

A COMPARISON OF THE EFFECTIVENESS OF WRITTEN INSTRUCTIONS WITH
INSTRUCTIONS EMBEDDED IN A FOTONOVELA

A Thesis

Presented to

The Faculty of the Department of Education

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

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May, 1996

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ABSTRACT

A COMPARISON OF THE EFFECTIVENESS OF WRITTEN INSTRUCTIONS WITH INSTRUCTIONS EMBEDDED IN A FOTONOVELA

by Camille E. Flores

The purpose of this study was to evaluate the effectiveness of the fotonovela as an instructional tool. The study addressed multi-cultural adults who were scheduled to receive Ear, Nose, and Throat (ENT) surgery paid for by public assistance and who normally received written instructions in either English or Spanish. Historically, as reported by the medical staff, about 25% of these patients failed to show up for scheduled surgery. The premise of this study was that the patients failed to show up for their surgery because they did not understand the instructions.

A fotonovela was built around the story of a typical patient getting ready for surgery. It used black and white photographs of an actor "patient" and his actor "wife" interacting with real doctors, nurses, and lab techs in a real lab and hospital. The fotonovela was passed out to participating surgery patients along with any normal and regular materials distributed to them by the medical facility prior to their surgery. Patients were assigned a number, and a record was kept, by number, of patients who received the fotonovela and those who did not. Whether or not the patient showed up for scheduled surgery was recorded.

The results of the study were inconclusive because, for various reasons, almost no data was generated. This seemed largely due to time pressures and constraints of the setting. However, the study did suggest a number of considerations which should prove useful to researchers in adult learning in non-educational settings. Research conducted outside the educational milieu is subject to a different set of constraints and prescripts. The technical environments of today are subject to constant change. An environment of stress and sense of time pressure is not conducive to careful, rigorous, controlled experimentation. Researchers must, therefore, solicit support and commitment in terms that are meaningful to the people in the environment. This has implications for where, when, what, and how research should be conducted.

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Chapter 1

Nature and Significance of the Problem

Introduction

Anyone who has been involved in training adults in the work place in recent years is likely to perceive that, in the 90's at least, people do not like to read. Rance-Roney and Ditmars (1994) quote Gwen Taylor, writing in *Journal of Reading* in 1993: "There are millions of people who have learned to read but choose not to, except minimally." Nawn (1993) suggests that business people not only lack the time but are unable to "read more than a few pages without fatiguing or losing interest" (p 720).

So if people are not reading, how are they getting their information and training? There is a lot of anecdotal evidence that TV is a major source of communication. According to Johnson (1994), who cites Harwood's 1992 statistics, Americans watch 4 hours and 9 minutes a day. Many researchers (Hortin, 1982; O'Malley, 1993; Sutton, 1992) have expressed optimism regarding its use for education.

Yet there is one major problem with television and interactive computer technology for communication and education: the cost of production is at present so high as to be beyond the means of most projects. A much less expensive form of visual communication with untapped educational potential may be the *fotonovela*, a print medium that combines the drama and visual characteristics of TV with the precision of the written word.

Purpose of Study

The purpose of this study was to test the efficacy of the fotonovela as a training tool. Michiewicz¹ had already demonstrated that a fotonovela was more likely to be read and shared than a traditional booklet covering the same material; but she had not evaluated the effectiveness of the fotonovela. That, then, became the purpose of this study: to evaluate the effectiveness of the fotonovela as a means of conveying information.

Significance of the Study

This study is significant for the following reasons::

1. It is very timely. The crisis in public education is spilling over into the work place. The use of multi-media is exploding. Visual literacy is a current topic. Functional illiteracy is on the rise.
2. It adds to the body of knowledge. Flora (n.d.) supplies anecdotal evidence that the fotonovela is useful for training, but only the undocumented Michiewicz study in Santa Barbara formally studied it from this perspective.
3. It will impact a large population. The fotonovela could be an appropriate tool for Americans who read poorly, for Americans or immigrants for whom English is a second language (ESL), or--in this the television age--everyone. This study will begin the investigation. It is more likely that the limitations of the fotonovela are in the subjects for which it is appropriate rather than the audience for whom it can be useful.

¹ The name Michelle Michiewicz is hand-written on the front page of a research fragment, *Fotonovela Evaluation Project*, which is not cited in the References. This study apparently was performed while the author was a student at the University of California at Santa Barbara. Even though it could not be identified, the research as described was conducted in a scholarly manner and is mentioned because it was the only research found that involved the fotonovela as a training instrument.

4. It tests several theories. First (and most importantly), it tests whether the fotonovela is more effective than non-pictorial, written instructions. Second, it tests whether any effectiveness crosses language differences. Because it tests in two different physical locations in a large, metropolitan city, the investigation also attempts to test whether any effectiveness crosses socio-economic or cultural lines.

5. It tries to answer questions not previously investigated. None of the questions implicit in the theories noted in (4), above, have hitherto been formally addressed.

6. It may reveal new teaching strategies. Actually, this study, even before its conclusion, initiated a new teaching strategy. VLSI Technology, Inc., a San Jose microprocessor manufacturer, commissioned the investigator to produce a fotonovela on clean room gowning procedures. The objective of this fotonovela was to reinforce material presented in a classroom; and, additionally, actually teach certain gowning procedures.

7. It will provide baseline data. It is hoped that this study will suggest additional questions and/or suggest answers that can be confirmed with additional studies.

Research Questions

Is the fotonovela a more effective tool for communicating information and conveying instructions than a written list? Is it only effective for Hispanics?

The hypotheses for this study are as follows:

1. When procedures and instructions are supplemented with a fotonovela presentation of the material, adults will be more likely to follow them correctly than if the procedures and instructions are presented textually only.
2. This will be true regardless of whether the adult's preferred language is Spanish or English.

Null Hypotheses

The null hypothesis for this study was that there would be no statistically significant difference between the Spanish or English control and experimental groups' performance.

Definition of Terms

1. "Spanish" is the label given a patient who, when given the choice of receiving instructions in Spanish or English, will select Spanish.
2. "English" is the label given a patient who, when given the choice of receiving instructions in Spanish or English, will select English.
3. "Medi-Cal" is a California medical insurance that pays 100% of the costs of covered surgery.
4. "ENT" is an abbreviation for Ear, Nose, and Throat, a medical specialty.
5. "Fotonovela" is a story conveyed in pictures and utilizing talking "bubbles" and text boxes. It is similar in style to a comic book but utilizes photographs of real people similar to motion picture "stills." Text in the talking bubbles is the conversation or thoughts of the actors. It is couched in common, everyday language. The literacy level of

the text bubbles should be at or below the target audience, generally no higher than a fifth grade level (considered to be the level at which most adults are comfortable). Text boxes in the fotonovela provide added detail, narrative, or parenthetical information. The literacy level of this material should be about two years higher than that of the talking bubbles. A fotonovela is a paper publication generally printed on newsprint. Depending on the subject, photographs are generally arranged three to five per page in multiples of eight pages.

