Eadweard Muybridge, who was hired by Leland Stanford to document a horse at a gallop, proving that all four hooves are off the ground at the same time. They recall the work of Matthew Brady who showed Americans the horrors of war for the first time, making it real. They remind us about the role photography plays in microbiology, again providing evidence for a literal truth.

If we begin by thinking there is one objective reality to represent then exercises in photography are not helpful for inquiry. Qualitative researchers move beyond positivist notions of photography depicting a literal truth. To do this, we begin by accepting alternate definitions of reality. Photography is best used where there is an understanding that reality is perceived or constructed (English, 1988). These perspectives consider the person observing the phenomenon, the person behind the camera lens. Like researcher-writers, researcher-photographers make decisions based on experience and theoretical perspective that influence the outcome of their reports. Instead of seeing this connectedness as a potential limitation of the tool, English, like Lincoln and Guba (1985), recognizes that generalizations cannot be freed from the human context from which they sprang (English, 1988, p.9). Furthermore, English acknowledges this connectedness as an asset instead of a limitation.
Sontag (1977) contrasting positivist ideas of reality, engages us in conversations that force us to examine the camera's renderings. Photographs, which cannot themselves explain anything, are inexhaustible invitations to deduction, speculation and fantasy. (23) The perceived or constructed realities recorded by the camera and photographer are left open for heuristic interpretation and analysis. Sontag does not define the limits of this tool by its connectedness. She too sees this as an advantage of the medium.

Another advantage of visual information is offered by Walker (1993). He described the medium as a silent voice for the researcher: another language we can employ in constructing understandings and communicating them to others. Photography is offered as a researcher's dialect for discussing complexities that cannot be sufficiently captured in oral or written language. By acknowledging a vision or a voice, Walker includes the photographer in the photograph. The image maker cannot be separated from the image he or she created. The photographer remains in the tones of a black and white image, in the deliberate framing, in the choice of the exact moment to release the shutter. Sometimes the image of its creator may lie latent, but it is there nonetheless.

Becker, who has been writing about photography for over twenty years, emphasizes how situated our understandings of photographs are. Photographs get meanings, like all cultural objects, from their context. (Becker, 1995, p.8). He discusses three contexts for photography and their distinguishers: visual sociology, documentary photography and photojournalism. Through the use of examples and non-examples, Becker demonstrates how the same images can be read in different contexts to construct different understandings. One strong illustration given by Becker involves an image of a
photographer on the White House lawn met by a long red carpet. It shows a man, hunched and head down walking along the carpet while nearby people stand weeping. The image he describes was journalistic in 1974 when Nixon had resigned from the presidency. Combined with other images, it might become a documentary of the Watergate events. A sociologist might be concerned with the way the media portrays political episodes in history or more specifically, the way the devices of photographic representation are used to indicate the political downgrading of a disgraced leader (13). Photographs have no meaning in and of themselves. What helps us understand them is more than content alone, it is context. (Becker, 1995).

Another way of looking at context is to examine the situations where we study. Classrooms are layered with activity: in geography and discourse. During a school day, children are rarely all gathered in one corner of the room, focused on the teacher. A more typical view involves children at work dispersed throughout the room, joining in conversations with other children about their learnings. The nature of classrooms makes it a difficult situation to observe. The movement of activity through time only makes our recordings more challenging. The camera is able to capture much more on film than we can in our fieldwork notebooks. Looking at multiple activities with multiple participants over time is very difficult work for the classroom ethnographer, yet that is precisely what we must do to capture some essence of the classroom culture under study. The unique agility and flexibility of the still camera in revealing a rich fabric and texture of complexity in one brief moment which can then be examined again and again, exceeds the ability to commit the moment to paper during or after studying a social setting. (English, 1988, p.14).
English's (1988) description of a slice of time which we can revisit opens discussion on why we would want to revisit them. Multiple examinations offers many advantages. A second or third viewing allows us opportunity to see beyond our expectations, often seeing noteworthy details for the first time. It also serves as a confirmation check for fieldwork notes, triangulating data. Further, having the additional data source allows us to take our inquiry further. This ability to freeze pieces of reality in forms to which other, subsequent methods of research can be easily applied, is an advantage of photography which cannot be renounced. (Secondulfo, 1997, p.34). Secondulfo discusses ways to use photographs with participants as a way to elicit data. One method he illustrates is the photo-interview which will be fully developed later in this paper. I believe this is one of photography's greatest strengths. The power of photography lies in its ability to be a source of data as well as a tool for eliciting data when employed as a stimulus.

