1994

An Ethnographically Informed Case Study of an Art Teacher Using Right Brain Drawing Instruction.

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AN ETHNOGRAPHICALLY INFORMED CASE STUDY OF AN ART TEACHER USING RIGHT-BRAIN DRAWING INSTRUCTION

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy in

The Department of Curriculum and Instruction

by

Sara J. Smith

B.F.A., Louisiana Tech University, 1970
B.A., Louisiana Tech University, 1971
M.F.A., Louisiana State University, 1983

December 1994
DEDICATION

I dedicate this effort to my family: To my mother, Elma L. Thomas Detrie, whose never ending pride supplied me with motivation; to my father, Arthur J. Detrie, who encouraged me to fulfill my dreams, thanks Dad; to my husband, Charles M. Smith III, whose understanding, patience, and love helped me through the difficult times; to my son, Bradley C. Smith and daughter, Ashley E. Smith, whose humor helped me maintain my perspective. My success and growth is indeed the product of their love.
ACKNOWLEDGEMENTS

I wish to express my sincerest appreciation to the many individuals who have given support to me in the writing of this dissertation. To Karen Hamblen, my major advisor, I extend my sincere gratitude for her guidance, constructive criticisms, insights, support, and confidence in my ability to complete this study.

I would like to extend special thanks to my committee members, Neil Mathews, Mark Zucker, Petra Munro, and Guy Beck, who relentlessly endured the process with me and provided direction throughout the course of my research.

To Ms. Bates (pseudonym), the teacher I observed, to whom I am indebted for allowing me to observe her teaching, I offer my respect and friendship. During the weeks of observations she exhibited the characteristics of a highly qualified professional. Her good nature and open mindedness not only made this study possible but a gratifying project.

Special acknowledgements go to Susan Heausler and Patti Wittman who assisted in proofing and organizing this study. Thank you both for your faith in my potential and for your unfailing support.

Finally and lovingly, I extend gratitude to my family, whose sacrifice and support toward the end of this intense and demanding period provided the incentive to successfully complete this study.

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ABSTRACT

The first and central purpose of this study was to identify and describe one high school art teacher's basis for incorporating into the curriculum right-brain drawing instruction based on Edwards' (1989) book, Drawing on the Right Side of the Brain. The second was to provide art educators with preliminary information about the right-brain theory's popularity that might assist them in future research on a larger scale.

Computer searches of ERIC and PSYCH INFO were conducted to locate related research findings dealing with hemispheric function. The empirical findings were analyzed and compared to rationales for employing right-brain teaching strategies. The research methodology was descriptive and was referred to as an ethnographically informed case study. Data collection involved observations over a period of 9 months during the 1992-93 school year. Documentation included taped interviews, researcher's journals, and photographs. Two informal informant interviews were conducted. In addition, a survey was conducted to determine the prevalence of right-brain drawing instruction among a group of secondary art educators.

Reviewed research supported this study's assumption that artistic abilities require both hemispheres and did not support right-brain concepts advocated in Edwards' (1989) book. It was concluded that the presentation of drawing techniques in Drawing on the Right Side of the Brain...
(Edwards, 1989) first attracted Ms. Bates' attention. From the research findings, it was determined that Ms. Bates used the right-brain theory to (a) maintain classroom control, (b) motivate students, (c) give structure to class, (d) give students confidence, and (e) give students confidence in her as a teacher. She also used right-brain drawing instruction because it (a) contained sequenced exercises, (b) was grounded in what she thought was research, (c) was easy to apply in the classroom, (d) was accessible, (e) easy to understand, (f) produced improvements in student artwork, and (g) put into words techniques she wanted to teach the students. A limited survey indicated that 53 of the 69 survey respondents used some form of right-brain drawing instruction in their current curricula. This study was designed to be the first step in initiating further research into the popularity of the right-brain theory.
CHAPTER 1

INTRODUCTION AND RESEARCH DESIGN

Current assumptions about the duality of human thinking -- verbal, analytical thinking located in the left hemisphere, and visual, perceptual thinking located in the right hemisphere -- appear to have developed from studies conducted in the 1950s by Ronald Myers (1956) and Roger Sperry (1958). These studies by Myers and Sperry were conducted subsequent to the discontinuance of split-brain operations on humans with intractable epilepsy in the early 1940s. Myers' and Sperry's split-brain research using cats revealed "that visual information presented to one hemisphere in a cat with its corpus callosum cut would not be available to the other hemisphere" (Springer & Deutsch, 1989, p. 29), indicating that the brain is double. These findings encouraged two neurosurgeons, Philip Vogel and Joseph Bogen, to consider a new series of split-brain operations involving humans suffering from intractable epilepsy. Further testing conducted with split-brain patients indicated that each hemisphere independently contributes certain specialized functions to overall human behavior. During the 1970s, as more emphasis was placed on the idea that each cerebral hemisphere is capable of functioning independently, the
dichotomous way of knowing and thinking and how it affected learning styles became an issue among educators.

Overview

Since the first split-brain operations in the 1940s, brain research has expanded to include numerous hypotheses and theories concerning various cognitive aspects of the brain and how they relate to education. Accompanying these theories, a succession of labels used to describe the processes of the left brain and right brain emerged. For example, the left hemisphere became associated with Western thought and such terms and denotations as verbal, sequential, temporal, digital, logical, analytical, and rational. The right hemisphere became associated with Eastern thought and such terms and denotations as nonverbal, visuo-spatial, simultaneous, spatial, analogical, gestalt, synthetic, and intuitive. With the assumption that the left hemisphere possessed a superior ability for speaking, writing, and calculation, questions began to arise as to whether school programs restricted to these and related tasks educated mainly one hemisphere (left), leaving half of an individual's potential unschooled. Educators began to wonder if "the entire educational system [was] biased against developing right-hemispheric talents," in specific, artistic talent (Springer & Deutsch, 1989, p. 296). Motivated by these
discoveries involving hemispheric function, educators envisaged a new dimension for the idea of laterality and its direct relevance to "everyday pedagogical practice" (Bogen, 1975, p. 24). Art educators specifically focused on studies dealing with the function of the right hemisphere and how it related to artistic processes and to drawing in particular. As the notion that the right side of the brain was responsible for artistic creativity became increasingly predominant and widespread, techniques implying that drawing instruction could be directed toward the right hemisphere also became popular.

Assumptions

Through the years two dominant assumptions concerning right-brain function have become embedded in our society and educational system. One assumption is that the qualities of the right hemisphere are essential for creative insight. The second is that these qualities have been inadequately developed. As Springer and Deutsch (1989) noted recently, "The idea that half—more precisely, the right half—of our mental capability is neglected has been appearing with increasing frequency in educational journals, self-help manuals, and a variety of other publications" (p. 297). In art education the belief that artistic creativity and particularly drawing is reflected in hemispheric functions

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has primarily become associated with a California psychologist, Betty Edwards. In 1979, Edwards wrote what was to be the most popular right-brain publication ever used for drawing instruction, *Drawing on the Right Side of the Brain*. Over 1,250,000 copies of this book have been sold. It has been translated into 10 foreign languages, and it is used as a textbook and resource for classroom instruction and for a multitude of workshops and seminars.

**Statement of Problem**

In her book, Edwards is very straightforward in her claim that it is the right half of the brain that possesses the ability to draw. Also included is the claim that untrained individuals can produce outstanding drawings if the verbal, analytical, left hemisphere is not given the opportunity to interfere. According to some critics, however, this approach is problematical in that "there is little in the way of scientific evidence tying degrees of creativity to the degree of right-hemispheric utilization" (Springer & Deutsch, 1989, p. 293). Publications and studies (Bogen, 1969, 1975; Ornstein, 1977; Sperry, 1968, 1973) used as support for Edwards' book are weak in suggesting differential hemispheric involvement for the holistic ability to draw and have failed to replicate results in other studies (Chambliss & Hartl, 1987; Clare 1983; Youngblood, 1991). It
may be possible that dissimilarities in the sensitivity of the tests used, as well as differences in the subject populations tested, contribute to some of these inconsistencies. The most important and generally overlooked fact, however, is that most studies used to support the link between creativity and the right hemisphere were applied to subjects with neurological injuries or surgically altered brains. In addition, testing was not specifically directed toward the subjects' integral drawing abilities. Discrepancies in these studies indicate that questions should be raised as to whether discoveries made with split-brain patients have any application in teaching drawing to the general population.

Certainly it is quite apparent that further research is needed before a strong statement supporting the notion of drawing as a right-brain function can be justified. Until these studies are initiated, designed, and conducted, and the results are analyzed, the right-brain theory may continue to grow in popularity and its use escalate, although it remains unsupported by sufficient empirical research (Clare, 1983; Hines, 1991; Springer & Deutsch, 1989; Youngblood, 1991).

To this date there does not appear to be a single study that specifically indicates superiority of the right-brain
for the task of drawing. It appears that generalization of research projects along with bits and pieces drawn from various neurological studies that dealt with a variety of brain disorders shaped the framework on which the right-brain theory is based. Art educators should question why the theory supporting right-brain instruction has not been thoroughly researched. At present, right-brain drawing instruction is being taught not only in public schools but also at university levels and in the private business sector. A study is needed to investigate the popularity and prevalent endorsement of the right-brain theory of drawing instruction.

Significance of the Problem

Although Edwards' drawing techniques appear to improve student's drawing abilities, there should be concern about the justifications for these results. In question is not a technique or practice but a theory unsubstantiated by empirical evidence. Instead of supporting claims with citations from specific research findings, Edwards seems to overgeneralize and speculate about results of research data. It is possible that this reductionist stand may go unnoticed in classroom practice, and the implications for art education may be unfortunate. Many art educators have minimal backgrounds in brain research and may conduct classes under the misconception that their success in teaching
representational drawing is a direct result of using Edwards' concept of switching modes from the left to the right hemisphere. This misconception not only distorts the teacher's perception of brain function, but is also conveyed to students who, in turn, communicate it to family members and friends. The problem of this "domino effect" has virtually been ignored in teaching practices by the art education community, and research on how it affects popular references to right-brain thinking, prevalent in everyday speech and jargon, is minimal. In general, art education has left itself open to criticism from any research-based community or administration for allowing assumptions about brain function to be promoted through art. It is evident that more empirical research dealing with the area of laterality in conjunction with artistic ability is needed to authenticate any legacy that art practitioners impart to students concerning left- and right-brain function.

If further research is not done, the stereotypic right-brain belief may continue to escalate with little or no opposition. In light of the number of art educators incorporating and advocating right-brain drawing instruction in their curricula, it is surprising that relatively few reports or studies have been done on this subject. The art education research (Chambliss & Hartl, 1987; Clare, 1983;
Hines, 1991; Stokrocki, 1991; Wieder, 1984; Youngblood, 1979, 1981, 1991) that has been conducted is limited mainly to statements and discussions about the theory being unsupported by empirical research. No one has investigated the reason for its popularity or the ramifications of using such teaching strategies in the classroom, facts which emphasize the importance of this study.

Purpose of Study

The first and central purpose of this ethnographically informed case study is to observe and describe instructional methods of one high school art teacher who incorporates the right-brain theory, based on Edwards' (1989) book Drawing on the Right Side of the Brain, into the curriculum. Research techniques from anthropology, specifically the techniques in ethnographic fieldwork, were used in this study to identify the reason for the theory's appeal to this teacher. The second purpose is to provide art educators with information that might assist them in future analysis of the right-brain theory's popularity on a larger scale and of any theory that catches on but is not substantiated.

In conjunction with this study a group of secondary art educators were surveyed to determine the extent to which this teaching strategy is used among a limited group. This information is not intended to be analyzed in a statistical
sense but was collected as an illustrative measure of right-brain drawing instruction's popularity among a group of art educators.

It was anticipated that data collected through this study and through the observation of one high school art teacher's use of Edwards' right-brain drawing strategy would provide information needed to explain the theory's popularity with an art educator. It was also hoped that as a result of this study art educators would recognize a need to further investigate this as well as any popular theory widely used among teachers.

Once the problem and the need for more research are recognized by art educators, hemispheric misconceptions embedded in our pedagogical practices may be corrected. Before widespread misconceptions about hemispheric function can be amended, a deeper understanding of what prompts art teachers so avidly to incorporate the right-brain theory into their teaching strategies is needed. This study is designed to move in the direction of gaining this deeper understanding through observation and examination of one art teacher's use and promotion of right-brain drawing instruction derived from Betty Edwards' book. Through the survey, this study will also examine the prevalence of right-brain drawing techniques among a limited group of secondary art educators.
Literature Search

Although earlier research (prior to 1979) was reviewed, current studies (1979-1991) were the primary source for data to access contemporary perspectives in the area of hemispheric preference. Two major journals recognized for their research in art education, *Studies in Art Education* and *Art Education*, were reviewed from 1959 to the present, and the views of various educators on the topic were compared. Literature from these journals indicating support for case studies and ethnographies was also analyzed and compared in order to collect information that would assist in this study's research methodology. Descriptors such as education, laterality, hemisphericity, right-brain, left-brain, drawing, creativity, and artistic abilities were used to locate information through computer searches. Computer searches of ERIC and PSYCH INFO were conducted for related hemisphere research material dealing with laterality. Also, limited manual searches of such psychological and scientific journals as *Cortex* and *Brain/Mind Bulletin* were conducted. The main focus of the literature search was to locate studies dealing with normal subjects and not those neurologically or physically impaired. A comparison and review of both editions of Edwards' (1979, 1989) book, *Drawing on the Right Side of the Brain*, was conducted. Dissertations and
empirical research from the early 1970s dealing with brain function were reviewed, and data collected were used as reference for the comparative analysis of Edwards' book that will be discussed in chapter 3.