Chapter 2

Review of Related Literature

Introduction

Whereas there is some anecdotal evidence that fotonovela is already used for training and communication, there has been essentially no research published on this subject. There has been quite a bit of sociological research involving fotonovela (and it is reported below), but researchers saw fotonovela as entertainment, a reflection of and influence on the popular culture. Researchers did not see fotonovela as a tool. Yet, it was important to review the literature to learn if there was anything in fotonovela which especially precluded or suggested its use as an instructional tool.

Because this study clearly focuses on adults and because fotonovela has been seen as a genre of the less educated (see below), it was also important to investigate the subject of adult education. The research, then, included references to adult literacy to find out if fotonovela or its components (tiered communication scaffolding--photographs, bubble dialogue, and text) were already being utilized.

However, since one of the basic premises of the research at hand is that while many adults today have no ability to read, many also frequently choose not to read, the subject of *adult education* in general was investigated to see if, again, anything precluded or suggested the use of fotonovela. Is visual (picture) communication an effective

alternative or adjunct to reading in adult education? It seems important to have an understanding of how visuals are involved in the theories of adult learning.

Taking visuals a step further, one finds the topic of visual communication or *visual literacy*. As described by Gueulette (1994), this is also a very broad subject; however, when viewed from the context of the subject at hand, visual literacy provides a framework from which to view the research. For example, whereas much research on visual literacy is concerned with the need for teaching visual literacy in order to empower those living in the visual world, the research at hand hopes to validate the use of the principles of visual literacy to teach/inform/communicate other information.

In total, then, research for this project fell into three broad categories: (a) the fotonovela genre, (b) adult literacy and education, and (c) visual literacy and communication.

Research on the Fotonovela Genre

Researchers who have looked at the publishing medium fotonovela have seen it almost entirely as a literary genre found in Latin America and parts of Europe. The fotonovela is a story told in pictures with balloon captions presenting the dialogue (Flora & Flora, 1978). There are two basic media, cartoons and photographs. Although various position papers concerning fotonovela cartoons were reviewed during the course of this study (Hinds, 1985; Lindstrom, 1982), the author decided almost immediately to limit here in-depth research to the photographic medium.

The fotonovela grew out of a relationship with film. According to the Floras (1978), French and Italian publishers in the 1940's began creating them as synopses of popular films. By the 1970's this connection to film disappeared, and the fotonovela plots were independent. However, because the two genre shared a reliance on dialogue, researchers could continue to learn from studies of film. McCracken (1986) interpreted Sempere to argue that the role of text in the fotonovela was marginal, that it was the photos that attracted the audience. Finally, both fotonovela and film continued to reflect themes of popular culture (Mosier, 1982).

Plots and themes in the fotonovela generally revolve around love (Flora & Flora, 1978), folk issues (Flora, 1980) or the "fantasies, longing, desires, and ideals" (Herner, 1982, p. 36) of ordinary people. The stories have been universally melodramatic and similar in concept to United States soap operas. The Floras (1978) categorized these romantic, idealistic fotonovelas as suaves. They included three basic theses: social disintegration/reintegration, salvation through consumption, and pure escapism. Mendez (1986) suggested that the poor, beaten down by work, need such fantasy as escapism.

There has been a strong family and religious presence in the fotonovela (Mora, 1985). Like morality plays, fotonovelas reflect whatever morality is approved by popular culture. The darker side of popular culture, fantasy involving sex and violence, has also found an outlet in fotonovela; Flora (1980) categorized these sometimes pornographic novelas as rojas (red).

Researchers have frequently examined sexual stereotyping and the exploitation of women in the fotonovela. The Floras (1978) suggested that in escapist fotonovelas the

female is portrayed as a Cinderella, passive and helpless. In general, the fotonovela female is totally self-sacrificing. Resistance is futile; and total passivity to the social order is rewarded by unrealistic, miraculous luck. When women are employed, they are never seen in positions of power or influence; their role is to reproduce the labor force (Flora, 1980).

McCracken (1986) reviewed the work of Sempere and Colomina de Rivera. She saw a "feminist optic" in the work of Colomina de Rivera who contended that fotonovelas are primarily consumed by young women from the working and lower middle classes and marginal sectors. Colomina de Rivera also concluded that, because fotonovela readers surveyed did not read the political, business, or opinion section of the newspapers, they reveal a complete disinterest in economic, political, and social problems. McCracken suggested that both Sempere and Colomina de Rivera posit a manipulatory model of the media.

On the other hand, Hill and Browner (1982) found that sexual stereotypes had begun to break down. Their comparison of male/female/active/passive showed a blurring of the stereotypes which may reflect the popular expectation that fotonovelas mirror "real life" (p. 55). A few years later Mora (1985) suggested an even more optimistic (for women) interpretation. Mora repeated the traditionally held view that the themes of mother and prostitute (the "mother" gone astray) which pervade Mexican cinema tend to support the social superiority and dominance of the male; however, she suggested that in actuality the male figure does not appear as a strong presence, that perhaps he fears the "intimidating perfection" (p. 234) of the mother and the latent power of the independent and assertive

prostitute. Even Flora (n.d.) is excited by the strength and independence of the women being portrayed in the most recent American fotonovelas.

Two researchers looked at limitations of the fotonovela. Georges Parent (1982) examined the narrative line in the stories. He suggested that due to the very simple narrative code, the stories must conform to the ideals which are "already shared by all their readers" (p. 209). Parent asked how long readers will go on accepting the same old story lines. Irene Herner (1982) suggested that we will go on accepting them as long as there is money in it. Hill and Browner (1982) added that due to the economic reality of commercial pressures, fotonovelas must reflect story lines and themes that "compel and interest their readership" (p. 54) or go out of business. They suggested that "popular literature may be a very sensitive barometer of changing values and concerns" (p. 61). Mosier (1982) went further and suggested that any art form, regardless of its commercial success, must reflect the popular interest if it expects to be considered art. Coelho (1988) described the way the Brazilian soap opera does this.