The Nature of the Photographer

Photography has been called a mirror of reality and a mirror with a memory focusing descriptions of the medium on the image itself and less on the event it tries to capture. Further removed from these metaphors is the photographer. Ideas that photographs are records of truth or reality try to dismiss the role the image maker plays in the process of documenting or constructing a perception of a recorded event. However, the photograph cannot be separated from the photographer. Furthermore, since technology is burgeoning and accessible, photography's greatest limitation is the way it is used by photographers.
This connectedness to human context makes us suspect about what is concealed in every photograph as well as what is revealed. Every image is the result of a series of decisions made by the photographer. What subjects interest me? Where are they best photographed? When will I have access? How will I frame my subjects? What will I include in the background? Realizing that all views are edited ones, viewers should question what lies beyond the boundaries of the frame. After all, the camera’s rendering of reality must always hide more than it discloses (Sontag, 1977, p.23).

English alludes to a photographer’s vision as an imprint that often arises as style. Style emerges as a result of the decision making process that leads up to the release of the shutter. English highlights three ways that style influences the photographic process and defines these influences through a series of choices. Choices include selection of subject, framing the image, and using an angle or straight on approach. I believe English has left out many critical decisions in the development of style. Other choices include: visual medium, access to technology, rapport with subjects, visual influences, theoretical perspective, and intention. This is evident in the way photographers talk about the creative photographic process. We no longer say we take a picture, but rather, we make one (Sontag 1977).

METHODS AND PROCEDURES

I investigated the writing practices and products of one mixed-age elementary school classroom at the Bridge School, a unique public school located in urban southern California. The school population is ethnically and economically diverse. Children are grouped into clusters which span at least two grade levels. The class I studied, Rainbow
Cluster, included 40 children, 6-9 years old. Their two teachers have teamed at the school for four years. I chose this classroom to study because the teachers were dedicated to offering a wide variety of writing experiences to the students.

A case study was decided upon as the most appropriate method for inquiry because it allowed me to research a social phenomenon in its real life context (Yin, 1994). Further, the case study allowed for additional qualitative procedures. This study relied on participant-observation, document analysis, interviews and photography. Only photography, the method at the heart of this paper, will be discussed here.

DATA SOURCES

Over 200 photographs were created and collected during the nine month study. The images were organized in four ways. First, during the early days in the field, I used photography as a way to overview the classroom setting. I photographed work areas, access to materials and general classroom organization. The photographs were affixed to a large map which itself became research tool. The second group of photographs focused on a particular classroom writing process, author's chair. I used my camera to document the introduction of this procedure to the class. These photographs enabled me an explicit and detailed source for analysis which I could review several times. Third, I offered the students several disposable cameras and asked them to photograph important writing. I asked the children to sign out the cameras as a way for me to later connect the photographers with the images they created. Finally, I created images of the children doing the work of writing in a variety of classroom contexts. These images, along with those created by the children were compiled into a notebook for use during photo-
interviews. Eight focal children participated in open-ended exit interviews which used the photographs as a way to elicit conversations about classroom writing.

PHOTOGRAPHY AS A TOOL

Overviewing the Setting

Early stages of research usually include an orientation to the study setting. Photography can be a helpful tool at this stage. Orientation typically includes multiple descriptive processes which can be aided by visual data. Mapping and surveying are customarily involved (Collier & Collier, 1986), both areas that are visual by nature. Photographic images are widely used for mapping purposes by employing aerial photography. Aerial images are helpful when studying urban and agricultural communities. In addition to geography, interaction patterns of various sorts can be identified. Mapping of other kinds of spaces can be easily accomplished with the camera. Schools and classrooms may be documented with wide lens and panoramic technology. While these images locate central areas within the larger community under study, they also survey the community's artifacts and tools that are readily displayed.