The literature search for this study was not exclusively limited to empirical research. Other media sources such as newspapers, comic strips, popular magazines (Time, Insight, Smithsonian, Newsweek, Saturday Review, UCLA Educator, Brain Mind Bulletin), university newspapers ("Finding The," 1991), computer manuals, university catalogs, and seminar pamphlets were also included. These sources were investigated to gain insight into the type of information concerning brain function that is being presented to the general population by the popular media. It is assumed that public opinion about how artistic abilities are processed in the brain is greatly influenced by these sources. In chapter 3 of this study, research literature not taken into consideration by art educators in making a right-brain curriculum choice will be discussed.

Research Methodology

Ethnographic methods of research were chosen to conduct this study which is referred to as an ethnographically informed case study. Data collection involved direct and continual contact over a 9 month period with a secondary high
school art teacher who uses right-brain drawing techniques in the curriculum. In addition to observations, two personal interviews were recorded, including an oral history of the art teacher (see Appendix A and B). A survey was also conducted to estimate the extent to which right-brain drawing instruction is used and endorsed among a group of art educators.

A literature search indicated that "during the past 20 years educators have turned to research traditions in the fields of anthropology and sociology in order to address both methodological and substantive problems in the study of teachers, curricula, classrooms, and schools" (Ettinger, 1987, p. 79). "Both participant observation and ethnographic techniques have long been used in sociology and cultural anthropology" (Alexander, 1982, p. 64) as the theoretical framework for research and are becoming viable solutions for art educators to gain pertinent information from classroom settings. Wilson (1972) stated:

The anthropological and sociological methodologies of participant observation . . . offer a means for inquiry which seems to match satisfactorily the complexity of phenomena being studied . . . . By using participant observational methods art educational researchers might be allowed the freedom and luxury of confronting issues of more substance than have been dealt with typically in research in art education. (p. 23)

The theoretical basis supporting the use of an ethnographic methods evolves from the attempt to reconstruct and explicate various realities and complexities of the participant in order to gain informative insight concerning curriculum choice and the range of its effects. The term *ethnographically informed case study* is used because several strategies and techniques drawn from ethnographic research methods have been combined to achieve maximum insights into one teacher's perspective concerning right-brain drawing instruction and curriculum planning.

**Procedure**

This study was conducted in a high school classroom located in a small parish in southeast Louisiana.
Observations were logged in a journal, and verbal lessons were tape-recorded in two high school classes of 60 minutes each, from 12:25 PM to 2:25 PM, 4 days a week, Monday through Thursday, for 9 months during the 1992-93 school year. Friday was eliminated for the Fall 1992 semester because of pep rallies and assemblies held at that time. Other classes were observed intermittently along with special functions, such as open house, freshman orientation, and night classes.

Fieldwork for this study involved the following: (a) intensive, long-term participation in the classroom setting; (b) careful recording of activities transpiring in the classroom by writing thick description field notes and collecting other types of documentary evidence, such as memos, exams, records, examples of student work, audiotapes, video tapes, and photographs; (c) subsequent analytical reflection on the documentary information obtained; (d) narrative vignettes, direct quotes from interviews and observations, diagrams, participant perspectives, and general descriptions of everyday events in the classroom; and (e) noting of any unconventional teacher or student behavior during the observations. Thick descriptions, personal observations, and opinions were manually logged into a journal each designated school day. Tape recordings of
verbal lesson instructions presented by the teacher were transcribed for later analysis.

Photographs of the environment and students, as well as their work, were documented and collected for analysis. Sketches of specific drawing assignments were included in the data recorded about classroom assignments. Documentation also included two structured and taped teacher interviews, and daily impromptu teacher interviews recorded in a journal, daily student interviews. Characteristics and quality of classroom management, instruction, student behavior, student artistic abilities, and other characteristics of this teaching environment were also observed. Additional interviews and participant responses to controversial right-brain articles were recorded through an informal interview during the fall of the 1993-94 school year.

A questionnaire to determine the prevalence of right-brain drawing instruction among a group of secondary art teachers throughout the state was mailed on May 3, 1993. This date was chosen to allow adequate time for return before the end of school in May. Results of the survey were summarized at a later date.

Study Phases

This study was conducted in two phases. The first consisted of the following: (a) observations summarized from
thick descriptions collected during the ethnographically informed case study; (b) first informant interview (see Appendix A); (c) document analysis; (d) artifact analysis; (e) photographs of classroom, students, and student work; (f) submission of reading material to informant; and (g) second informant interview (see Appendix B). In the second phase of this study a survey was conducted to determine the extent to which right-brain drawing instruction is incorporated in the curricula of other secondary educators within Louisiana. The survey was also used to help determine how representative the participant might be in relation to other art educators in Louisiana.

Phase one.

This study began in the fall of the 1992-93 school year and continued until the end of the 1993 school year. In the beginning data collection remained strictly at the journal-logging stage to allow the teacher and students to adjust to my presence and the new school year. After 4 weeks, a tape recorder was introduced with the permission of the teacher. A few weeks later, photographs were taken, and interaction with students began to occur. In December, just before Christmas vacation, an oral history and the first informal interview was tape recorded with the teacher. After the holidays, observations continued with little change in
strategy. The formal field research ended in May at the close of the 1992-93 school year, but contact was kept with the teacher throughout the summer months and into the fall and spring of the 1993-94 school year.

During the fall of the 1993 school year the teacher was asked to read three articles critical of right-brain drawing instruction. The second personal interview was then conducted to see if any change in attitude toward the right-brain theory had occurred.

Phase two.

On May 3, 1993, a brief questionnaire was distributed among 167 secondary art educators in the state with an expected return date of late May, 1993. This schedule allowed time for a follow-up if needed in the fall of the 1993 school year. The questionnaire was used to determine the prevalence of right-brain drawing instruction among a group of secondary art teachers. It was hoped that this survey, consisting of 10 short-answer questions (see Appendix C), would support this study’s assumption that right-brain drawing instruction is popular among other secondary art educators.

The survey was preceded by a short pilot-tested questionnaire developed with the help of another doctoral student in educational research. The questions on the mailed survey remained the same as those on the pilot. The only
differences between the pilot and the mailed survey were minor changes in format. The mailed survey was sent to parish art supervisors with a request for them to distribute it to secondary art teachers in their parishes for completion and return. Follow-ups to ensure adequate survey responses were considered but were not implemented, since the number of returned responses, 69 out of the 167 surveys mailed (41.3%), were adequate for this study. This survey was only designed to gain general knowledge on the popularity of the right-brain theory and was not intended to be analyzed statistically.

**Analysis**

An ongoing analysis and comparison of data collected during observations, interviews, and questionnaires was conducted. Additional reading and examination of research literature followed the study's completion. This process allowed for the identification of recurring dominant themes and the emergence of meaningful patterns or trends among teacher-participant, students, and the art educators who were surveyed. Data analysis was conducted by the researcher, a doctoral student with a major in educational research, an additional doctoral student with a major in art education, and a graduate professor in art education. Art teacher peers
uninvolved in the study reviewed data analysis throughout the research period.

The use of multiple analytical methods to examine the observation journal and interview data aided in establishing the specific rationale of the art educator's curriculum decision. Analysis of questionnaire responses provided a general base for indicating how prevalent the use of the right-brain theory might be with other art teachers.

**Participant**

Strictly by chance, this study began from an overheard conversation involving several local high school students who were talking about their art class and how they were learning to draw using the right side of their brains. Within a short period of time and with a little investigation the teacher's name and school were obtained. Ms. Bates (pseudonym), a woman in her mid-thirties with a Bachelor of Arts degree in art education, was very friendly, open, and approachable, which made arranging an initial conference a simple task.

During an initial conversation the research objectives were explained, but the study's hypothesis was not revealed. This was done intentionally to avoid influencing the teacher's behavior or actions during observations and interviews. Research results will be made available to the teacher at the end of the study. At this time permission was
given by Ms. Bates to observe several art classes. Due to time constraints, a choice was made to observe two out of five art classes she taught to grades 9 through 12, ranging from Art I to Art IV. One beginning class and one advanced class with grade levels mixed within each class were chosen for observation. These two classes were targeted for observations to determine if teaching methods might vary with different levels of art instruction. One class chosen, the Art IV advanced class, also included Art II and Art III students. Ms. Bates was very agreeable to my presence in the classroom at those times, and it was decided that the observations would take place four days a week during 5th and 6th class periods. Fridays were usually hectic and the class schedule erratic due to school activities. In order to avoid confusion and missing classes, it was decided that no observations would be made on that day.

Ethical Cognizance

The anonymity of all participants has been preserved at all times. This has been done to protect the participants from being directly affected, evaluated, or confronted in any way as a result of this study. Research releases from all individuals involved in this study--the participant, my major professor, department head at Louisiana State University,
school principal, school board superintendent, and Louisiana State University--have been obtained.

Definitions

Art Education: The teaching of visual experiences through various mediums and techniques.

Cerebral Dominance: One side of the brain leading or being dominant over the other.

Cognitive Shift: A transformation from one mental state to another, e.g., from L-mode to R-mode or vice versa.

Commissures: A bundle of fibers connecting corresponding points on the two sides of the central nervous system.

Contour Line: A line that creates a boundary separating a form or an area of space from its surrounding background.

Corpus Callosum: A major pathway that normally connects the cerebral hemispheres.

Dominance: The principle which suggests that certain elements should assume more importance than others in the same unit. It emphasizes the fact that there is one main feature and that other elements are subordinate to it.

Drawing: Visual signs, usually made on paper with pencil, pen, or chalk, combined into optical units that are used by artists to communicate or express creative ideas.

Ethnography: The work of describing a culture.
**Ethnographically Informed Case Study:** A case study conducted through the combined use of participant observation and ethnographic methods.

**Gridding:** Constructing a drawing by using evenly spaced lines running horizontally and vertically at right angles that divide the drawing into small squares.

**Hemisphere:** One of the halves of the brain.

**Lateralization:** Refers to the side of the brain that controls a given function.

**LBD:** Left brain damaged.

**LFV:** Left visual field.

**L-Mode:** A state of information processing characterized as linear, verbal, analytic, and logical.

**Ontogeny:** The development or course of development of an individual organism.

**Participant Observer:** An ethnographer that not only observes but participates.

**Phylogeny:** The evolution of a genetically related group of organisms as distinguished from the development of the individual organism.

**RBD:** Right brain damaged

**R-Mode:** A state of information processing characterized as simultaneous, holistic, spatial, and relational.

**RVF:** Right visual field.
Split-brain Patient: A patient that has had some of the fibers that connect the two cerebral hemispheres surgically cut.

Surrealism: A style of artistic expression which emphasizes fantasy and whose subjects are usually the experiences revealed by the sub-conscious mind.

Thick Description: In-depth descriptions of a particular behavior.

Conclusion

This study investigated and examined reasons supporting an art educator's decision to promote a drawing strategy using the right-brain drawing technique advocated in Betty Edwards' book Drawing on the Right Side of the Brain. It is anticipated that this study will contribute to an understanding of how a theory with little supportive research can become popular among art educators. It is also hoped that this study will encourage art educators to further investigate the relationship of artistic abilities to hemisphere function through empirical research.

This research paper has been divided into chapters consisting of the following: (a) chapter 1--problem statement, purpose of research, and proposed method of study; (b) chapter 2--overview of brain function research, literature review; (c) chapter 3--comparative analysis of
Betty Edwards' book *Drawing on the Right Side of the Brain* and a discussion of research not used in curriculum planning; (d) chapter 4—research methodology; (e) chapter 5—research observations, informant interviews, and survey findings; and (f) chapter 6—discussion and recommendations.
CHAPTER 2
REVIEW OF LITERATURE

The notion that specific areas of the brain control certain aspects of behavior is not a new one. For years scientists have been trying to discover precisely how the brain functions and what tendency a particular hemisphere might possess for dominance. As the right hemisphere became predominantly associated with artistic abilities some educators began promoting this relationship within their curricula. The purpose of this chapter is to present a review of the literature relative to hemisphere dominance and how it relates to artistic abilities. The first section provides a historical perspective on the issue of hemispheric dominance. The second section concentrates on some of the social implications associated with the right or the left side of the brain. The physical sense of laterality and the shift in education to direct instruction toward a particular hemisphere is presented in section three. The fourth section is a review of selected literature from the perspective of the researcher as an art educator. The literature has been grouped in categories of nonart-specific journal publications, unpublished research and dissertations, and non-journal publications. Specific studies were selected for
review because they used visuals as stimuli in their experiments.

The final section of this chapter constitutes a summary and discussion of the research. Betty Edwards' (1989) book, Drawing on the Right Side of the Brain, art specific journal publications, and the literature not used in curriculum planning are discussed separately in chapter 3 due to the lengthy analysis and comparison.

Historical Overview

In the earliest of times, humans believed that behavior was controlled by a soul, a spirit, or a rational system. "Plato (427-347 B.C.) developed the concept of a tripartite soul and placed its rational part in the brain because that was the part of the body closest to the heavens" (Kolb & Whishaw, 1990, p. 326). Even though Aristotle (384-322 B.C.) possessed a good knowledge of brain structure, "he decided that because the heart was warm and active, it was the source of mental processes" (Kolb & Whishaw, 1990, p. 326). The mind has also been referred to as the "bogey in the brain, the ghost in the machine, or as some psychologists have referred to it, the little green man in the head" (Kolb & Whishaw, 1990, p. 327). There was also the phrenologists' theory that depressions and bumps in the skull indicated the
size of the underlying area of the brain (see Figure 1). These bumps and depressions, when correlated with personality traits, supposedly indicated the part of the brain controlling the trait. For example, Franz Josef Gall (1758-1828), a phrenologist, believed students with good memories had large protruding eyes caused by the memory area located behind the eyes.

The variety of views concerning the nature and location of what actually controls thought began to change with René Descartes (1595-1650). "Descartes replaced the platonic concept of the tripartite soul with that of a unitary mind that is the reasoning or rational soul" (Kolb & Whishaw, 1990, p. 327). He considered the body a machine constructed of material which clearly had spatial matter that responded reflexively to sensory changes in the brain.