Although there is a presumption that the fotonovela is a genre of the lower socio-economic classes, this was not borne out by research. Hinds (1985) claimed that comics are not seen as negative in Mexico; and whereas most are written at a very low reading level, some are actually intended for readers beyond the grammar school level. There is evidence that only the upper classes do not read fotonovelas (Hinds, 1985). Floras (1980) wrote that sales figures and rudimentary market surveys suggest that novelas suaves are aimed at middle and lower middle class audiences. In Columbia, while people will not admit that they read them, Flora (1981) examined letters to the editor to discover that the

educational level is much higher than generally assumed, and the readership includes both sexes. Carillo and Lyson (1983) suggested that female immigrants to the United States from Mexico use the fotonovela as a "cultural bridge;" the women seek comfort in stories that validate a lost (left behind) and fantasy culture.

Ultimately, researchers saw the fotonovela as entertainment--sometimes violent, sometimes base, sometimes manipulative, sometimes realistic, sometimes fantastical, but always melodramatic and always... entertaining. Flora (n.d.) described a number of "alternative" fotonovelas produced in the United States, but they all had a political or sociological agenda. However, one fotonovela about rape that she discussed did seem to have a strong educational component. Coincidentally, this fotonovela was the most successful of those she reported. Flora aside, really only Herner (1982) considered that the fotonovela might have greater potential. She, however, looked at the fotonovela as an item of mass media which reflects popular culture and felt that because its production is an economic endeavor and its producers artists no less than Michaelangelo, that the entire process reflected the human condition. She ends by, philosophically, reminding the reader that the means for the fulfillment of humankind lies ultimately within each person and, therefore, the photographers, writers, and other artisans involved in fotonovela production have within them the power to raise the level of quality. Some (Flora, 1981, p. 526) have already verbalized their intent to do so.

Adult Literacy and Education

Researchers in adult education frequently complain of the dearth of research aimed at and for adults; too frequently conclusions based on research on children or college students are generalized to include the regular adult population. There are a number of reasons why this is not appropriate. A child is forced to participate in education; an adult chooses to participate. A child has a very narrow bandwidth of knowledge; an adult has a large, complex knowledge base. A child's occupation is education; an adult's recreation is education.

Learning styles research, for example, has been performed on children and college students rather than adults. Fenwick (1994) suggests that adults are not defined by a single learning style and presents evidence to suggest that people may utilize various learning styles at various times in their lives as influenced by circumstances, individual growth and maturity, adaptation, moral and ethical principles, and--more importantly--interaction between all influences. Rather than a specific learning style, Fenwick suggests that individuals demonstrate a "process of continuous, organic development in approaches, preferences, and strategies of learning" (p. 17).

Harmon (1987) surveyed research on adult learning. It is well known that the ability to *recall* information deteriorates with age, yet because *recognition* is associated with cues, adults can actually perform better on recognition tests than pre-adults. The adults have more information already available to serve as cues. Teaching strategies to help students associate or integrate the new information are therefore appropriate. However, since adults are more self-directed, a poor performance on a memory test may merely indicate that the adult finds the exercise trivial and not worth pursuing (Thomas, 1983).

The same reason may explain a declining attention span. Adults are more apt to learn when the material "relates or is meaningful to their needs, goals, habits, values, and self-concept" (p. 6). Harmon quotes a 1982 Beder and Darkenwald study published in *Adult Education* which reported that when teachers compared adults to pre-adults, they found the adults "more intellectually curious...more concerned with the practical applications/implications of learning...more motivated...less confident in their ability to learn...more willing to take responsibility for their learning...more clear about what they want to learn...more willing to work hard at learning...less emotionally dependent on the teacher" (p. 15). He also reports a 1982 Jones and Cooper study published in *Lifelong Learning: The Adult Years* which states that "eye-mindedness [as opposed to ear and motor-mindedness] appears to be dominant in the majority of adults" (p. 17). Cox (1994) writes that "neurological links between the visual and linguistic domains are created" (p. 207) which continue to impact perception into adulthood.

Armed with this knowledge, researchers have formulated a number of principles related to adult education. In adult education the teacher/student relationship is inappropriate; rather, "adult educators should be *guides*" (Rance-Roney & Ditmars, 1994, p. 102), partners, facilitators. The adult must never be put in a subordinate position. Adult learners bring so much to their learning that each individual's experience is unique; successful adult educational methods, then, must be essentially individualistic. Materials must address the interests of the adult student. Other researchers (Barret, 1993) note the increasing reference to the adult's need for individual choice. Motivation seems to be even more important for adult learners than for children. If adults do not find value in it, they

will not stay or participate; they are, after all, probably paying for it, and it takes place in their leisure time (Sargent, 1991). Harmon (1987) reports the findings of Thibodeau's research as reported in a 1980 article in *Journal of Research and Development in Education* which revealed that the preferred methodology of middle aged adults differed from those of late adolescents and young adults. Middle aged adults preferred "hands-on" experience, 1:1 with their teacher, and visual presentation. Harmon also reports that the 1982 Jones and Cooper study suggests that forming associations visually be used as a strategy to enhance the recall/recognition ability of adults because "visual images usually are remembered more effectively than words" (p. 17). Rance-Roney and Ditmars also suggested that techniques include multisensory stimulation as well as visual imaging to stimulate memory.

In 1990 Naomi Sargent (1991) directed a study on adult learning in England for the National Institute of Adult Continuing Education. This was a huge study in which 4,608 adults in various locations were interviewed regarding their leisure and learning activities. Of additional benefit was the fact that Sargent had performed a similar study ten years before. A great deal of information came out of the study. When incidental learning is included, over 30 percent of the adult population participates in learning activities, which peak in the twenties and thereafter decline so that among people over 45 only 25% pursue formal learning activities. Studying is strongly related to class; the upper classes participate the most (one-third of them) and the low-skilled workers the least. (Interestingly, unskilled workers participate more than low skilled workers.) Ethnic groups, although they represent only about 5% of the population, participated more than

whites in general, on par with the upper and middle class participation. The most popular areas of study were vocational, with men outnumbering women. With television being excluded from the study, reading was the most popular leisure activity, and it had grown somewhat in popularity in the 10 years since the previous study. Of the adults who are not presently studying, 42% would like to be studying. (Unfortunately, the study included no explanation for their failure to participate other than to suggest that pressures of work and family precluded the time.)