Photographic surveys may take many forms. Photographing strictly in the public domain, the camera can, in a few hours, record the outer face of the community. (Collier & Collier, 1986, p. 36). These survey images begin to give us superficial economic and cultural insights. For example, a still camera may survey and document how many books there are in a classroom, or the configuration patterns of children's work areas. Later, overlays or colored pins may be added to still images to create diagrams and organize data (Collier & Collier, 1986). Collier and Collier (1986) describe a photographic cultural
inventory of a setting. They too highlight the relationships of objects which photography captures. Visuals can enhance the fieldwork notebook which would typically contain a listing of artifacts or diagrams. Photographs allow for a deeper analysis of the range of artifacts... their relationship to each other, the style of their placement in space, all the aspects that define and express the way in which people use and order their space and possessions. (Collier & Collier, 1986, p. 45).

I combined the ideas of mapping and surveying as I overviewed the classroom setting. Before the school year began, I made several rough sketches of the classroom in my fieldwork notebook. After reflecting on my notes, my sketches felt inadequate. I knew my readers in education would have specific understandings of classroom geography that would be challenged by my descriptions. I used photography to supplement my maps and create a large overview. I could return to this survey nightly as I reviewed my fieldnotes and expanded my understandings of the ways the physical characteristics of the classroom fed cultural conceptions about the social world and how it framed children's ideas about writing at school.

Diachronic Views

Once a slice of time is frozen in an image, it makes itself available for application of other methods of inquiry. It can be triangulated with other data sources or reviewed by additional researchers for alternate interpretations. Photographs have the benefit of being rich data sources as well as stimulus for generation of additional data. Typically research reports are synchronic in nature supplying the reader with support for its knowledge in stop-time (Polkinghorne, 1997, p.8). Photographs can be exemplary evidence to validate claims made from views of a phenomenon in a particular time. However, I
suggest that by combining still photographs into series we can expand this research mode to include what is diachonic in nature. Diachronic views look at change though time, a view that compliments the study of social actions, a view that will be effective in the study of schools and classrooms.

I sequenced a series of images I created during the introduction of a key element to the classroom writing workshop: author’s chair. I used my camera to document the ways the teachers and children interacted around this new activity. Later, I grouped these images together as a way to examine the lesson and the participation structures. I also used these images in the photo-interview kit (discussed below), especially when talking to the child model in the process who was also a key informant.

Getting Insider’s Views

There are many ways to use photography to try to get the insider’s perspective of a setting, event or object. The insider’s view is important to researchers who look for ways to investigate how others see their world. Photographs are effective tools for tapping into a participant’s perspective. One way for researchers to see the vision of the people they study is to turn the camera over to the informants, allowing them to show you what they see. Another way is to use researcher or native made images to stimulate new data through photo-interviewing.

Native Camera Work

Those of us concerned with representing participant’s ideas through their own voice, authentically, find the idea of participant generated images very exciting. By allowing the participants the tools they need for expression, we are offering them another language to convey their ideas (Walker, 1993). Worth and Adair’s now classic
anthropological film footage portrays the perspective of Navajo participants. These researchers trained seven Navajo men and women on the workings of a 16 mm camera and sent them shooting. The Navajo informants produced images of their own conception of their world and their place in it (Collier & Collier, 1986). This is a true co-construction of an understanding, and a method that would be equally effective with a still camera.

Orellana and Hernandez (1999) offered still cameras to very young (predominantly first grade) students during neighborhood literacy walks which focused on environmental print. Children used the cameras to read their world and composed images that captured places of significance to them. Later, these photographs were used in the classroom to generate new literacy events through writing and dictation. The photos also prompted children to reveal rich experiential knowledge. For example, Betty dictated a page about helping her parents who work at the store on the weekends... (Orellana & Hernandez, 1999, p. 617).

In another study, Orellana (1999) included an analysis of child generated images as a way of understanding their views of their social worlds. She tried many ways to approach the project, first giving cameras to thirteen children, then using the images for photo-elicitation with two students, and later, briefly loaning her own inexpensive 35 mm camera to the children while she asked questions and recorded notes. Orellana then offered disposable cameras to a small group of informants. Some children made photographs in their homes in the absence of the researcher, others photographed their immediate neighborhood while the researcher audiotaped their conversations. Additional discussions occurred with the child photographers over the prints. The photographs
themselves become data worthy of analysis, but they can also be used to prompt writing, or in photo-interviews eliciting new data.