Prior to Descartes, writers believed that the mind existed in places other than the brain. After dissecting animal and human brains and seeing that humans differentiate themselves by possessing the largest brain, Andreas Vesalius (1514-1564) discredited these earlier theories and concluded that it is the brain that mediates the mental processes. Descartes, however, was the first to detect mental processes in specific locations in the brain, a discovery which
FIGURE 1. Gall's system of faculties for the brain.

indicated that areas of the brain are specialized for particular abilities. "Thinking of the mind as unified and located precisely in a single structure, Descartes simultaneously initiated the debate on localization of function" (Kolb & Whishaw, 1990, p. 328).

**Localization of Function**

A short paper presented to a medical society meeting in 1836 by Marc Dax, a country doctor, reported observations of speech loss following damage to the brain. These observations were not in themselves exceptional insights. Cases of sudden and permanent difficulty in the ability to speak after brain injuries had already been reported by ancient Greeks. The significance of Dax's observations, which was not recognized until after his death, was an apparent association between "the loss of speech and the side of the brain where the damage had occurred" (Springer & Deutsch, 1989, p. 1). In his paper, Dax concluded that each half of the brain possessed different functions, with the left controlling speech. This idea was not received with great enthusiasm and was soon forgotten. The following year Dax died unaware that he had "anticipated one of the most exciting and active areas
of scientific inquiry of the second half of the twentieth century" (Springer & Deutsch, 1989, p. 2).

In 1861, remarks by Auburtin to the Society of Anthropology in Paris claiming that the frontal lobes of the brain controlled human speech prompted a young surgeon named Paul Broca to further investigate this area (Springer & Deutsch, 1989). After Broca performed several autopsies that suggested a link between frontal lobe damage and speech impairment, he became a chief proponent of the concept of cerebral localization of function. Through his studies, Broca also recognized the relationship between hand preference and symmetry of the brain.

In 1868, British neurologist John H. Jackson proposed the idea of a "leading hemisphere" (Springer & Deutsch, 1989, p. 13). Jackson's concept maintained that a given individual's cognitive style relies more on one mode or hemisphere than on the other. Believers in the theory of a "leading hemisphere" focused on the contention that the two hemispheres might process information in distinctively different ways. The term leading hemisphere referred to the left side of the brain because it was the director of higher functions, such as speech. The right side of the brain was then
labeled the minor hemisphere because it was thought to be without special function and second in control behind the dominant left. Over the years these ideas of hemisphere superiority have been intensified through the use of underlying good and bad implications toward the right- and left-brain. It is still unclear why it took "most scientists 70 years after Broca's findings concerning the left hemisphere to recognize that the right hemisphere controls important functions" and is of vital importance to complex mental activities of the brain. (Springer & Deutsch, 1989, p. 17).

Duality of Thought

Almost 40 years after Dax's discovery, Karl Wernicke, a German neurologist, found that damage to the rear portion of the left hemisphere produced difficulties in the understanding of speech (Springer & Deutsch, 1989). This finding gave the first indication that the two hemispheres might be specialized for different modes of thought and eventually led to the concept of hemisphericity.

In the late 1800s, intelligence (left) and intuition (right) were classified as two dimensions of the brain. This classification specifies meaning as the product of one side of the brain and expressiveness as the product of
the other. This idea fostered the association of creativity with the right hemisphere because it was believed that artists "operate from subjective feelings, undefinable emotion, and intuition" (Youngblood, 1983, p. 10). Scientists, on the other hand, "are motivated by objective, logical, reasoned cognition founded upon verifiable facts" (Youngblood, 1983, p. 10). Therefore, persistent assumptions were made which implied that the logical mental process was a predominantly left-brain function and that visual and intuitive thought was a right-brain function. Eisner (1982) summarized by saying that "the sciences become the road to truth, and the arts the roads to pleasure and emotional release" (p. 39).

Social Implications

Notions of two-sidedness have permeated our culture, forming societal ideas about the two ways of knowing. The right side of the brain, controlling the left side of the body, is thought to be the intuitive and expressive side. The left side of the brain, controlling the right side of the body, is thought to be the logical and rational half. This division is not only associated with assumptions of function but with certain social stigmas and virtues as well. Many beliefs indicating specific qualities assigned to right and left have been incorporated into our
language, customs, and religion. Strongly connected with what is good, just, and moral is the right hand or side (controlled by the left side of the brain). For example, some common right-handed phrases or words are:

"Seated on the right hand of God"

"This answer is right"

"In your right mind"

"My right-hand man"

The New Webster Dictionary (1989) defines right with terms such as just, proper, straight, suitable, and honorable.

On the other hand, the left side of the body (controlled by the right side of the brain) is linked with feelings that are unfavorable, immoral, substandard, or improper.

According to The New Webster Dictionary (1989), one definition of left includes words such as insincere, weak, and backhanded. Some left-handed phrases include:

"A left-handed compliment"

"Oh, you're way out in left field!"

Many of these colloquial expressions are so embedded in our speech that the implications of bias are overlooked.

Political views are also indicated by reference to the right or left. Those taking a conservative position are the political right, and those professing views marked by reform are the political left. In a social settings, to sit in
honor is to sit on the right side of the host. This bias has even led some parents and teachers to attempt a change in the handedness of children.

Laterality

Physical

In a physical sense, laterality involves an object situated on, directed toward, or coming from the side. Another, although limited, concept of laterality is concerned with the tendency of Homo Sapiens to be right-eyed, right-handed, and right-footed or left-eyed, left-handed, and left-footed. "The left-right physical symmetry of the brain and body does not imply, though, that the right and left sides are equivalent in all respects" (Springer & Deutsch, 1989, p. 2). This right and left tendency is also recognized to be a quality of the brain. In reference to the human brain, laterality refers to the "side of the brain that controls a given function; hence studies of laterality are devoted to determining which side of the brain controls various functions" (Kolb & Whishaw, 1990, p. 872).

Cognitive Styles

During the 1970s and early 1980s, various educational disciplines directed considerable attention toward determining if variations in hemisphere preference were
related to cognitive styles in learning. Subsequently and prematurely many academic educators and researchers began implying that educational instruction most often involved the superior, dominant, and verbal left hemisphere. It was also implied that less instruction was given to the nonverbal, visual, and perceptive right hemisphere (Barr-Johnson, 1982; Brandwein & Ornstein, 1977; Edwards, 1979; Galin, 1976; Hunter, 1976; James & Burrows, 1981; Regelski, 1978; Rennels, 1976; Roukes, 1982; Whalen, 1985). This implication became an important issue among art educators since artistic abilities were thought to belong to the educationally deprived right side of the brain. Instead of encouraging the holistic approach to education, this attitude seemed to continue the age-old conflict of traditional dualism, i.e., the intellect versus intuition, science versus art, the logical versus the mysterious, and the tripartite soul versus a unitary mind.

Literature Search

Results of split-brain operations coupled with years of continued research generated a great deal of interest in hemispheric specialization. Studies designed to identify hemispheric differences and to explore their implications for human behavior became one of the most exciting and active areas of scientific inquiry in the mid-twentieth century.
(Springer & Deutsch, 1989). Many other areas of study involving human behavior--such as psychology, philosophy, sociology, anthropology, and education--began to draw ideas from the store of information provided by hemispheric research and then initiated their own content-specific studies. Separate from the research, theoretical articles that speculated about brain function and how it related to cognition were written by educators and professionals interested in education. These articles were usually published in popular magazines, although some did appear in professional journals. The media, attempting to present the general public with these new discoveries and ideas, began to interpret and simplify scientific jargon and principles into comprehensible terminology. Cartoonists also began to use the brain's duality as a source for their humor (see Figure 2). Scenes depicting an inability to display logical thinking became associated with a dominant right-brain.

A vast number of materials were created through the writing, simplifying, and deciphering of the research concerned with the brain and the two hemispheres. To organize and delineate differences in focus, the searched literature dealing with hemisphericity was put into the following three categories: (a) nonart-specific journal
"You're a right-brained sort of person Mr. Sommersby—Very creative, artistic, etc... Unfortunately, I think I see why you're having trouble figuring out your gas mileage."

FIGURE 2. Right-brain cartoons.

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publications, (b) unpublished research and dissertations, and (c) non-journal publications.

The question of whether or not the two hemispheres of the human brain have separate roles for specific behaviors has been the object of inquiry for countless research projects. Although studies in this area have mainly been conducted for reasons other than instruction in drawing, they have become the major source for assumptions and implications about how the right hemisphere relates to artistic abilities. Most of these studies were conducted to determine if specific behaviors might be localized in the brain. Reference to the right-brain theory and Betty Edward's book, *Drawing on the Right Side of the Brain*, will be included in the literature discussion but separately as chapter 3.

**Nonart-Specific Journal Publications**

Two publications, *Left Brain, Right Brain* by Sally Springer and Georg Deutsch (1989) and portions of *Fundamentals of Human Neuropsychology* by Bryon Kolb and Ian Whishaw (1990), were instrumental in the writing of this paper. Both books supplied history, insight, bibliographies, and technical information for the base on which this study was built. Information and sources gained from these books have been interwoven throughout the text.
Computer searches of ERIC and PSYH INFO provided 223 abstracts containing hemispheric content. They were compiled in bibliographic form for review. The abstracts indicated that most empirically oriented studies dealing with brain function were conducted in fields other than art education. Twenty-four nonart-related studies were selected from the bibliography for further review and analysis because they used visual stimuli and drawing to investigate specific hemispheric function.

The majority of the nonart-specific journal publications selected for further review were located in Cortex and The Neuropsychologia. Other articles reviewed were published in psychological journals, such as Neurosciences: Third Study Program, Journal of Clinical and Experimental Neuropsychology, Perceptual and Motor Skills, Brain and Cognitions, Brain and Language, Psychological Review, and Neuropsychological Assessment. Knowledge acquired from the reading and analysis of these articles was applied to the writing of this paper and was used as an aid in determining recommendations for future research.

Review of nonart-specific journal publications.

In a study by Levy, Trevarthen, and Sperry (1972), a chimeric-stimuli test was conducted with split-brain patients. In this study a split-face picture appeared
briefly on a screen before a patient. The split-face picture consisted of halves of two different faces joined down the center. This split stimulus is known as a "chimeric figure." The subject was asked to view the "chimeric figure" by fixating on the center of the screen as the composite picture was shown. The split-brain patients seemed unaware of any irregularities about the picture. A group of prepared pictures that consisted of four complete faces were presented to the patient. Among the pictures two were unrelated to the "chimeric figure" and two were the completed halves of the "chimeric figure." After viewing the pictures, the patient was asked to respond by identifying the picture that was previously shown as a composite (see figure 3). Patients could complete this task either verbally or by pointing with one hand or the other. When asked to vocalize their responses, patients most often chose the completed half to the right side of the chimeric figure (left hemisphere processes right visual field information). When patients were presented with several pictures and asked to point to one previously shown, the patients chose the left side of the composite (right hemisphere processes left visual field information). It was indicated in this study that both hemispheres seemed to process a normal symmetrical face from the split-face composition. This tendency is known as
"Whom did you see?"

"It was the boy."

"Point to the person you saw."

FIGURE 3. Presentation of "Chimeric Figure" to a patient.

"completion." In reference to the "chimeric" stimuli test, Springer and Deutsch (1989) suggested that "in conjunction with eye movements that bring information to both hemispheres, completion helps bring to visual experience a unity that extends across the visual field" (p. 58). This study concluded that both hemispheres are equally capable of processing human faces. In Edwards' (1989) book, she stated that the right hemisphere "is specialized for recognition of human faces" (p. 139).

In a study by Zaidel and Kasher (1989), pictures were used as stimuli to investigate hemispheric processing of realistic and surrealistic images. A total of fifteen normal (without brain damage or surgical separation of the corpus callosum), right-handed subjects participated in the study, 8 females and 7 males. The procedure involved the projection of stimuli consisting of surrealistic and realistic images to subjects with a tachistoscope (a camera that projects images to right and left visual fields separately). The surrealistic pictures portrayed impossible representations of the known world, while the realistic stimuli represented the world correctly. Both types of stimuli were equal in complexity and subject matter. During the first phase of the procedure, 24 pictures, 12 realistic and 12 surrealistic, were projected centrally for a duration of 4 seconds each.
The subjects were instructed to remember each picture for subsequent testing. In the second phase of the study, the same 24 pictures were projected in random order with the use of a tachistoscope to either the right visual field (RVF) or the left visual field (LVF). By pressing a "yes" or "no" button the subjects were to indicate whether or not they had seen the pictures previously. A timer was started upon presentation of stimuli and stopped when the subject responded manually on the response key.

It was found that more attention was given to the real/unreal dichotomy than to subject matter. The results reported by Zaidel and Kasher (1989) showed "no strong evidence for better memory for realistic pictures in the right hemisphere" (p. 623). Although pictures other than portraits were used as stimuli in Zaidel and Kasher's (1989) study, a correlation was indicated through the use of realism by both Zaidel and Kasher (1989) and Levy, Trevarthen, and Sperry (1972). Both studies clearly indicated the left hemisphere's ability to process realistic images and faces. Edwards (1989) perceived this processing to be mainly a right hemisphere function and maintained, "We must keep the left out of it" (p. 42).

In her book, Drawing on the Right Side of the Brain, Edwards (1989) over-simplified split-brain operations by
implying that commissurotomy (surgical disconnection of the two hemispheres by cutting the corpus callosum) patients were just fine after they had their corpus callosum severed. Edwards (1989) stated:

The operation yielded the hoped-for result: the patient's seizures were controlled and they regained health. In spite of the radical nature of the surgery, the patients' outward appearance, manner, and coordination were little affected; and to casual observation their ordinary daily behavior seemed little changed. (p. 29)

Springer and Deutsch (1989) described an observation by Gazzaniga (1970) that indicated the contrary. As a split-brain patient was putting on trousers, "one hand was pulling them up while the other hand was pulling them down" (Springer & Deutsch, 1989, p. 36). Another similar incident was reported by Ferguson, Rayport, and Corrie (1985). A patient opened the closet door and reached with the right hand to remove something to wear. The left hand independently took another item and would not put it down. The patient then had to call for assistance.