Although this study may not be generalized to the United States, it does imply that human adults feel a need--for whatever reason--to study. For many adults in the United States such a need would be frustrated. In 1993, the U.S. Department of Education commissioned a survey which revealed that nearly half of the adults in the United States "were unable to make practical use of literacy skills in everyday life" (Rance-Roney & Ditmars, 1994, p. 100). This means that half the population cannot fill out a tax form or read a bus schedule or election pamphlet let alone study. Although literacy was defined, for purposes of World War II, to be the ability to read at a fourth grade level, functional literacy--or the ability to fill out a tax form, read a bus schedule, etc.--is today considered a more meaningful measurement.

Hayes and Valentine (1989) performed a study in which low level reading adults (defined as those who tested at less than a sixth grade reading level) were asked to rank reading needs. (This study was undertaken partially because the Adult Performance Level (APL) Project of 1975 had *not* asked the low level readers what they needed to be able to read; the project established curricula based on other information.) The top five reading

needs named by the low level readers in their study were: (1) filling out an income tax form, (b) reading and using road maps and city maps, (c) reading and using a thermometer, (d) using a checking account at a bank, and (e) budgeting their money. Reading difficulty was not correlated to rank. What was important to the low level readers was the frequency with which they encountered the need and the consequences of not being able to perform the task. The APL Project totally ignored social aspects of the literacy problem and the support groups of the poor readers. How many literate adults, for example, hire someone to do their taxes for them? Hayes and Valentine discovered, tragically, that curricula based on the APL Project was not appropriate; low level readers were, in fact, frequently being taught what they valued least.

Using mathematical analysis, Hayes and Valentine were unable to group the needs of the readers and concluded that

From an instructional planning perspective, the virtual lack of substantial relationships between recognizable personal characteristics (e.g., age, race, gender, employment status, educational attainment)...[makes it] impossible to draw conclusions about functional literacy needs based upon demographic profiles of individuals or groups. Unfortunately, measured reading ability is also a relatively uncertain predictor of functional literacy ability...Relevance and functionality are highly personal--and probably highly transient constructs that are nearly impossible to determine without frank and continuous communication with learners. (p. 13)

Roscow (1990) echoed these sentiments, writing that too much of what educators do is stereotypical, rigid, and familiar. She met with success using material which held her students' interest--commercial advertisements. Commercial advertisements are like fotonovela in that they combine visual and textual.

Smith (1990) used TV commercials with the ingenious addition of close captions to teach ESL students. She wrote: "The captioning helps turn the seductive medium of television into a literacy and language tool" (p. 13). Smith also used close captioned soap operas because her students reported that they liked them and watched them in both their native language and English.

Who are these functionally illiterate? Rance-Roney and Ditmars lay out a case that reading ability is related to learning style and thus, prejudice to the contrary, not to general intelligence. It also does not seem related to age (Paris & Parecki, 1993). However, "studies have proven that intergenerational illiteracy is a long-term problem" (Rance-Roney & Ditmars, 1994, p. 118) and that reading failure in the primary grades virtually guarantees later failure to learn to read.

Low level readers almost always misunderstand their problem (Rance-Roney & Ditmars, 1994). They see, very narrowly, that they have difficulty deciphering individual words--a decoding difficulty. They do not seem to be aware that, in the broader sense, reading is a tool to discern meaning from the whole. In fact, Rance-Roney and Ditmars cite a study (p. 93) in which one poor reader, when it was pointed out to him that, indeed, he had understood the meaning of a passage, replied, "but that's cheating!" The authors do not believe that low level readers read for pleasure; "the words reading and enjoyment do not go together" (p. 101).

The illiterate who are learning to read cannot be compared to children who are learning to read. Not only do they exhibit all the characteristics of adult learners mentioned at the beginning of this section, but they bring a great deal of emotional

baggage to the problem. They may be embarrassed, humiliated, convinced they cannot learn. Adults cannot learn to read unless they believe they can (Rance-Roney & Ditmars, 1994). Unfortunately, a *learned* helplessness may make them passive so that they cannot take the control necessary to succeed. They may also believe that methods for teaching learning that have failed them in the past are the only true way to learn; or they may have been so indoctrinated in failed methods (Rance-Roney & Ditmars, 1994) that they have great difficulty letting them go and moving on with today's methods. Additionally, fear of loss of cultural identity may be a de-motivator (Paris & Parecki, 1993).

There seems to be agreement among researchers that failure to read is not solely a failure to decode; rather, it is a multidimensional problem. Paris and Parecki (1993) write that "many factors operate to affect the literacy proficiency of individuals and that these constellations of factors are not identical for all people in all situations [which]...makes it very difficult to identify single causes and outcomes in literacy that can be generalized across large populations (p. 12). Recent research has clearly demonstrated that what differentiates the literate from the illiterate is metacognitive skill. That is, people who read have developed strategies for deriving meaning from material. These include being aware of context, skimming, and utilizing visual (pictorial) information. Research has proven that by teaching metacognitive strategies, reading level of adult non-readers can be permanently improved. Paris and Parecki (1993) mention, additionally, family literacy programs and other social/work programs which attempt to integrate reading into the meaningful lives of the learners.

Visual Literacy and Communication

Given that a lot of people do not like to read and that a lot of people are unable to read and that television is a ubiquitous presence, perhaps reading will eventually become less important than pictorial communication. "Imagery, or visualized information, is becoming the new nature of information" write Renk, Branch, and Change (1993, p. 84). Johnson (1994) also sees visual information as a component of the new communication (p. 29). White, cited in Fredette (1994), says "the change in information is a shift from print to imagery as the medium for information delivery, transformation, and exchange" (p. 238).

Braden (1993) summarized the research into this separate, parallel visual language which researchers find most powerful when combined with text (p. 7). One of the most interesting studies he mentioned was that of Salomon (1984). Salomon examined perceptions about the amount of mental effort involved in learning. His study compared television to print and revealed a relationship between mental effort invested, amount of learning occurring, perceived competence, and perceived demand. In the United States we tend to view television as a passive medium; this is not the case in Israel. Salomon's research revealed that it is the viewers' perceptions of television as undemanding that causes them to view it passively.

Ley and Klein (1993) also compared a visual medium to print--interactive video--and this study was performed with adults. Interestingly, the results showed no difference between the effects of the two mediums. The authors conclude, as others have before

them, that "instructional method (e.g., using role models) is more important than choice of instructional media" (p. 63).