Like Orellana, I offered the students disposable cameras as a way to help me see what they see. With the help of the classroom teachers, I established a sign-out sheet as a device to match the resulting photographs with the photographers. The children photographed while I was in the research setting and in my absence working to capture important writing. My assumption was that they would create images of the important processes: conferences, author’s chair. Instead, they created image after image of their own written products, reminding me of Sontag’s notion that simply by photographing we make something important. These photographs, along with the images I created over the course of the study were used to generate additional data through photo-interviews.

The Photo-Interview

The photo-interview is an effective tool for investigating the way people see their world. It is one of the most wide-spread uses of photography for qualitative inquiry (Bunster, 1977; Collier & Collier, 1986; Dempsey & Tucker, 1994; Preskill, 1995; Secondulfo, 1997; Wagner, 1979), yet it has not yet been fully developed. However, the photo-interview takes advantage of one the methodologies strongest affordances; images used are data and stimulate data. The ability to apply other research methods to photographs is an undeniable advantage of the medium.

The idea of photo-elicitation is especially useful when interviewing children (Dempsey & Tucker, 1994; Preskill, 1995) who have preset ideas about the dynamics of interacting with adults. This is typically complicated by interviewing in the school setting where children perceive the researcher in a teacher-like fashion and the interview
as part of doing school. In this context, it is not uncommon for researchers to report
difficulty in interviewing for significant information. Children are quick to feed
researchers information they think is the best answer. They do this either because they
have identified the researchers agenda from previous experiences in the classroom or
because their teacher will find out. They may offer researchers their best school behavior
over thoughtful participation in the research dialogue. The problem of memory check is
also significant with children. They are quick to forget instances that are not meaningful
to them. Photographs can serve as reminders, prompting a recalling of events.

There are several approaches to the photo-interview, but all advocate thoughtful
planning and organizing of the photo-interview kit. Images assembled for the
interview must be carefully chosen so they feed the goals of the research. There are two
effective ways of accomplishing this. A preliminary interview may be conducted without
images to find out what is important or relevant to the informant, or native made images
can be used. Orellana and Hernandez (1999) had informal conversations with the children
participants about their community. They decided the route for their photographic literacy
walk based on the places named by the children. These conversations, both formal and
informal should frame what goes into the photo-interview kit.

Dempsey and Tucker (1994) also advocate a pilot interview along with other
means of preparing in their nine-step plan for the photo-interview. After identifying the
research questions, establishing content for photographs, and creating the images, images
are labeled and organized before a protocol is prepared. Secondulfo (1997) and Wagner
(1979) both advocate a more open-ended approach to the interview itself. Secondulfo
describes the process as a conversation in which interviewee and interviewer discuss
significant pictures together within the frame of a non-structured interview. (Secondulfo, 1997, p.33). Wagner (1979) supports the creation of a photo-interview kit with images specifically chosen for the purpose of the interview. He notes that the choices are critical because he wants the images to do the interviewing. Wagner believes photographs are more powerful tools than oral prompts and suggests that interviewers keep talk brief and simple. He also suggests cues that ask the informants to rank images or choose one most representative of a concept.

Bunster (1977) used photographs in interviewing working mothers in Lima, Peru. She chose 129 images from over 3,000 to include in a photo-album used during the interview process. This unusual format was decided upon because it met the needs of the study. The researcher often met the women in parks or markets while they were working. The album could travel easily and open in contained spaces. Bunster would like to improve on her methods. Ideally, we would have taught the key informants how to use the camera and then made their shots part of the photo-interview kit. (Bunster, 1977, p. 282) Native made images can be very effective tools for elicitation because they enhance both conversations without the images and analysis of the images without the conversations. Informants not only help to determine the emic dimension of a phenomenon, but they check, correct, and modify the components in a set of photographs that will later serve to illustrate a whole category of events. (282)

The research highlighted many advantages in using the photo-interview. Most obviously, photographs serve as a prompt inviting informants to attend to ideas they might have not talked about (Bunster, 1977; Dempsey & Tucker, 1994; Orellana, 1999; Orellana & Hernandez, 1999; Secondulfo, 1997). Photographs are also useful for
focusing the interview (Collier & Collier, 1986; Wagner, 1979), serving as a memory check (Bunster, 1977; Collier & Collier, 1986; Wagner, 1979), and a member check for researchers drawing conclusions from data (Bunster, 1977).