Levy, Trevarthen, and Sperry (1972) reported that split-brain patients have had difficulty learning to associate faces with names. Other problems that occurred after split-brain operations were deficits in the ability to solve geometrical problems, loss of memory, and temporary muteness.
(Springer & Deutsch, 1989). Although the patient may be healthy, the brain no longer functions as it had before. Edwards' (1989) assessment that the patients had "regained health" is misleading because it implies complete recovery (p. 29). Thus, defining terms plays an important role in the interpretation of how the two hemispheres function.

The right-brain theory implies a right hemisphere dominance for drawing abilities. "Drawing a perceived form is largely a right-hemisphere function. This has now been empirically tested and documented" (Edwards, 1989, p. 46). Although Edwards indicated that empirical data supported this statement, no documentation was cited in her text. A study by Young and Bion (1981) found no difference in left hemisphere and right hemisphere processing of line drawings and indicated both left and right hemisphere involvement in the first step of the drawing process (identifying form).

The purpose of Young and Bion's experiment was to investigate how the left and right cerebral hemispheres identify line drawings. Subjects for the study consisted of 20 5-year-olds, 20 7-year-olds, 20 11-year-olds, and 20 adults (no age given). In each age group 10 males and 10 females were included and all participants were rated as right-handed. Line drawings were prepared for this study consisting of 20 easily recognizable stimulus cards. These
cards were projected bilaterally to each subject with an object in each hemifield (right or left visual field). A red line was drawn under the projected drawing which the subject was to report first. For half of the trials, the right visual field (RVF) was underlined, and for the other half the left visual field (LVF) was underlined. All the cards were shown in random order. After a short practice session, the subjects were instructed to name as quickly as possible the depicted objects underlined in red as they were presented bilaterally. This procedure was repeated twice, and reaction times were recorded separately. For each stimulus card, presentation times of 100ms were used with 5-year-olds, 50ms with 7 and 11-year-olds, and 30ms with adults. These times were determined by a pilot study and were intended to minimize variations in overall accuracy across age.

Names of each picture reported by subjects were recorded as correct or incorrect. Reaction time determined which hemisphere was faster in the recognition of the stimuli. Each picture appeared once in both the LVF and RVF for each stimulus set. Failure to recognize any of the objects would have had equal effect on LVF and RVF scores.

Results of the study by Young and Bion (1981) showed that "no visual hemifield difference was found for subjects' first reports and a small RVF superiority was found for
subjects' second report" (p. 463). It was also noted that the results were unrelated to age. Young and Bion concluded that because little or no difference was found in the subjects' use of visual fields for the recognition of prepared line drawings, perceiving an object uses both hemispheres. Young and Bion maintained "that the picture identification abilities of each cerebral hemisphere are not built up separately, and that once the identity of a depicted object is known it is available in some form to either hemisphere" (p. 462).

A study by Kirk and Kertesz (1989) was conducted using stroke patients with single cerebral lesions "to determine whether the severity and nature of drawing disability differs between LBD [left brain damaged] and RBD [right brain damaged]" patients (p. 882). Sixty-nine right-handed stroke patients were included in the study, 41 with lesions in the right hemisphere and 28 with lesions in the left hemisphere. Patient drawings were assigned random numbers and each drawing was rated and analyzed separately by a standardized scoring system.

The results indicated that the RBD patients "showed neglect and a piecemeal quality in which spatial relationships between components were abnormal" (Kirk & Kertesz, 1989, p. 885). Although the RBD patients clearly

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understood the objects and included details in their drawings, they lacked the ability to create a whole from the parts. The LBD patients, on the other hand, possessed the ability to accomplish spatial placement, but their drawings were significantly more simplified. The evidence indicated that the left hemisphere was more capable of spatial relationships while the right hemisphere was more oriented to detail. This study by Kirk and Kertesz indicated that a partnership in hemisphere function accomplishes both tasks, spatial placement and detail, for the exercise of drawing.

Other studies (Delis, Kiefner, & Fridlund, 1988; Gianotti, Meceli, & Caltagirone, 1977; Gianotti, & Tiacci, 1970; Jones-Gotman & Milner, 1977) resulted in similar findings concerning visuospatial dysfunction of the right hemisphere. Variations in the findings of these and other studies mentioned in this paper were partially due to the use of subjects with varying degrees of brain damage. Gainotti and Tiacci (1970) noted "that the patients with left-sided brain damage often had a paresis in the right hand and were therefore obliged to draw either with a disabled hand or with the non-preferred hand" (p. 383). This may have been one reason for less detail in drawings by patients with left hemisphere lesions. Because of these types of inconsistencies, many reviewed studies requested that caution
be used in the interpretation and generalization of the research findings.

In *Psychological Review*, Kosslyn (1987) delineates a theory of subsystems that were formulated for visual recognition, navigation, tracking, and imagery. In an extensive discussion of these subsystems, Kosslyn (1987) "account[ed] for how visual function becomes lateralized in the brain." He concluded that "neither imagery as a whole nor individual imagery abilities, such as image generation or image transformation, are lateralized solely to one side or the other" (p. 170).

A study by Levine and Banich (1982) was conducted to "directly compare visual field asymmetries for the naming of line drawings and the words that name these drawings" (p. 36). Testing was conducted with 32 adult subjects, 16 males and 16 females. All subjects were right-handed and had vision corrected to 20/20. The stimuli were bilaterally presented with a tachistoscope and consisted of 80 black line drawings of common objects on white stimulus cards. The stimuli also included 80 four- or five-letter words which named the objects. Each subject was given 150 line drawings and asked to supply the name of each object.

Results of this study indicated that "pictures and words that name them do not show identical visual field advantages."
While words show a significant RVF [right visual field]-left hemisphere advantage, pictures show no visual field difference" (Levine & Banich, 1982, p. 41). This study implies that both hemispheres are used for the recognition of line drawings. An important concern was expressed by Levine and Banich in their study. "A variety of methodological problems makes the results of most studies investigating lateral asymmetries for the recognition of line drawings difficult to interpret" (Levine & Banich, 1982, p. 35). Some of these problems, such as inadequate control over fixation, were mentioned as factors contributing to the inconsistent findings of related research. These inconsistencies seem to be overlooked by advocates of the right-brain theory.

Teuber (1974), in an article for The Neurosciences: Third Study Program, discusses three questions surrounding hemispheric specialization: the what, the how, and the whence. The three are defined by Teuber as:

(1) what it is that characterizes the specific function of the right and left hemispheres in the normal adult; (2) how the commissures act in providing information transfer, between the hemispheres, and in constraining, or modulating, the activities in the parallel halves of the brain, in such a way that a functional asymmetry arises and is maintained; (3) last, one would reopen the question of whence the asymmetries arise in phylogeny and ontogeny. (p. 71)
Teuber suggested as early as 1974 that the concept of the dominant left hemisphere had "been abandoned and replaced by one of complementary specialization" (p. 71). The question of dual functions for man's [woman's] cerebral hemispheres involves many complex aspects of neuronal organization, and the "why" of two hemispheres still eludes researchers.

In another publication, *The Neurosciences: Third Study Program*, Milner (1974) also argued that there was new evidence to support the idea of complementary specialization as opposed to earlier views of hemisphere dominance. Milner (1974) stated that this was "manifested in normal subjects by the way the hemispheres interact when competing information simultaneously enters the two ears or the two visual half-fields, and it becomes still more evident when the interhemispheric connections have been divided" (p. 75). In yet another publication, *The Neurosciences: Third Study Program*, Broadbent (1974) expressed a view of the two hemispheres "performing different parts of an integrated performance" (p. 31). He also noted that, "We really have no grounds from these experiments for thinking of the hemispheres as operating independently" (p. 37).

Chemtob (1979) conducted a study of hemispheric differences in regard to aesthetic preference for simple drawings such as arrows, squares, and circles. This study
was conducted with normal subjects (without brain damage or surgical separation of the corpus callosum). The results showed a significant difference in hemisphere preference for the stimuli (figures of the Barron-Welsh Art Scale, 1963) shown to the subjects. Chemtob recommended that the findings reported in this study be interpreted cautiously and that there was a need for replication. He pointed out that the hemisphere preference indicated in the study did not "appear to be due to specialization of each hemisphere for a particular stimulus dimension across individuals, but rather seemed to be a function of differences in the preferences exhibited by each hemisphere of a particular individual" (p. 804).

The first in a series of studies conducted by Peterson and Lansky (1974) questioned whether or not left-handed architecture students would have a tendency to solve spatial problems more frequently than right-handed students. Although the results indicated no significant differences, the authors speculated that it appeared "safe to say that the left hemisphere goes more with right-handedness and verbal abilities, the right hemisphere more with left-handedness and greater spatial competence" (Peterson & Lansky, 1974, p. 550). In a second study by Peterson and Lansky (1980) the relationship between handedness and architecture was
continued but with the inclusion of data on sex and academic predictors. Although the data implied that there was some support for the idea that left-handers complete architectural programs in greater proportion than do right-handers, the results were given with a word of caution. The authors pointed out that the sample for this study was small, and the results did not provide clarification. In the study it was stated, "The temptation to jump to some stereotype about left-handedness and visual abilities has been strong. The present data brought us up short with that idea. It is clear from the present data that right-handed men and women do well in the program" (p. 1143).

The following studies have similarities in research procedures. All were conducted with split-brain or brain damaged patients, and all used a form of drawing to determine any hemisphere advantage.

LeDoux, Wilson, and Gazzaniga (1977) conducted a study in an effort to find clues as to the origin of lateralization. The collected data suggested that many differences existed between the hemispheres. It also suggested that the differences that did exist were more attributed to the brain's processing "than to the evolutionary specification of cognitive style" (LeDoux, Wilson, & Gazzaniga, 1977, p. 747).
In a study by Kosslyn, Holtzman, Farah, and Gazzaniga (1985), a pattern of deficits was observed in subjects who attempted to generate multipart images using the right hemisphere. The left hemisphere could, on the other hand, generate single and multipart images. Two general points were made as a result of experiments conducted in this study, but only one had relevance to hemisphere dominance. Kosslyn, Holtzman, Farah, and Gazzaniga (1985) concluded that "Imagery is not a simple event and it does not take place entirely within a single part of the brain. Attempts to localize the imagery system, as an undifferentiated whole, to one neural locus have not been successful" (p. 340).

Grossman (1988) tested patients with varying degrees of brain damage for their ability to produce freehand drawings. The findings revealed that the subjects with right hemispheric damage were significantly more impaired overall than left hemisphere-damaged patients in producing freehand drawings. The patients with right hemisphere damage were most impaired when expressing shape attributes in their pictures.

In a study by Swindell, Holland, Fromm, and Greenhouse (1988), LBD and RBD patients were tested for the rate of recovery in drawing abilities. The results showed that "LBD patients recovered drawing abilities more rapidly and more..."
completely than RBD subjects* and that the time allowed for
testing was a critical factor in assessment of recovered
drawing abilities.

In a similar study by Marsh and Philwin (1987), a change
in the work of one artist with a left posterior lesion was
observed. The time allowed for recovery was considered a
factor as well as comparisons of pre-illnes to post-illness
paintings. Marsh and Philwin's (1987) study is included in
this section because the subject's artistic ability was not
the focus of the study. However this study did use art as a
form of stimulus. An artist was used only because there was
a greater potential for a subject skilled in drawing to
exhibit the effects of brain lesions. A nonartist may have
done poorly due to the lack of natural talent, experience, or
professional training. In addition, there would have been a
lack of pre-illness art work for comparison with post-illness
work. Marsh and Philwin (1987) stated:

The conventional use of spontaneous line drawings
or copies of line drawings rather than a full
painting to test for unilateral neglect in the
general brain-damaged population gives a restricted
sample of drawing which may not reveal the more
subtle aspects of unilateral spatial neglect that
may be elicited by a painting. (p. 152)

Results indicated that damage on the left side of the brain
altered the visuospatial perception and constructional
ability on both sides of a painting. However, the side
(right side) of the painting opposite to that of the lesion was more affected.

**Summary.**

In the reviewed literature in this section, researchers attempted to identify specific activities of a single hemisphere by studying split-brain and normal subjects. All but two (Grossman, 1988; Swindell, Holland, Fromm, & Greenhouse, 1988) of the empirical studies obtained findings concerning hemispheric specialization suggesting that a normal brain does not function as two independent units, but as a complementary system (Broadbent, 1974; Milner, 1974; Teuber, 1974). These findings do not support concepts promoted in the right-brain theory.