The meaning inherent in visual information is more complex than textual meaning. Dyer (1982) says pictures are equally as important as text and probably more important because "they are easier to understand and have more impact than words" (p. 86). He describes three levels of meaning in pictures: denotative, connotative, and ideological. To get the full meaning from pictures, one must analyze the appearance of the people in it (their age, gender, national origin/race, hair, body, size, looks), their manner (expression, eye contact, pose, clothes), and their activity (positional communication, body movement, what they are touching) as well as the props, settings, and production techniques of the picture itself (p. 96).

Many researchers have built on Dyer's work. Glasgow (1994) recommends *deconstruction* of visuals into surface, inferential, critical, and creative levels of meaning. This method, she feels, will make analysis more scholarly and authentic. Sutton (1993) cautions viewers to be aware of the motivation behind the visual.

A number of researchers have demonstrated that the viewer brings additional meaning to his perception of visuals. Dake (1993) describes how art has been affected by the digital age, where images, reality, and truth have become blurred. He concludes that "visual reality, in the digital age, is clearly revealed as an individual's own construction, based on past experiences, expectations and assumptions" (p. 139). Pailliotet (1993) has even defined a methodology (deep viewing) to coalesce a multiplicity of meanings.

Story (1994) did some qualitative research in which she examined college students' responses to the pictures accompanying stories. Not only do illustrations add to the action, setting, and characterization, but pictures add "underlying meaning" (p. 58). Three different picture renditions of the traditional *Cinderella* story produced surprisingly different interpretations of the story.

In her 1993 study Russel defined five ways in which viewers add additional meaning to photographs: observation, interpretation, personal memories, participation, and medium intrusion. She concluded that viewers attempt to transform the image they see into their conception of reality; they try to find meaning in the picture. Viewers tend to notice the technical aspects of the photograph--angles, technique, focus--only when what they see does not conform to some aspect of their reality.

Hodes (1993) performed an interesting study that not only validated the value of images in cognitive processing, but gave some insight into the kinds of cognitive activities where it is most useful (spatial) and compared it to imaging (constructing a mental picture). She concluded that while "specific imagery instructions might be effective for learning, they cannot replace the function of visual illustrations for learning and recognition tasks" (p. 254). Stredney (1993) wrote that "by creating more sophisticated imagery, we may facilitate the brain's ability to assimilate novel information by introducing cues that establish links to internally held contexts" (p. 324).

Williams (1993) summarized the theoretical frameworks which support the way in which visuals "have effects on attention, representation, organization, interpretation,

retention, compensation" (p. 675). He felt that visuals are sometimes better than text at conveying spatial and concept relationships such as describing physical objects or demonstrating a physical procedure. On the other hand, whereas the meaning of text must frequently be expanded with adjectives (what is a hat?), the meaning of visuals must frequently be narrowed (a dachshund cannot represent all dogs). Visuals can be preprocessed--"gist, theme or global message of a visual can be processed in a single fixation" (p. 673)--whereas text must be processed serially and thus puts considerable strain on cognitive resources.

There has been considerable research performed on the subject of iconicity. Horton (1993) notes that while there are a number of ways (he describes eight) that graphical images can be misunderstood, "visual images are less ambiguous and more memorable" (p. 683) than text. Mizuko and Reichle (1989) wrote that graphic symbols fall on a continuum from *transparent* (easy to discern what they represent), through *translucent* (some relationship between the object and the graphic), to *opaque* (arbitrary symbol). Their studies were done on adults with mental handicaps (mental age of around 5 years) but replicated many similar studies done with normal children. The results substantiated previous work that concluded that the more transparent the symbol, the more easily it is recalled. Unfortunately, this study was performed with children, and, as noted in the section, Adult Literacy and Education, above, we can only assume that these conclusions can be generalized to adults.

Summary

In spite of exhaustive research, no studies were found that examined the effectiveness of fotonovela as a teaching tool. Flora (n.d.) reviewed some applications which could possibly be considered educational, but she made no attempt to study the phenomenon; she merely stated that 40,000 fotonovelas were expensively produced and labeled the project as "successful" (p. 11). Also, *The Fotonovela Evaluation Project* (n.d.), possibly authored by M. Mickiewicz, describes a successful study in Santa Barbara County which demonstrated that fotonovela would be more likely to be read and shared than a traditional booklet. Clearly, a need exists to examine the potential of the fotonovela more closely.

The research also revealed no evidence that a fotonovela--with its pairing of visual and textual--could be detrimental to adult learning. Hinds (1985) refers to a negative American perception of comics--but, even though a photographic fotonovela is rather far removed from a comic book, no verification of this perception could be found. On the other hand, the fotonovela might be considered akin to entertainment or even television, and so, as Salomon (1984) demonstrated, if American adults' perception of the fotonovela is that it requires no mental effort, they might read it, as their children viewed the television in Salomon's study, "mindlessly" (p. 654).

Clearly, the potentially positive effectiveness of the fotonovela suggested that a study would be appropriate. For example, considerable numbers of researchers mentioned

the positive effect of the visual/textual pairing; and a number of researchers mentioned the positive impact on adults of real life, personalized materials.

Research in visual literacy raised the issues pertinent to the production of the fotonovela to be used in the study. Care must be taken to avoid narrowing the "definition" of the characters (Williams, 1993, p. 671). For example, Hispanic subjects would have difficulty identifying with blond, Nordic type patients. Similarly, a subject who works as a clerk will have difficulty identifying with a patient who goes to work as a lumberjack. The suggestions of Horton (1993) (i.e., to avoid extremes, maintain neutrality, and suppress unimportant details) were invaluable.

Chapter 3

Procedure of the Investigation

Subjects and Setting

The impetus for this study came during the summer of 1995 when the head nurse at the office of a private ENT surgeon, Dr. "T", responded to a mass mailing (Appendix A) which suggested that a fotonovela could solve some communication problems with patients. The staff was concerned about communication and wanted to try new approaches but lacked spare funds. Since Dr. "T"'s office had no money to spend on the project, the author offered to build a fotonovela gratis for her thesis experiment. The staff enthusiastically agreed.

Dr. "T"'s office was always extremely busy with an atmosphere of frenetic activity where everyone had too much to do and not enough time in which to do it. The staff reported that Dr. "T" performed some 20 surgeries a week, but historically, about one quarter of scheduled surgeries were canceled. A small proportion of scheduled surgeries were canceled because abnormalities showed up in pre-surgery blood work or because the patient failed to follow instructions and either ate, drank, or ingested aspirin prior to surgery (information elicited by direct inquiry at the time of surgery), but the largest reason was that the patients simply failed to keep their appointments. This was a very wasteful, expensive situation.