I conducted exit-interviews over photographs and other media near the end of my study. Eight key informants participated in the photo-interviews which were conducted outside the classroom on a lunch bench. The photographs led the conversations, but I use a loosely structured protocol to help me. In preparation for these interviews I created a sectioned binder filled with images created during the study. A binder was utilized for two reasons. First, it could be sectioned. One section grouped the images made by the students and another contained images of the temporary writing products created in Rainbow Cluster. The third and largest section of the photo-interview kit held the images I made of the children doing the work of classroom writing. In addition, the images in the binder could be manipulated. During the 20-30 minute interviews I asked the children to select, sort and rank the photographs. The images and binder were coded to allow for easy replacement in preparation for additional interviews.

**DISCUSSION**

I found many advantages in utilizing photography as a data generation tool for qualitative inquiry in education. During the earliest phase of the research I used photography to overview the setting. I affixed photographic images to a large hand drawn map so that I was able to take the classroom home with me. This map became a valuable tool when exploring my field-notes and in planning future experiences as a participant-observer. Further, photographs allowed me another way to capture both a synchronic and diachronic view of Rainbow Cluster’s writing experiences. Individual
photographs provided me with a detailed account of a single classroom moment. In addition, grouping images over time provided me with new perspectives.

Photography served as a research tool for getting an insider's view of the classroom writing community in two ways. While there are many methods for tapping participant's understandings, cameras allowed the young students another language to convey their ideas. Participant generated images were helpful for accessing their perspectives of important writing. Simply by composing photographs, the students expressed value in the subjects featured. Later these native made photographs, along with my researcher made images were compiled into a binder for use in the photo-interview. Photo-elicitation is especially useful when interviewing young children because they have preset ideas about interacting with adults. Even though I made every effort to differentiate myself from the classroom teachers, the children in Rainbow Cluster still treated me as an adult in the classroom setting. My role in the classroom shaped their responses to the initial interviews. I often felt they were trying to provide me with the correct answer, guessing about what I would want to hear. The photographs helped the children express themselves during the exit interviews. They created narratives around them, and ranked images systematically by their perceived importance.

There are several drawbacks involved with working in this medium. Researchers point out the financial considerations involved in working with visual imagery. Cameras and film processing are still expensive. In addition, processing can be time consuming. Time economy is also a challenge. Researchers who work with photography must have a technical competency that will not inhibit the progress of the study. Along with technical know-how, a technological mystique may surface, obscuring the photographic process.
Technical ability is often underplayed in the visual sociology and visual anthropology literature. Researchers are content to emphasize the theoretical over the technological. I agree with Collier and Collier's (1986) observations that technology can obscure useful picture making. The equipment and technique can be overwhelming, but it also carries with it an allure that can be distracting. However, minilessons in pragmatics are necessary when turning cameras over to our informants, especially when those informants are children.

The most prevailing limitation discussed is that of subjectivity. Photographs cannot be separated from the photographers who create them. They are connect to a human context and therefore cannot represent an objective view of a phenomenon under study. I believe that visual texts are no more or less subjective than written texts. Both carry the imprint of their creators, both carry a human voice. This human connectedness is only a limitation of the methodology if we believe there is a literal truth that can be captured by any medium. No matter how we present them, all views (written or visual in nature) are edited ones.

Even with these challenges in mind, the advantages of employing visual methodologies can not be undermined. This paper has shown how photographs can be used to overview the setting, document a classroom process, and begin to get at informant's understandings. The value of photographs goes beyond enhancing fieldwork notebooks. Photographs provide researchers with another language to record and communicate in.
IMPORTANCE OF THE STUDY

As a result of this study, I offer the following three suggestions to qualitative researchers working in classroom contexts. First, photography can effectively be utilized to enhance experiences as a participant-observer by documenting research settings in images that can be taken away from the study site. Second, photographs enable both a diachronic and synchronic view for analysis of the concepts under study. Finally, photography is an effective method for accessing participants' perspectives through native made images and photo-interviews.
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