Data from these studies indicated that the right-brain is lateralized for certain specific nonverbal tasks and the left-brain for verbal tasks. It should be recognized, however, that the information resulting from these studies is too inconsistent and inconclusive for art educators to draw firm conclusions about what functions the right-brain possesses during drawing. These studies do not indicate how drawing information is processed in the brain of a normal individual, nor do they address how much information is transmitted between the hemispheres by the corpus callosum (Teuber, 1974). To imply, as the right-brain theory does,
that one hemisphere works harder than the other at processing certain information is misleading. Bogen (1969) states:

One of the most obvious facts about the cerebrum is that it is double. One hemisphere is structurally the gross mirror image of the other; and the metabolic rate of one is essentially the same as the other. That is, the other side is not only structurally the same, but it is working just as hard. I submit that the informational capacity of the one is just as great as the other; or, put differently, the other side is not only working just as hard, but also just as intricately. (p. 105)

The right-brain theory seems to be based more on speculation and overgeneralization of research than on actual data. Unfortunately, this theory, "which says more about a current popular-science vogue than it does about the brain" (Gardner, 1978, p. 24), may go unnoticed in classroom practice. Edwards (1989) states, "The method works, regardless of the extent to which future science may eventually determine exact location and confirm the degree of separation of brain functions in the two hemispheres" (p. xiv). In making this statement, Edwards seems to acknowledge the limitations of her proposition that art education can be directed to specific hemispheres. Kosslyn (1987) wrote, "The elegance and simplicity of a dichotomy usually disappears when the dichotomy is confronted with actual empirical results in need of explanation" (p. 169).
Unpublished Research and Dissertations

Through the PSYCH INFO search, five dissertations (Fancher, 1982; Mallet-Gray, 1981; Ogorek, 1982; Webb, 1985; Young, 1981) were found that dealt with art education and brain function. One unpublished study (Youngblood, 1991) presented at a conference of the National Art Education Association in Atlanta, Georgia, on March 11, 1991 was located. A copy of the unpublished paper was available and obtained from the author. All of the studies in this section listed Drawing on the Right Side of the Brain as a reference.

Of the five dissertations, two (Mallet-Gray, 1981; Young, 1981) were written for United States International University, one for the University of South Carolina (Webb, 1985), one for the University of Alabama (Fancher, 1982), and one for the State University of New York at Buffalo (Ogorek, 1982). Four (Fancher, 1982; Mallet-Gray, 1981; Webb, 1985; Young, 1981) were quantitative studies assessing effects of right-brain instruction. One study (Ogorek, 1982) was qualitative and focused on knowledge of brain functions possessed by doctoral students in education.

Three (Fancher, 1982; Mallet-Gray, 1981; Webb, 1985) of the four quantitative studies stated a null hypothesis for the use of right-brain instruction. These studies maintained that there was no significant difference between subjects
using the right-brain method of instruction and subjects using different instruction or none at all. One study suggested that research had been oversimplified concerning independent hemispheric functions (Fancher, 1982).

The single quantitative study (Young, 1981) that suggested a positive hypothesis for the use of right-brain instruction was in the area of math education. This study hypothesized that subjects given training with right-brain instruction would improve in their mathematical achievement. Although the results of this study indicated that the hypothesis should be retained, a change in teaching techniques was not considered as a possibility for the subjects' improvement in mathematics.

The writer of the qualitative dissertation (Ogorek, 1982) observed graduate students in education and surveyed their knowledge of brain functions. The main purpose of Ogorek's study was to determine the amount of knowledge of brain function being received by persons who would be responsible for curriculum planning. It was concluded that most respondents did not have adequate knowledge of hemispheric function and that research on this subject was not being utilized for curriculum planning. Ogorek suggested that curricula should incorporate strategies and activities for both right and left hemisphere development.
Two of the five dissertations (Mallet-Gray, 1981; Young, 1981) were conducted in areas other than art. These data demonstrate that the right-brain theory has been used in disciplines other than art and supports this paper's assumption that the right-brain theory is embedded in more than one educational discipline.

One study (Youngblood, 1991) concerned with hemispheric functions and drawing abilities has been included within this section. Similar to other published research (Clare, 1983, Clare & Sutter 1983; Chambliss & Hartl, 1987; Doerr, 1980;), Youngblood's study was also initiated to challenge Edwards' "right-brain myth." This study was designed to examine the following questions:

1. Does drawing from either upright or inverted images influence the representational quality of finished drawings?
2. Does experience gained from executing one drawing transfer to the execution of a second?
3. Do subjects learn to draw better representationally when no instructions are provided, when specific drawing instructions and exercises focused on hemispheric contributions to drawing are provided, or when drawing instructions and exercises are provided without reference to hemispheric contributions to drawing?

In Youngblood's study two control groups received no drawing instructions. Three groups received complete instructions taken directly from chapter 4 in Edward's book, Drawing on the Right Side of the Brain. A third set of three groups
received the same drawing exercises from chapter 4 but without any references to the right hemisphere and how it functions during the drawing process. Results from this study "suggest that it makes little difference in terms of enhancing drawing resemblance whether we offer naive subjects no instructions, abbreviated instructions with drawing practice, or instructions and practice focused on the right hemisphere's contribution to drawing" (Youngblood, p. 28). This study indicated that the use of right-brain concepts and exercises did not accelerate the acquisition of drawing abilities.

Non-journal Publications

Popular media have been known to greatly influence public opinion. It is, therefore, assumed that public perception of how artistic abilities are processed in the brain has also been affected by the media. It was for this reason that other media sources such as newspapers, comic strips, popular magazines, university newspapers, computer manuals, university catalogs, and seminar pamphlets were included in the literature search. Most of the sources in this section were an accumulation of findings collected over a period of three years. No specific strategy was adopted for locating any of these sources, merely a conscious effort to be watchful during the course of daily reading. Many of
the newspaper articles and cartoons were sent from friends and colleagues also interested in this study. Information about hemisphere dominance collected from the media sources was not only reviewed but has been interwoven throughout this paper to indicate public assumptions about brain function. Quotations and statements were also pulled from these sources and used to manifest how embedded right-brain thinking has been within our culture.

Newspapers.

One media source that provided valuable insight as to how the public perceives brain function was not revealed through the ERIC and PSYH INFO computer search. This source, the local newspapers (The Advocate, 1993; Campus News, 1991; The Picayune, 1991), produced insights that were instrumental in activating this research. An article printed in the The Picayune (Sunday, March 10, 1991) contained information about a study at Loyola University, New Orleans. This study was being conducted by Kitten Grote, an art educator working on a master's degree; Mark Grote, the chairman of Loyola University's visual arts department; and Sarah Smith, the director of Loyola's Academic Enrichment Program. The article maintained that the Grotes were "particularly interested in the [right-brain] theory because they both had slight learning disabilities while in school."
The Grote, Grote, and Smith research team was "testing Loyola art students to see if a correlation exists between the visual arts and learning disabilities" (Kemp, 1991, p. 10D). Even though this study was in the preliminary stages, Grote's visual arts department had begun an intense writing program for visual art majors to help them express themselves in other academic areas. Plans were being made to publish the study, and Grote was quoted as saying, "Art could be seen as an indicator for a teacher to see that a student may have a learning disability in other areas" (Kemp, 1991, 10D). It should be noted that there were no prior studies mentioned or cited in this newspaper article. This failure to cite research seems to be a recurring characteristic of supporters of the right-brain theory. The newspaper also quoted Grote as saying, "Artists with learning disabilities may be quite normal" (Kemp, 1991, p. 10D). The chairperson continued by maintaining that artists' "disabled learning" could be attributed to deficiencies in hemisphere development. Assumptions like these, made by professionals in the field, contribute to the growth of this theory's popularity.

In another newspaper article ("Finding the," 1991) related to the Grote, Grote, and Smith study, Grote was quoted as saying, "If we can show a correlation [between
learning disabilities and artists], our findings can be a tool that can be used in primary and secondary schools as an indicator for early diagnosis" (p. 1). Both articles discussing the Grote, Grote, and Smith ("Finding, the," 1991) study implied a general acceptance of right-brain theory and projected that something positive may result for artists.

A similar newspaper article was printed in The Advocate (Dunne, 1993, p. 1B). Although the main focus of this article centered around a group of teachers who attended a conference, it contained reference to the right-brain theory. The article began by quoting a teacher who said, "Lloyd is a 'right-brained' child." Lloyd, a fourth grader, was classified as a right-brained child because, although he was "good at art," he could only read on a third-grade level and was considered a discipline problem (Dunne, 1993). It was suggested that the traditional classroom curricula and teaching styles did not address the learning modes of Lloyd and other children like him. The Health Reference Center furnished a description of how the brain functions: "The brain's two hemispheres work together and most people operate out of the 'center' of the two hemispheres, with each side contributing its share" (Dunne, 1993, p. 2B). The Health Reference Center also stated that "the left hemisphere specializes in the control of verbal skills such as grammar.
and vocabulary and analysis of information such as math—the items usually at the core of the school curricula" (Dunne, 1993, p. 1B). Thus, it also implied that the right hemisphere has been neglected in the curricula.

The same article was mainly concerned with a group of teachers from a local high school who attended a summer institute in Tennessee to learn how to integrate visual arts, music, drama, and dance into the elementary school curriculum. According to the article, the information gained at the institute would be used to stimulate right-brained children. The article did not specify whether the use of right-brain terminology originated from the teachers who attended the institute or from the author of the newspaper article. The only reference to the right-brain theory was in the introduction of the article. The remaining information presented in the article strictly pertained to the kind of information the teachers gained from the institute and what they wanted to do with it. The "now you see it, now you don't" use of right-brain terminology has been evident throughout the research conducted for this study. It appears that the right-brain theory has been used as a logical explanation for general academic inadequacies.

The title of another newspaper article (Thomas, 1993, p. 8B) unrelated to art read, "The right has as much right as
left." The title referred to the right of anti-abortion groups to express their views but not be generalized as violent. One line makes this article relevant to this study: "Abortion has become a type of doctrine of the religious and pagan left" (p. 8B). This again supports this study's assumptions that implied meanings given to the right and left are prevalent in society.

Magazines and books.

Many theoretical works published in various magazines and located through the original computer searches (Bering-Jensen, 1991; Bogen & Bogen, 1983; Dunkel, 1991; Edwards, 1979, 1989; Interface Press, 1975; Lipkin, 1991; Roukes, 1982; Sperry, 1975) support the view advocated in the right-brain theory. Most of these articles discussed or hypothesized about various aspects of using right-brain function as a pedagogical tool in art education. These articles were based on excerpts taken from nonart-specific, empirical research involving brain-damaged or brain-altered patients. Works (Cornock, 1984; Elliot, 1986; Ganier, 1977; Hines, 1991; Weider, 1984; Youngblood, 1979, 1981, 1985) published in research journals oppose the right-brain theory and have been included in art-specific journal publications in chapter 3.
One book, *Drawing on the Right Side of the Brain* (Edwards, 1979), which has strongly advocated and popularized the belief that art almost exclusively involves right-brain activity, became the single best-selling right-brain publication of the 1980s. Because this book is so popular and has been the sole incentive for so many research projects and dissertations, *Drawing on the Right Side of the Brain* is the main focus of the discussion in chapter 3.

Miscellaneous materials.

In the 1993 Fall catalog of the University of New Orleans Metropolitan College, two courses offering four sections of right-brain drawing instruction were listed under *Noncredit Lifestyle and Leisure* (p. 57). *Drawing on the Right Side of the Brain* was specified as the instructional book, and its author, Betty Edwards, was given credit for developing the right-brain theory. The course description stated that exercises would be taught to improve students' drawing skills. It was also maintained that students would experience the right-brain shift which, according to the catalog description, encourages creative potential.

Reference to right-brain learning abilities was not limited to a college catalog. It was also included in a computer manual, *How to Use the Macintosh Bible Software Disks* (Allen, 1991). This manual accompanied the Macintosh...
Bible software (two disks) that was used to help type this paper. In two chapters of this manual, reference was made to the disks as a right-brain disk and a left-brain disk. The right-brain disk contained illustrations and drawings by master artists, and the left-brain disk contained accessories for sorting and storing numbers automatically. This casual way of describing differences between computer disks is another indication of how generally accepted the right-brain theory has become.

A workshop pamphlet (Roy & LaBauve, 1993) announcing a 5-day concentrated workshop which could teach drawing to anyone with average eyesight and average hand-eye coordination was obtained from a fellow graduate student. Instructors for the workshop studied at state universities and were described as having traveled extensively to learn with noted artists. The pamphlet listed 10 things that would be achieved during the course of the workshop, and 5 directly pertained to right-brain function and control. Drawing on the Right Side of the Brain was the instructional book for the workshop.

The Brain Mind Bulletin announced that the famed neurosurgeon, Joseph Bogen, who has been credited with pioneering split-brain research, was the featured speaker at a 4-hour conference at California State University,
Northridge, on December 6, 1975. Over 100 educators from 19 universities attended the conference to discuss split-brain research and its implications for education. The topic of discussion was the educational relevance of what Bogen referred to as "dual modes of thinking" ("Split-brain," 1975, p. 1). Most relevant to this study was Bogen's statement, "The experiments on split-brain patients are difficult to interpret. You don't know what you have when you're finished" ("Split-brain," 1975, p. 1). This statement implied that research findings using split-brain patients should not be conveniently generalized. This concurs with statements of caution issued in many of the research studies.

The right-brain theory, so it seems, has permeated almost every existing printed medium read by the general public. Unlike the research studies, many of the popular media that were reviewed indicated an unquestioned acceptance of the right-brain theory. In most cases these views were not supported by research data.

Summary

In this chapter various approaches to the study and interpretation of hemispheric specialization were discussed. These areas included 24 nonart-specific journal publications, 5 dissertations, 1 unpublished study, and 17 non-journal publications. The literature presented focused on the
subject of cerebral dominance and hemispheric specialization as it related to artistic abilities. The reviewed nonart-specific journal publications suggested a relationship between the left and right hemispheres as opposed to specific functions specialized to one hemisphere or the other. Of the dissertations reviewed, three (Fancher, 1982; Mallet-Gray, 1981; Webb, 1985) stated a null hypothesis for the use of right-brain instruction. Two (Ogorek, 1982; Young, 1981) suggested a positive hypothesis for right-brain instruction. The one unpublished study reviewed (Youngblood, 1991) maintained that right-brain drawing instruction did not affect how brain functions are controlled. All but one of the popular media searched (Thomas, 1993) referred to the right side of the brain as the hemisphere that controlled artistic abilities.

Conclusion

A theory exists that the human brain is a direct result of evolutionary development. It may be traced back to the flatworm, which is thought to possess one of the first primitive brains with right and left side divisions (Ogorek, 1982). It is believed that evolution has continued to increase the brain's size and complexity. In dealing with increasingly complex processing functions, the brain has become more specialized and adaptable. As research about the
differences between the two halves of the brain continues, the answers become more complex and elusive.