Dr. "T"'s office did not know why their patients failed to keep their appointments. Procedures and instructions were always given to the patients in writing. The instructions (see samples in Appendix B) told the patient about the sequence of surgical events and about dietary and medicinal restrictions both before and after surgery. The patients were multi-cultural, of all ages from children through adult, and, as the office accepted Medi-Cal, most patients were on the lower end of the socio-economic scale. Because about one-third of the patients were Spanish speaking Hispanic and about one-third were Vietnamese, the office provided the written instructions in Spanish, Vietnamese, and English. Patients were asked which language they would prefer to have.

A second site, the ENT out-patient clinic at a county hospital, was recruited to make the study more robust. Like Dr. "T"'s office, the clinic accepted Medi-Cal, had multicultural patients of all ages, supplied instructions in Spanish, English, and Vietnamese (see samples in Appendix B), and stated that they had about a 25% rate of cancellation of surgery. The clinic was also a very busy place with a hectic atmosphere.² Additionally, the clinic provided an interpreter for non-English speaking patients.

Adult patients may not have had their surgery as scheduled for a number of reasons. They may not have understood what was expected of them, they may have hesitated to miss a day's pay, they may not have believed in the efficacy of surgery, they may have been frightened, they may have feared the expense. The premise of this study was that patients failed to keep their appointments because they, the TV generation, did not like to

² During all the months of this study, the liaison was never immediately available by phone. Calls to the clinic generally required long waits on hold followed by a transfer to voice mail. Best results were achieved by face-to-face visits and five minute conversations in a corner.

read, and so they failed to comprehend the procedures and instructions outlined in writing.

Design of the Study

This study followed a posttest-only control group experimental design. Standard, written instructions were given to all patients. An experimental group received, in addition, an instructional fotonovela. Patients who asked for their instructions in either Spanish or English were randomly assigned to the experimental or control group as follows: 26 envelopes for the Spanish group and 26 envelopes for the English group were each numbered 1 through 26.

The random number generator function of Microsoft Excel was utilized to identify the experimental groups. The data analysis tool suggested that a uniform distribution was appropriate. According to the Excel documentation, this distribution was characterized by lower and upper bounds, with variables drawn with equal probability from all values in the range. Therefore, for each site two columns of 26 numbers were requested, one for the Spanish group and one for the English group. The first thirteen unique numbers in each list were selected as the numbers of the experimental group.

On the day that the materials were to be delivered to Dr. "T"'s office, the staff withdrew from the studying saying that it was taking up too much of their time. The clinic became the primary site of the experiment, and materials were prepared and delivered. For each group (Spanish and English) the appropriate fotonovela was placed into those envelopes labeled with the randomly generated numbers for the experimental

group, and a record was made of the number assigned to each item (control and experimental) in each group (see Appendix C).

Clinic staff were requested to ask all surgical patients to participate in the study if they requested Spanish or English instructions. If the patient gave permission, he or she was asked to select an envelope from the appropriate box (English or Spanish). The office staff recorded the age and sex of the patient next to his or her number on the Research Data Sheet (the data collection instrument in Appendix D) and also recorded the number of the envelope on the patient's record (not available to the researcher). The office staff was requested to ask the patients to open the envelope after they left the office.

When the patient's appointment data passed, the office staff entered a "y" (yes) or an "n" (no) on the Research Data Sheet depending on whether or not the surgery occurred.

Limitations and Delimits

No attempt was made to keep track of any other activities that might have affected the study. For example, patients were provided with the telephone number of the clinic and encouraged to call if they had questions. It is possible that patients who had questions and called to get answers would be more likely to keep their scheduled surgical appointments. It is also probable that weather and time of year affected whether or not patients kept their appointments. However, as the control and experimental groups were randomly selected, these other affects were presumed to have been equally distributed among the two groups.

An effort was made to limit the content and presentation of the fotonovela. For example, whereas a fotonovela by its very nature is a story, a "story" can be presented in a positive, negative, emotionally charged, or straight-forward way. For this study, it was felt best to limit any non-factual characteristics as much as practical so as to simplify the comparison to the regular textual instructions. Therefore, every effort was made to eliminate emotion from the fotonovela. Additionally, as the focus of this study was on *visual* effects, not sociological, an effort was made to prevent the inclusion of any characteristics (names, expressions, foods, dress, etc.) with culturally-specific associations.

A potential source of error in the study was the production quality of the fotonovela which was at the low end in every respect. First, because of the quantities involved, offset printing was not practical (or financially feasible), so the fotonovela treatment was produced using black and white photographs, digitized with a scanner, printed via laser printer, and reproduced and packaged with high-quality Xerox equipment. Secondly, non-professional actors/models were utilized. Some characters were portrayed by actual medical personnel. One student actor was hired. Lastly, a professional photographer was not involved.

Another potential source of error was the use of interpreters at the clinic. The clinic liaison felt that interpreters fully meet the communication needs of the clinic. The liaison predicted that the fotonovela would have no effect on the outcome of the experiment.

Another potential source of error was recording accuracy. There was no way to know how conscientious the staff were. Indeed, when the fotonovelas and data sheets were

delivered to the clinic, the experimenter was told that the patients "almost always" keep their appointments--a 2-5% failure rate rather than the 25% failure rate which prompted the study in the first place.

A final consideration was the null hypothesis. Actually the study did not measure whether or not patients were more apt to follow instructions in a fotonovela than a written list. In practice, it measured whether they were more apt to follow a single instruction--to show up for surgery--when they were given a fotonovela. Outpatient surgical procedures occur in a different location than the examination. It was not feasible to record information that was available only at the time of surgery. Therefore, one assumption might be that the fotonovela may not have been instructing but, rather, providing motivation, eliminating fear, and so forth.

Evaluation Method

Instruments

The Research Data Sheet (see Figure 1 below and in Appendix D) was the only instrument used in this study. As noted in the ***limitations and Delimits*** section, above, only the patient's response to the instruction to show up for surgery was recorded. (ENT surgeries were sometimes "bumped" at the clinic for more important surgeries. The staff reported that they could easily distinguish the difference and would not log a "bump" as a failure to show.) Although it was not necessary for the study, data about age and sex was recorded for possible post-study analysis.

Sexo (M or F)	Edad (18-nn)		Surgery on schedule (Y or N)	Language of Text (E or S)	Site (T or S)
		1		S	T
		2		S	T
		3		S	T
		.		S	T
		.		S	T
		.		S	T
		26		S	T

Figure 1: Research Data Sheet

Treatment

The treatment was a fotonovela (see Appendix E and F) titled *When the Doctor Says Surgery*. The main character was a dark-haired young man named "Joe." Joe has a wife, "Mary." The story follows Joe from the doctor's office, where he was first told about the upcoming surgery, through his registration at the hospital on the day of surgery. In between Joe makes a note of his appointments, modifies his diet, and goes for blood tests. Joe's wife, Mary, is an active participant in his preparations; she helps him remember to avoid aspirin and, on the morning of surgery, liquids. She accompanies him to the surgery.

The content of the fotonovela was derived from the pre-surgery instructions common to both sites as follows:

1. Go to pre-op, and get blood tests.
2. Do not eat or take aspirin before surgery.

3. Do not drink liquids the morning of surgery.

4. Have an adult accompany you to surgery.

The fotonovela also included material to provide a sense of timing of events. Lastly, the fotonovela addressed itself to the lower socioeconomic groups in that the fotonovela patient used a city bus instead of a car and carried his lunch to work.

Once the content was put into storyboard format (see Appendix G), it was reviewed and accepted by the site liaisons at DR. "T"'s office and the clinic. Then photographs were taken to illustrate the story.

The fotonovela "action" mirrored realities of the patients. The "doctor" was Dr. "T." The "nurse" was Dr. "T"'s staff nurse. The "office" was his office. The hospital and lab pictured were the ones used by Dr. "T"'s patients. The hospital staff--receptionist, lab receptionist, and lab technician--were personnel that Dr. "T"'s patients might encounter. The only actors were "Joe" and "Mary."

The experimenter originally planned to use a Logitec digital camera instead of scanning but prudently took all photographs with both the digital camera and a 35mm camera. As it turned out, the quality of the digital camera prints was unacceptable. Instead, the

experimenter used the black and white photographs to create a paste-up, and scanned the pages into TIF files.³

Text in the talking bubbles of the fotonovela was designed to be readable at the fifth grade level or below. Readability statistics generated by Microsoft Word version 6 are shown in Figure 2 below.

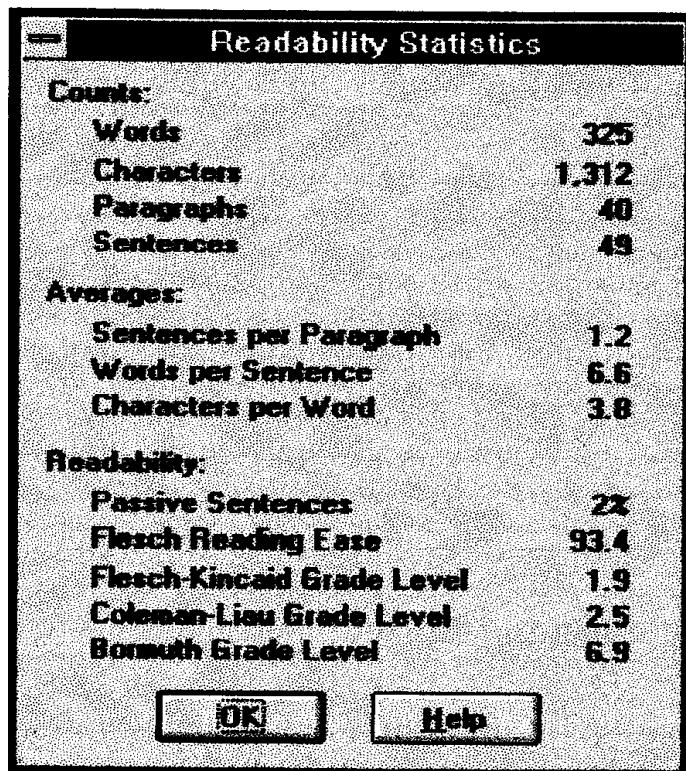


Figure 2: Readability Statistics on Talking Bubbles

³ This decision was made for convenience and to save time after the failure of the digital camera version. However, it later became clear that the quality of the fotonovela could have been drastically improved if the photos had been scanned individually instead of as an entire page. Individually, the lightness/darkness of the individual photos could have been improved in Photoshop. As it was, all photos on a given page had to be adjusted as one; the result was disappointing.

On two out of three scales, grade level was below third. The 6.9 number for Bormuth was probably an anomaly as Microsoft's documentation says it was computed using the same criteria as the other two.

Text in the text boxes of the fotonovela was designed to be a few grad levels higher than the text in the talking bubbles. Readability statistics generated by Microsoft Word version 6, shown in Figure 3 below, show reading levels at or about the seventh grade level which was appropriate.

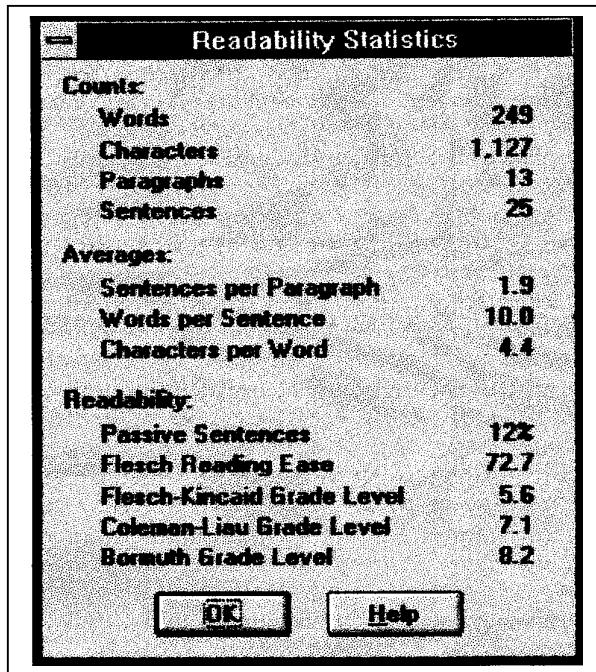


Figure 3: Readability Statistics on Text Boxes

The black and white photographs, text boxes, and talking bubbles were assembled into a 10 page, 8-1/2" x 5-1/2", booklet, with an additional front and back cover, using Aldus PageMaker on an IBM PC clone. TIF files were imported. Talking bubbles and text boxes were derived from Microsoft Powerpoint clip art and drawing tools. Text for

both bubbles and boxes was rendered in regular Times New Roman 10 point font. In the Spanish version, hand-written accents were added with black ink.