Cohen (1977) argued that the normal brain does not function as two isolated components, but as a closely integrated system. Because it was difficult to assess the activity of one hemisphere in an individual with an intact corpus callosum, most of the hemispheric studies were conducted with split-brain patients. Owing to the differences in subjects, stimuli, age groups, and investigative procedures, there are inconsistencies in the research findings of these studies. Most of the reviewed research suggested that the evidence from split-brain patients was unclear and encouraged caution in the interpretation of the findings. Despite these warnings, bits and pieces of the research results have been used as the base of a theory which implies that drawing instruction can be directed toward the right hemisphere. This theory, the right-brain theory, has been used in art curricula by some art educators for over a decade. Betty Edwards has been credited with developing this theory through the publication of her book *Drawing on the Right Side of the Brain*.

Edwards made specific claims about her right-brain theory. She maintained that art almost exclusively involved right-brain activity. Certain exercises in her book
advocated "drawing tasks in the classroom as a means of activating the right hemisphere in the interest of enhancing student drawing capabilities" (Youngblood, 1991, p. 2). One of these drawing tasks involved viewing images upside down during the drawing process. It was implied that this exercise would turn off one side of the brain (left) to allow the other side (right) to function. The literature review conducted for this study did not support this concept. Youngblood (1991) argued, "Conversely, others recognized that turning hemispheres on and off like light bulbs by merely inverting images from which to draw was, at best, an over simplification and, at worst, decidedly incorrect" (p. 2).

Although her drawing methods appeared to be effective, there was no consistent research evidence provided to support Edwards' claim that "hemisphere switching" could be a learned phenomenon (Youngblood, 1991). In this review no scientific data were found to suggest that her instructional techniques indeed produced a cognitive shift toward the right hemisphere. Although numerous research studies relevant to brain research are listed in her bibliography, none are cited in the text of her book. Studies listed in the bibliography and used to support her theory were conducted with patients
who were brain damaged or had undergone split-brain surgery because of epileptic seizures.

In light of the inconsistencies that beset brain research, recommendations have been made to use caution in forming conclusions about how the hemisphere functions. These recommendations have been largely ignored by those advocating the right-brain theory. Hemisphere research has been greatly over-simplified by supporters of the right-brain theory. Misinformation has been presented by teachers to students, who in turn pass it on to friends and relatives. Thus, the functions of the right-brain have become progressively misconstrued. According to Dobbs (1989), the misinformation presented about the right-brain theory is "not unlike the old parlor game of 'Telephone,' in which information becomes increasingly distorted as it is passed from person to person" (p. 119).

Over-generalization of research data should have significantly reduced the impact the right-brain theory has had as a viable instructional tool. However, this does not seem to be the case. Although there are "alternative hypotheses" that predict different findings, the popular media have promoted the notion of right-hemisphere specialization as it relates to art (Youngblood, 1991). One reason the right-brain theory may not be questioned is
because it has been solidified within society by merely remaining unchallenged for over a decade. At the present time, there has been little indication that any new research in the area of hemispheric function and how it relates to art will be conducted in the near future. It would be unfortunate if this topic was considered too unproblematic to warrant further research. This study is designed to make the initial step toward activating this type of research.
CHAPTER 3
COMPARATIVE ANALYSIS OF
DRAWING ON THE RIGHT SIDE OF THE BRAIN

Research from the last 20 years involving brain damaged-patients uncovered many complex aspects of the brain's organization. This research indicated that the two cerebral hemispheres operate in different ways, the left controlling the logical and scientific functions and the right linked to creativity and intuition. Art educators began their own investigations into the relationship of this discovery to artistic abilities. One educator, Betty Edwards, argued that artistic abilities were located in the right hemisphere. In 1979 Edwards wrote a book, Drawing on the Right Side of the Brain, that was based on an implied relationship between the right hemisphere and the ability to draw. This book initiated Edwards' "right-brain theory," and because its popularity and its widespread use in classrooms, it calls for lengthy discussion, taking into account other studies that contradict the "right hemisphere creativity myth" (Hines, 1991, p. 223). The present chapter is divided into eight sections dealing with: (a) art-specific journal publications, (b) right-brain theory, (c) the text behind the theory, (d) the influence of Nicolaides, (e) right-brain exercises,
(f) contradictory research, (g) disregarded research literature, and (h) a summary.

Art-Specific Journal Publications

Through the initial computer search of research publications (1969-present), only a limited number of works were found concerning hemispheric preference and how it directly relates to artistic abilities (Barr-Johnson, 1982; Chambliss & Hartl, 1987; Clare, 1983; Clare & Suter, 1983; Doerr, 1980; Dorethy & Reeves, 1979; Jausovec, 1985). Although empirical studies were found that involved the use of drawing, they did not specifically deal with creativity or drawing as an art form but merely with the ability to make recognizable images and reproduce given shapes. These studies were discussed in chapter 2 in the section titled "Nonart-Specific Journal Publications."

Among the art-specific publications, most of the literature is theoretical in nature. These works were not experimentally based, they simply did or did not support the idea of hemisphere preference (Bogen, 1975; Cornock, 1984; Edwards, 1979, 1989; Elliot, 1986; Ganier, 1977; Hines, 1991; James & Burrows, 1981; Regelski, 1978; Weider, 1984; Whalen, 1985; Youngblood, 1979, 1981, 1985). These ideas were expressed through definite points of view on the question of validity of the claims of cerebral dominance and its
relationship to creativity. In the review of these articles it was found that, regardless of whether the author did or did not support the idea of hemisphere preference, both views were based on information borrowed from exactly the same empirical studies that tested brain-damaged or brain-altered patients. Thus, individual interpretations of research seem to have played an important role in the development of the right-brain theory. This underscores the cautions issued by researchers reviewed in chapter 2 concerning interpretations of research findings.

Even though general research involving laterality appeared to peak during the 1970s, no studies were located that specifically dealt with art education and how it relates to laterality. A manual and computer search of two major publications, *Studies in Art Education* and *Art Education*, however, did yield four empirical research studies (Chambliss & Hartl, 1987; Clare, 1983; Clare & Suter, 1983; Doerr, 1980) conducted at a later date that directly dealt with hemispheric function and how it relates to art education. All four were researched and published after 1979, the year Betty Edwards wrote *Drawing on the Right Side of the Brain*, and introduced her right-brain theory. Three of these studies (Chambliss & Hartl, 1987; Clare, 1983; Clare & Suter, 1983), similar to Youngblood's (1991) unpublished study, were
initiated in an effort to dispel what they felt was the "right-brain myth." All three studies were direct reactions to Edwards' right-brain theory. Based on the number and nature of publications, it may be concluded that the right-brain theory increased in popularity between 1986 and 1989, at the same time that the conflict surrounding it diminished.

**Drawing on the Right Side of the Brain**

In the late 1970s, Dr. Betty Edwards developed a right-brain method and technique of drawing instruction known as the "right-brain theory." Edwards viewed this theory as an extension of the brain research conducted by Roger Sperry at the California Institute of Technology. In 1973, Sperry summarized his earlier research as follows:

> The main theme to emerge from the foregoing facts is that there appear to be two modes of thinking, verbal and non-verbal, represented rather separately in left and right hemispheres, respectively, and that our educational system, as well as science in general, tends to neglect the non-verbal form of intellect. What it comes down to is that modern society discriminates against the right hemisphere. (p. 76)

Edwards (1989) considered her right-brain theory to be "one of the first practical educational applications of Sperry's work" (p. xi).

Edwards combined concepts from Sperry's brain studies with drawing techniques similar to those developed by Kimon Nicolaides (1941) and formulated a book that strongly
advocated drawing instruction directed toward the right hemisphere. This book, *Drawing on the Right Side of the Brain* (Edwards, 1979), which was revised in 1989, has been used as a textbook and reference by some art educators when teaching right-brain drawing techniques. Concepts advanced in Edwards' book revolved around a theory that the brain is lateralized for drawing on the right side. One of these concepts implied that students taught through right-brain drawing instruction can learn to access the right side of the brain at will for drawing purposes. Edwards also implied that students will also be able to prevent the left side of the brain from interfering with or participating in the drawing activity.

Edwards' right-brain instructional program is theoretically based upon research findings concerning cerebral dominance. It seems that these findings led Edwards (1989) to postulate "that both hemispheres are involved in higher cognitive functioning, with each half of the brain specialized in complementary fashion for different modes of thinking, both highly complex" (p. 29). The two modes of thinking as defined by Edwards are the R-mode and L-mode. The R-mode is "a state of information processing characterized as simultaneous, holistic, spatial, and relational" (Edwards, 1989, p. 224). These attributes are
associated with the right hemisphere. The L-mode is "a state of information processing characterized as linear, verbal, analytic, and logical" (Edwards, 1989, p. 244). These are attributes associated with the left hemisphere.

Edwards claimed that anyone can produce an accurate, realistic drawing if a cognitive shift is made to the right-brain or R-mode of thinking. She also maintained that, "In the process of learning to draw, one also learns how to control how one's own brain handles information" (Edwards, 1989, p. xiii). In support of this theory, Edwards (1989) expressed her "belief that if persons untrained in art can learn to make the shift to the artist's mode of seeing--that is, the right-hemisphere mode--those individuals are then able to draw without further instruction" (p. 7). This R-mode shift, as explained by Edwards, is done so that the functions of the visual right hemisphere are able to operate unobstructed by the dominant left hemisphere's tendency to verbalize, analyze, rationalize, and organize. Edwards maintained (1989) that "in order to gain access to the subdominant, visual, perceptual R-mode of the brain, it is necessary to present the brain with a job that the verbal, analytic L-mode will turn down" (p. xiii). It is on this concept that her drawing exercises are based. Exercises designed to allow the right hemisphere the freedom to create
without inhibition or left hemisphere interference. In other words, right-brain drawing instruction is based on the assumption that a cognitive shift from the L- to the R-mode can be induced through specific exercises.

Text Behind the Theory

Curricula in art education, unlike other core subjects such as math, English, and science, are not standardized. Therefore, curriculum decisions are left in the hands of individual art teachers. In many public schools, nonart teachers are required to be on specific pages in their textbooks at certain times of the year. This creates classes that are concurrent, although they are taught at different schools and by different teachers. Art educators, on the other hand, are usually free to create individual curricula and are restricted only by funds, supplies, and classroom facilities.

While searching for an adequate, comprehensible, theory-based curriculum that provides students with quality instruction, some art educators have adopted the strategy of directing drawing instruction to the right hemisphere. Drawing on the Right Side of the Brain is often used in conjunction with the right-brain strategy as a textbook or an additional reference. This book is most widely known for almost exclusively directing its drawing exercises toward the
right hemisphere. It also advocates "that training the right hemisphere will improve artistic abilities" (Hines, 1991, p. 225).

**Text Format**

*Drawing on the Right Side of the Brain* was originally written in 1979 but was revised in 1989 with minimal changes in content or format. It contains an impressive store of techniques for assisting beginners in the execution of representational drawings. Edwards' book is clearly written with precise illustrations and descriptions. Both editions of the book contain 12 chapters that include drawing exercises, examples of drawings by famous artists, and before-and-after drawings by previous students. Chapters 3 and 4 are primarily devoted to a very general discussion of right- and left-brain function with reference to related research. It is important to note that the research studies mentioned in these two chapters are not cited and are non-specific. Only simplified terms borrowed from the research are used to explain the relationship between the right hemisphere and drawing abilities. Before electing to incorporate it within the curriculum, advocates of right-brain drawing instruction need to be aware that the theory supporting this strategy is not documented through empirical research.
References to the right- and left-brain in both editions are not limited to chapters 3 and 4 but are interwoven throughout the entire book. Quotations from well-known philosophers, scientists, educators, and artists are strategically placed in the wide, outside margins of the pages (see Figure 4). It appears that these quotations, although not completely referenced or footnoted, are used to enhance the validity of the book's contents through the credibility of the authors quoted.

Edition Changes

In comparing the 1989 edition to the 1979 edition of Edwards' book, very few changes were noted. In chapters 1 through 7, several phrases have been eliminated or changed, and up-to-date student drawings replace older ones. Chapters 8 and 9 of the 1979 edition have been combined to form chapter 8 of the 1989 edition. Although the exercises and techniques in the newly formed chapter 8 remained the same as in chapters 8 and 9 of the 1979 edition, the text has been rearranged to accommodate additional information. Chapter 10 in the 1979 edition has become chapter 9 in the 1989 edition, and although there are some content and format changes, it retained the same title. Chapter 11 in the 1979 edition has become chapter 10 in the new edition with a title change and a few line changes. The only extensive addition or change in
2. Within your first format, draw the objects you have chosen, or, if you wish, trace the format and bighorn sheep in Figure 7-7. Complete the drawing, as shown in Figure 7-7. This drawing satisfies the need to delineate the positive form.

3. Next, concentrate on the negative spaces, which are bounded, remember, by the format. Draw or trace the spaces, completely focusing your mind on what you are drawing. Try for the mind-set that these spaces are real—as real as the positive forms. Reinforce this "realness" by filling in the negative spaces with ink and brush or a felt-tip pen, as in Figure 7-8, or with pencil, as in Figure 7-9.

4. Next, continuously gaze at one of the negative spaces until it pops into focus as a shape. (Figure 7-10 isolates a few shapes to illustrate this process.) This takes a little time. L-mode, confronted with a shape that has no name, takes an extra moment, hoping for recognition. Unable to match the shape with a name, L-mode perhaps says in effect, "I don't know what that is. If you are going to continue gazing at it, you (R-mode) will have to deal with it. I'm not interested." Good! That's just what we want.