The fotonovelas were produced at a local service center. They were copied to 3-1/2" high density disks, approximately one page per disk, and transported to the service center for printing, copying, folding, and stapling.

Data Collection

Two cardboard shipping boxes were put into the ENT clinic. The Research Data Sheet was taped to the cover of each box. One box contained envelopes with Spanish fotonovelas and the other envelopes with English fotonovelas. Two copies of the appropriate permission form were stapled to each envelope in each box. A manila envelope to hold signed forms was taped to the inside cover of the English box. The boxes were kept on a counter adjacent to the instruction materials normally distributed to patients.

Chapter 4

Results and Discussion

Results

Insufficient data was collected. Dr. "T"'s office did not participate, and, although materials were available in the clinic for more than three weeks, no data was collected from Spanish speaking patients, and only eleven data points were collected for English speaking patients. Of these eleven, five were apparently collected from minor children⁴ who were not supposed to be included in the study. Figure 3, below, summarizes the collected data.

Sex	Age	Number	On Schedule	Language	Site
		1		E	S
F	25	2	Y	E	S
F	11	3	Y	E	S
F	12	4	Y	E	S
F	48	5	Y	E	S
M	41	6	Y	E	S
F	13	7	Y	E	S
F	43	8	Y	E	S
F	12	9	Y	E	S
M	18	10	Y	E	S
F	12	11	Y	E	S

Figure 4: Collected Data

⁴ Derived from age data collected.

No analysis was made on the data because with fewer than 25 data points in each group analysis would not be statistically significant. Therefore, neither null hypothesis could be either accepted or rejected.

Discussion

Research about adult learning performed on adults is not commonly undertaken outside of a scholastic setting. If this fotonovela study is typical, it is easy to see why: they fail. Without turning around and doing research on why research fails to collect data, some obvious conclusions can be drawn.

1. Researchers must select the **setting** of their research with care. Research on adult learning has demonstrated that adults have their own agenda and that their activities, their learning, must be perceived to fit into that agenda or the adult will not actively participate. Why did Dr. "T"'s office solicit this project, engage with the researcher for several months, allow their facilities and themselves to be photographed, and then, at the eleventh hour, decide not to participate? Why did a busy clinic fail to recruit more than 11 participants in three weeks? Why did the staff fail to follow instructions? Quite possibly these lapses occurred because the administrators of the research--the nurses aides or clerks who relayed instructions to patients--did not have the study on their personal agendas. They saw no benefit for themselves or their function.

The work dynamics are different in business and industry than in education. In an educational environment, it costs a student nothing to do as his teacher asks and participate in a research study by filling out a form or taking a test. The teacher generally

donates class time for the research activities. Elsewhere, life goes on at its usual pace; research (such as this fotonovela study) can impose an *additional* burden. To enthusiastically and wholeheartedly participate in research that *adds to* one's workload would require tremendous motivation.

Motivation is not impossible to find. The patient liaison in Dr. "T"'s office as extremely motivated to provide additional materials to her *young* patients. Unfortunately, the researcher's promise to return after the study and produce material for children was not sufficient motivation; perhaps, however, a fotonovela for and about children would have been. The lesson to be learned is that the research procedure must not impact the environment unless it is inherently motivational.

2. The researcher must get permission and commitment from *everyone* involved, not just the subjects. A researcher can not rely on anyone to do anything--no matter how minor--unless, perhaps, remuneration is involved. Therefore, it would be prudent to clarify, as best as possible, every role, every function, every procedure, in advance, in writing and ask every participant to signify his understanding and agreement by signing. If Dr. "T"'s office (doctor, nurses, receptionists) had truly reviewed the storyboard, there would have been no last minute major changes. If the staff had been asked to "sign off," they would have reviewed the material. If the researcher had documented the processes and time commitment involved and received everyone's buy-in beforehand, there would have been fewer surprises.

3. Lastly, and perhaps most importantly, the researcher must ensure that--like the opera--the subject is appropriate to the task. In this project, the subject of the fotonovela

was ill chosen. Dr. "T"'s office performs out-patient tonsillectomies--not exactly an event of life altering importance. The researcher should have defined, in advance, the desired characteristics of the subject and sought a sponsor rather than accept the first subject that came along. It would have been much easier to recruit support for a project that was viewed by the medical community as important. For example, while looking for additional sites that would accept an experiment on ENT surgery, the researcher encountered one hospital that would have been interested in pursuing a fotonovela dealing with breast cancer.

Possibilities for Further Research

Even though they are difficult to implement, researchers should continue to attempt projects in adult learning. Research instruction focuses on sample size, treatment groups, variables, etc.; but, ironically, when dealing with adults, all of these appear to be secondary to setting.

This project was intended to research the use of the fotonovela s an instructional tool. Such research is as relevant today as it was at the inception of this project. The potential of the fotonovela has not yet been explored or documented.

Chapter 5

Summary

The purpose of this study was to evaluate the effectiveness of the fotonovela as an instructional tool. The study addressed multi-cultural adults who were scheduled to receive Ear, Nose, and Throat (ENT) surgery paid for by public assistance and who normally received written instructions in either English or Spanish. Historically, as reported by the medical staff, about 25% of these patients failed to show up for scheduled surgery. The premise of this study was that the patients failed to show up for their surgery because they did not understand the instructions.

A fotonovela was built around the story of a typical patient getting ready for surgery. It used black and white photographs of an actor "patient" and his actor "wife" interacting with real doctors, nurses, and lab techs in a real lab and hospital. The fotonovela was passed out to participating surgery patients along with any normal and regular materials distributed to them by the medical facility prior to their surgery. A record was kept, by number, of patients who received the fotonovela and those who received nothing extra. Whether or not the patient showed up for scheduled surgery was recorded.

Because almost no data was generated, no statistical analysis could be performed and neither null hypothesis could be accepted or rejected. However, the study generated considerable information on methodology which should prove invaluable to researchers who would like to replicate the research successfully. Research conducted outside the educational milieu is subject to a different set of constraints and prescripts. The technical

environments of today are subject to constant change. An environment of stress and sense of time pressure is not conducive to careful, rigorous, controlled experimentation. Researchers must, therefore, solicit support and commitment in terms that are meaningful to the people in the environment.

Methodology aside, the fotonovela, unfortunately, remains an unexplored instructional tool. This investigator can but hope that others will continue to be intrigued by its potential.

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