FIGURE 4. A quotation placed in the margin of Drawing on the Right Side of the Brain.

the 1989 book occurs in chapter 11, a chapter on color and the only one containing color plates in either of the two editions. Chapter 12 and the postscript in both editions remain the same. In the 1989 edition, an "Afterword" has been added which contains information about handwriting and how it is becoming a lost art. Overall, a total of 47 pages were added to the new edition of Edwards' book.

Text Content

In both editions of chapter 1, Edwards introduces *Drawing on the Right Side of the Brain* and explains why specific exercises are included and how to use the book. In this chapter Edwards also introduces her right-brain theory or "strategy," as she calls it, which is best expressed in her own words: "The overall strategy [is] to explain in basic terms the relationship of drawing to visual, perceptual brain processes and to provide methods of accessing and controlling these processes" (1989, p. xiii). In chapter 2, the premise of the book is defined by Edwards (1989) as follows:

Drawing is a teachable, learnable skill which can provide a two-fold advantage. By gaining access to the part of your mind that works in a style conducive to creative, intuitive thought, you will learn a fundamental skill of the visual arts: how to put down on paper what you see in front of your eyes. Second, through learning to draw with the method presented in this book you will gain the
ability to think more creatively in other areas of your life. (p. 14-15)

Chapter 3 contains the basics of right-brain drawing instruction with some general brain research information. Chapter 4 introduces the shift from the left to the right mode and also begins a series of exercises. Chapter 5 discusses drawings that are produced from memories but does not include any exercises. Chapter 6 contains information about contour drawings and continues with exercises that include information mentioned in chapter 5. Chapter 7 describes the use of positive and negative space with a corresponding exercise. Perspective is the main focus of chapter 8, and an exercise is included. Chapter 9 contains the drawing of portraits with related exercises and drawing rules. Creating darks and lights is the subject of chapter 10, and several exercises are included. The color section, chapter 11, focuses on the color wheel and how to use color, it is the last chapter to included exercises. Only three pages in length, chapter 12 concludes Edwards' book by encouraging readers to continue their reading and study of art. One of the two remaining sections of Edwards' book, a 12 page "Afterword," contains three handwriting exercises, followed by a postscript directed toward teachers and parents. Here Edwards suggests various ways to encourage and train students in the use of both hemispheres, also stressing
practice since "the visual sense quickly gets flabby and out of shape" (Edwards, 1989, p. 241). A glossary, bibliography, and index fill the remaining pages of the book.

The Influence of Nicolaides

Edwards appears to have been greatly influenced by the information presented in a book written in 1941 by Kimon Nicolaides, A Natural Way to Draw. Except for the reference to the L- and R-mode, Edwards' exercises and concepts are remarkably similar to the ones developed by Nicolaides. Both books are based on specifically outlined lessons or exercises, use examples of student drawings, and use mathematical diagrams to illustrate spatial placement. Both make statements of positive artistic achievement, such as "Anyone can learn to paint" (Nicolaides, 1941, p. 99) and "drawing is a skill that can be learned by every normal person" (Edwards, 1989, p. 3).

Of the seven different exercises in Edwards' book (vase/head profile, inverted drawing, contour drawing, use of positive and negative space, perspective, portraits, and color), five are parallel to those included by Nicolaides' (contour drawing, light and shade, contours in space, the head, and the use of color). Edwards also uses some of the same illustrations that Nicolaides included, such as The Carpenter (1880) by Vincent Van Gogh and The Artist's Mother (1880) by Vincent Van Gogh.
(1883) by Georges Seurat. Other illustrations by well known artists used in Edwards' book are also similar to those used in Nicolaides' book. They contain related subject matter expressed in similar techniques which were executed during the same general time period but by different artists. Although common to other drawing texts, it may also noted that student work reproduced in Edwards' book resembles student work reproduced in Nicolaides' book. For example, both authors use drawings of students' hands that were produced from a contour drawing exercise (see figure 5).

A common view expressed by Edwards and Nicolaides is that in order to discover the key to drawing one must learn the act of correct observation. In addition, Edwards and Nicolaides both contend that the student must discover the hidden process by which artistic creation and inspiration work. In their introductions both authors make statements about "seeing" and the "correct way of seeing." According to Edwards (1989), "[the] ability to draw depends on [the] ability to see the way an artist sees, and this kind of seeing can marvelously enrich your life" (p. 2). Correspondingly Nicolaides (1941) states that "learning to draw is really a matter of learning to see--to see correctly--and that means a good deal more than merely looking with the eye" (p. 5).
FIGURE 5. Student contour drawings of their own hands.


The single major difference between the two authors is that Edwards uses the right-brain theory as an explanation of the students' drawing success, whereas Nicolaides attributed this success to the proper learning of drawing rules and practice. According to Nicolaides (1941), an understanding of the laws of nature is essential to good drawing. As men and women relate to them through rules, "his [sic] difficulty will never be a lack of ability to draw, but lack of understanding" (p. xiv). He continued by saying, "to understand theories is not enough. Much practice is necessary, and the exercises in this book [A Natural Way to Draw] have been designed to give that practice" (p. xiv). The statement underscores the idea that rules and practice may account for a student's success in drawing skills and not mode switching.

Right-Brain Exercises

Edwards includes 25 exercises in Drawing on the Right Side of the Brain, beginning in chapter 4 and ending in chapter 11. These exercises correspond to the various topics discussed in each chapter and are designed to enhance the student's ability consciously to decide which hemisphere is in control during the drawing process. For example, one drawing exercise used by Edwards requires the student to copy inverted images illustrated in the book, and according to
Edwards (1989) it allows "the R-mode [right hemisphere] a chance to take over for a while" (p. 5). As a result of this exercise, Edwards (1989) claims that the student "will learn the artist's mode of seeing: the key is to direct your attention toward visual information that the left brain cannot or will not process" (p. 57).

Another example of Edwards' right-brain instruction involves two stages of contour drawings, i.e., pure contour drawing and modified contour drawing. Pure contour drawing places the student in the turned-around drawing position, that is turning away from the paper so as to avoid viewing it during the process of drawing. While in this position, the student is asked to draw the outside edge of his or her hand that is not being used for the drawing process. Modified contour drawing is similar to pure contour drawing except that the student is allowed to sit in a regular drawing position and to glance toward the drawing at intervals. Edwards (1989) stated that these exercises create the "intense observation that causes the cognitive shift to R-mode" (p. 90).

Edwards presented her drawing techniques very matter-of-factly, expressing confidence in the reader's ability to achieve a positive outcome from the right-brain drawing experience. Edwards builds the reader's trust in her right-
brain theory by claiming that these positive outcomes are obtained as a direct result of switching hemispheres. "It's my belief," she states, "that if persons untrained in art can learn to make the shift to the artist's mode of seeing--that is, the right-hemisphere mode--those individuals are then able to draw without further instruction" (Edwards, 1989, p. 7).

Edwards (1989) makes several claims to support her theory that drawing instruction can be directed toward the right side of the brain. For example:

It appears that the right brain perceives--processes visual information--in the way one needs to see in order to draw, and that the left brain perceives in ways that seem to interfere with drawing. (p. 32)

At other times, the hemispheres can work simply; with one half "on", the other half more or less "off". And it seems that the hemispheres may also conflict, one half attempting to do what the other half "knows" it can do better. (p. 32)

Since drawing a perceived form is largely a right-brain function, we must keep the left brain out of it. (p. 42)

The split brain studies indicated that the left brain likes to be boss, so to speak, and prefers not to relinquish tasks to its dumb partner unless it really dislikes the job--either because the job takes too much time, is too detailed or slow or because the left brain is simply unable to accomplish the task. (p. 42)

Drawing a perceived form is largely a right-hemisphere function. This has now been empirically tested and documented. (p. 46)
As I explained, to draw a perceived form we want the left mode mainly "off" and the right mode "on," a combination that produces a slightly altered subjective state in which the right hemisphere "leads." (p. 46)

Trying to draw a perceived form by using the verbal left mode is like trying to use a foot to thread a needle. It doesn't work. (p. 50)

The right brain is the hemisphere appropriate for the task of drawing. (p. 55)

Drawing in R-mode [right hemisphere] induces a changed state of consciousness that can last for hours, bringing significant satisfaction. (p. 58)

It should be noted again that Edwards cites no documentation references or research studies in support of any of these claims.

In Drawing on the Right Side of the Brain, Edwards advocates the importance of the right hemisphere to the exclusion of the left hemisphere, and she goes so far as to claim that the left hemisphere actually interferes with the process of drawing. In addition, Edwards maintains that individuals are capable of turning hemispheres on and off and implies that one hemisphere is capable of holding conversations with the other. For example, Edwards (1989) states:

Keep your mind on nonverbal, relative factors. if your left[-]brain intrudes with verbal phrases about the separate things (faces and vases) try to quiet it down. Your hidden Observer might say, "Just stay out of this, please. The other side [right side of the brain] can handle this job. It won't take long and then we'll get back to you." (p. 49)
Edwards fails, however, to support this notion with scientific research. Although entertaining, these internal brain conversations over-simplify how drawing behaviors are actually processed in either the right or the left hemisphere. Without scientific data for support, the right-hemisphere theory displays the characteristics of a myth, defined in the The New Webster Dictionary (1989, p. 485) as "unverifiable thing," or a metaphor, defined in the Webster Dictionary (1989, p. 459) as a figure of speech rather than a credible curriculum theory. As Hines aptly notes:

To contend that creativity and art are 'in' one hemisphere while science and rationality are 'in' the other, is to contend that Beethoven would have been just as great a composer and Titian just as great a painter had their left hemispheres been removed. (p. 223)

Contradictory Research

Examination of hemisphere research (Robinson & Solomon, 1974; Saitis, 1984; Saitis & Gazzaniga, 1981; Wertheim & Botex, 1961; Youngblood, 1991) suggests that art practitioners do not have sufficient empirical evidence to substantiate the claim that individuals possess the ability to switch brain hemispheres during drawing. Nevertheless, many art educators continue to practice such strategies in their classrooms. Advocates of the right-brain theory seem to disregard statistical findings that studies of artistic
abilities of patients who have suffered left or right hemisphere damage show different patterns of impairment depending upon the hemisphere injured. As Hines (1991) has noted, "Patients with left hemisphere lesions generally produce drawings that are impoverished in terms of detail. Right hemisphere patients produce drawings in which the details may be present, but they are arranged in a bizarre and often incoherent fashion" (p. 225). Assuming Hines' findings are correct, they support the principle that both hemispheres play important roles in normal drawing abilities.

**Drawing Rules**

Professing that students who learn how to shift the cognitive process from the left hemisphere to the right hemisphere will master realistic drawing techniques, Edwards assumes that this can be achieved through right-brain drawing instruction. Although largely ignored by advocates of the right-brain theory, the possibility exists that clear and precise rules and methods for drawing, as opposed to directing instruction to the right hemisphere, may be the explanation for improved drawing outcomes and student success. The following summary of a study by Scott Clare (1983) supports this idea.

One of the most common mistakes of beginning drawing students is the so-called cut-off-skull error (Edwards,
1989). This error is the tendency for beginners to place the eyes above the horizontal midline of the head. Edwards (1989) assumes that this is done "because most people are not interested in foreheads and tops of heads, areas that perhaps seem boring to the left [hemisphere] and difficult to characterize with a symbol" (p. 141). In the same context, she also claims that the left hemisphere interferes with the right hemisphere's processing of visual information. "It appears," she says, "that the right[-]brain perceives--processes visual information--in the way one needs to see in order to draw, and that the left[-]brain perceives in ways that seem to interfere with drawing" (Edwards, 1989, p. 32).

In a study by Clare (1983) that deals with drawing rules used for learning realistic drawing, however, Clare found that the presence of hair on the forehead contributes to the cut-off-skull error.

Clare's study showed that viewing a model with or without hair has a definite effect on eye placement, concluding that the illusion of the short forehead is widespread, especially among beginners, because persons with a full head of hair are more commonly observed. Clare also suggested that to remedy the cut-off-skull error, students need only be taught that eyes are placed on the horizontal midline of the entire head, as opposed to the midline of the
face below the hairline. In support of this assumption, Clare cited a study conducted by Rand (1973) advocating the use of drawing rules rather than analytical training in copying geometric figures. Rand reported that if children at 3 to 5 years of age were taught drawing rules, they copied figures more accurately than if given no previous instruction. Clare also referred to a study that was previously conducted by Clare and Suter (1983). Here subjects were tested to determine if inverted drawing increased right hemisphere involvement in a drawing task. Since "there was no indication that drawing tasks involve more right-brain processing than a writing task," Clare and Suter (1983) concluded that "drawing required the integrated activity of both hemispheres" (p. 127).

Although Edwards claims that a cognitive right hemisphere shift necessary for drawing realistic pictures, the exercises she uses to enhance right-brain processing and suppress left-brain processing seem to contradict this message. For example, in her drawing techniques of portraits, Edwards provides the reader with comparative and analytical rules (assumed to be left-brain functions) for drawing proportions of the face, (Clare, 1983). For example, Edwards (1989) recommends the student observe the following formula to calculate some profile dimensions: "The length
from eye level to chin equals the distance from the back of the eye to the back of the ear" (p. 147). Also included in Edwards' portrait exercises are illustrations that demonstrate general proportions of the human head (see Figure 6). These illustrations distinctly resemble graphs and angles used in mathematics, graphic symbols generally considered to involve analytical (left-brain) functions. As Clare (1983) noted, however, "because comparative, analytical strategies such as these are inconsistent with right hemisphere, visuospatial, holistic processing they contradict the cognitive shift theory" (p. 126).

In reviewing student drawings throughout Edwards' book, it can be observed that the eyes in all the portrait drawings are placed in almost the exact same location on the face. These drawings are reminiscent of manufactured kits containing predrawn faces, ears, eyes, and noses that when rearranged will produce various types of portraits. Portraits created with this type of kit look alike because all of the features, even though slightly different, end up in the same location on the face. The portraits completed by Edwards' students have this same look about them, the probable result of her formula for calculating eye placement on the face.

Theoretically, right-brain drawing exercises cannot be performed without the use of some left hemisphere-type techniques, such as measuring, drawing rules, and sequenced placement of elements. If it were possible to eliminate left hemisphere-type techniques from instruction, in Clare’s (1983) view, it would restrict the tool of teaching by limiting possible problem solving strategies. Consideration by art educators should be given to the idea that introducing drawing rules suitable to each grade level might actually increase sequential development of spatial drawing skills. Teaching students “the use of converging lines to represent spatial systems,” for example, may enable them to succeed at drawing tasks not previously accomplished (Clare, 1983, p. 127), a view also supported by Rand (1973). In one of her own early studies, even Edwards (‘Right-brain’, 1975) acknowledged that “many of these tricks [rules] had been known by artists all along” (p. 3).

In 1980, one year after Edwards' book was published, Doerr recognized that claims being made about right-brain dominance for artistic abilities were inconclusive. She also cautioned art educators to temper information presented to students until actual research could be conducted. In an effort to support her view of hemisphere dominance, Doerr (1980) executed a study that focused on “specific art
abilities and art skills as they relate to cerebral dominance theories" (P. 5). Although making no mention of either the right-brain theory or the Edwards' book promoting it, Doerr supported the view that results borrowed from brain research are inappropriately applied to the concerns of art education.

Doerr's study involved 175 subjects in the age range of 17-48 years. These subjects were tested for "general relationships between figural creativity, as measured by the Torrance Tests of Creative Thinking (TTCT), and trait cerebral dominance, as identified by the conjugate lateral eye movement (CLEM) interview procedure" (Doerr, 1980, p. 7). CLEM, as first observed and described by Day (1964), "involves the voluntary, sideways movement of the eyes immediately following a question requiring reflective thought" (Doerr, 1980, p. 5). The hypothesis that CLEM may be controlled by the contralateral hemisphere was advanced by Bakan (1969) and has been used to identify a subject's "cognitive abilities attributed to left- and right-movers" (Doerr, 1980, P. 5). Doerr used CLEM to place subjects in one of three groups: the right-brain dominant group, the left-brain dominant group, or the no-dominance group. She then administered the TTCT Figural Form A to all groups to measure four factors of creativity: fluency, flexibility,
originality, and elaboration. Doerr (1980) stated her results as follows:

Since no significant differences were found in performance on any of the four dependent variables for any of the three brain dominance groups, one may conclude that in this study, fluency, flexibility, originality, and elaboration did not fit the double-dominance model of hemispheric specialization. (p. 9)

In conclusion, Doerr (1980) maintained that instead of teaching students to focus on the cognitive functions associated with a particular hemisphere, education should emphasize on a holistic approach.

Disregarded Research Literature

When right-brain drawing instruction is included within the curriculum, the predominant instructional material used seems to be Edwards' Drawing on the Right Side of the Brain. This book was not the result of any specific scientific research project but rather the accumulation and combination of ideas interpreted from various sources. Some of these sources were empirical in nature, while others were instructional techniques. It seems that art educators are not thoroughly examining empirical studies when making decisions about curricula that include right-brain instruction.

Several possible reasons may account for this, one being that few studies are easily attainable. For example, the
literature search conducted for this study, only eight empirical research projects were found that were directly related to art education and right-brain instruction (Clare, 1983; Chambliss & Hartl, 1987; Doerr, 1980; Fancher, 1982; Mallet-Gray, 1981; Webb, 1985; Youngblood, 1991). Moreover four of the eight studies are unpublished and remain relatively inaccessible, hence will remain unknown (Fancher, 1982; Mallet-Gray, 1981; Webb, 1985; Youngblood, 1991). Having so few studies relating art to brain function forces art educators to consult articles published in unfamiliar scholarly journals, such as those devoted to neurological research. The process of locating such studies is not only difficult, but expensive, which may explain why educators are generally unacquainted with them.

Another reason art educators may not be looking at empirical research is that most brain research is complicated, the terminology is difficult to understand, and the statistical information is directed to those in the neurological field. Moreover, most art educators are so busy dealing with daily school duties that allowing time to conduct research may be impossible. Erikson (1979) suggests that "too few art education researchers make enough effort to insure that the knowledge they generate is made available and usable to the clientele which they serve" (p. 12). According
to Degge (1982) "we [art educators] have not been responsible enough in providing guides to and models of art instruction and inquiry that are, in form, really usable or appealing" (p. 31). "With little time for thoughtful planning or critical reflection about one's own practice and increased time working procedurally through prescribed curricula, it is easier for a teacher to succumb to routinized, assembly-line instruction and managerial concerns" (May, 1989, p. 152). As a result, art teachers may be influenced by ideas that appear to be thoroughly researched and tested but are actually only based on bits and pieces of research findings.

Teachers constantly search for and need something that is readily available, easy to read and understand, and affordable. If the material also contains a logical sequence of exercises and indicates a substantial success rate, it becomes even more appealing. In short, teachers want something that works. Edwards' Drawing on the Right Side of the Brain meets all these requirements. Moreover, her right-brain theory appears to be substantiated by research because the book features quotations from noted authors printed in the margins. In addition, the bibliography includes the names of many prominent scientists, although the text cites none of them specifically.
No other art book has been as publicized, discussed, and used across various disciplines (math, psychology, architecture, business, etc.) as extensively as Edwards' (Chambliss & Hartl, 1987; Clare, 1983; Clare & Suter, 1983; Dobbs, 1989; Doerr, 1980; Youngblood, 1979, 1981, 1983, 1985, 1991). Her book remains popular despite cautions often expressed about her misrepresenting the research findings. At present, research findings are not conclusive enough to demonstrate the extent to which the right hemisphere is involved in the drawing process. Because the right-brain theory influences how art is perceived, art educators should question why the subject of right-brain instruction has not received substantial attention in art education research.

Summary

One of the major findings gained from the analysis of Drawing on the Right Side of the Brain is the drawing techniques it advocates bear a strong resemblance to strategies previously developed by Nicolaides (1941). Nicolaides' book, A Natural Way to Draw, has been popular among art educators since 1941, which suggests that his strategies have been widely used by art teachers for years. Although not as rigorous and complex as the drawing rules of Nicolaides, the basic principles and format used by Edwards are parallel to those of Nicolaides, suggesting that clear
and precise rules and instruction may be the explanation for improved drawing outcomes. Being able to draw may not, as Edwards claims, involve a right hemisphere shift, but a series of lessons well learned.

Results from art-specific research (Clare, 1983; Chambliss & Hartl, 1987; Doerr, 1980) concerning the right hemisphere's dominance in artistic ability do not support concepts presented in Drawing on the Right Side of the Brain (Edwards, 1989). Suggestions that a student has the capability of turning on and off hemispheres and implications that one hemisphere is capable of holding conversations with the other are recurrent themes throughout the book. Although entertaining, such over-simplifications are misleading and theoretically unsound. At present, art practitioners have insufficient information to determine whether or not a student possesses the ability to switch brain hemispheres during drawing. In the area of lateralization, as it relates to artistic abilities, more extensive study is needed before such a proposition can be accepted. Once the need for more research is recognized by art educators, discontinuing hemispheric misconceptions already embedded in our pedagogical practices may follow.

Even though controversy surrounds the right-brain theory, positive results produced from the drawing techniques
introduced in Edwards' book should be recognized as genuine. Remarkable improvements in drawing abilities are displayed by students enrolled in her program. Students may draw flat and irregular shapes prior to Edwards' exercises but later draw shapes true to form and perspective. According to Youngblood (1981), many teachers have incorporated her drawing lessons with extraordinary outcomes of improved drawing abilities. Edwards' basic concepts and drawing methods seem capable of promoting rapid and impressive results. It is not the product that is at issue in this study, but the use and popularity of a theory not clearly validated by research. However, this study acknowledges the limits of research (misinterpretations, biases, etc.) and recognizes that research should not be considered the only viable approach to obtaining a solution.
CHAPTER 4
RESEARCH METHODOLOGY

In the 1970s and 1980s, a number of changes occurred among art educators concerning research. Eisner (1993) noted, "There is occurring in the American educational research community a not-so-quiet movement in research methodology, a movement that is redefining the paradigms we use to think about educational research" (p. 50). This movement in research to which Eisner referred involves forms of qualitative research methodology. The literature indicated that during the 1970s art educators began discarding the borrowed research methodologies of scientific fields and turned to qualitative techniques that were ethnographic in nature. Eisner (1974) applauded this change as early as 1974 and encouraged the arts to extend beyond the limits imposed by traditional quantitative methods. Bersson (1978) suggested that "a more complex and comprehensive kind of evaluation is required, one that provides an equally complex, wholistic view of art programs" (p. 61). Participant observation, as defined by McCall and Simmons (1969), and ethnographic methods have these holistic qualities, wherein information is characteristically obtained from direct field research. This style of research makes use of multiple techniques for data collection, including
observation, informant and respondent interviewing, document analysis, and participation with self-analysis. Multi-instrument recordings are used to assure validity of observations by cross-checking and to provide a thorough description (Degge, 1975). Ethnographic methods of investigation offer researchers an alternative in the selection of methodologies apart from the scientific modes of inquiry. In Halpin's (1966) words, "there is more than one gate to the kingdom of knowledge" (p. 283).

Support for Ethnographic Method

Some scholars may be leery of a method of inquiry which differs from the structured approach taken by the scientific paradigm. "In terms of research design, participant observation is intentionally unstructured so as to maximize discovery and description" (Bersson, 1978, p. 61). Included among the art educators who began writing in favor of the ethnographic approach during the 1960s and 1970s are Beittel (1972), Eisner (1974), Lewis (1972), McFee (1966), Stewart (1972), and Wilson (1972). In the 1980s and 1990s the number of art educators advocating "the use of descriptive techniques in the study of art education school settings" increased (Ettinger, 1987, p. 80). Among this new generation of art educators are Alexander (1981), Chalmers (1981, 1982), Degge (1982), Eisner (1979, 1981, 1990, 1991, 1993), Ettinger
(1987), MacGregor & Hawke (1980), Sevigny (1981) and Stokrocki (1986, 1991). Stokrocki (1986) maintained that "Participant observation involves a search for conceptual categories" (p. 83). "A single case can indicate a general conceptual category; a few cases can confirm the indication" (Glaser & Strauss, 1967, p. 30). In the present study, the characteristics and conditions impelling an art teacher to use the right-brain method of drawing instruction are the main focus.

One art educator, Pohland (1972), writing in support of the descriptive method of research, stated:

Researchers in education, from art to zoology, have, I think, been so enamored of the naturalistic tradition, so overwhelmed by the elegance, sophistication, and power of mathematical models, and so misled by a singular conception of what constitutes 'the scientific method,' that they have rarely questioned whether or not the methodologies appropriate for the natural sciences are equally appropriate for the social sciences. One of the consequences of not questioning is to permit methodologies to become masters rather than servants. Research becomes defined as that which a particular methodology will permit. Perhaps this accounts for our failure to grapple with some basic educational issues and to expend our energies on trivia. (p. 13)

Wilson (1972) maintained that participant observation as introduced by Pohland complements the "complexity of methodology with the complexity of phenomena being studied"
Three aspects of participant observation which make it suitable for research in art education are indicated by Wilson (1972):

1. Participant observational methods allow the researcher to attend to a great number of variables and interrelations concurrently.
2. Participant observational methods are nonstandard and flexible allowing the researcher to switch or devise new methodologies in mid-stream just as art redefines itself and the art teacher and student chart new courses on the basis of opportunities which present themselves contextually.
3. Participant observational methodologies generally require close qualitative relationships between the inquirer and the situation being studied, and when the situation studied is as qualitative as art the fit of methodology and subject again seems most satisfying. (p. 23)

Lewis (1972) expressed an advantage of participant observation similar to that of Wilson (1972) by stating "that it is flexible. The researcher is free to pursue unforeseen leads. He [sic] is not bound to predetermined methodology" (p. 17). One very important advantage that should not be overlooked is that the comprehensive knowledge and understanding gained through descriptive study can be readily applied by art educators to other program designs.

Field research may not be adequate for all educational inquiry, but "what participant observation does offer is a
potent, knowledge generating system of description, analysis, and interpretation" (Bersson, 1978, p.62). Halpin (1966), in his support for an alternative path for inquiry, wrote:

    In graduate courses on research we have made such an ado about the nature of scientific evidence and the use of statistical inference that we have blinded students to the essential issue: without fresh viable observation all the machinations of research methodology become an empty and self-deceiving ritual. There is not virtue in demonstrating that one can count or that one can compute Pearsonian correlation coefficients on the items he has counted; the trick is to know what things are worth counting in the first place. The skill can be acquired only through direct experience with the phenomena we are seeking to understand, and can be matured only by developing within ourselves—as human instruments—the capacity to view with unfettered perception the world around us. (p. 287-288)

A real life, everyday art classroom is filled with intensity, the smell of wet tempera paint, chalk, school bells, intercoms, interruptions, petty irritations, and a "sense of human struggle that make up life at school" (MacGregor, 1982, p. 3). Many of these aspects are eliminated in the controlled environment of a quantitative study. With an ethnographic study, reactions are not something produced and monitored in a predetermined setting. They are spontaneous and genuine. Subjects are not just numbers on a chart but personalities with individual characteristics. There is a feeling in an ethnographic study
that the characters exist and continue to do so after the last page is turned. "I can think of no more important research agenda for art education than the fine grained study, description, interpretation, and evaluation of what actually goes on in art classrooms" (Eisner, 1993, p. 54).

For the present study, inquiry is an endeavor to extend knowledge. It is a systematic exploration into a matter of interest undertaken to change and improve the teaching of art. With this in mind, it was decided that the search for information about why one art teacher uses right-brain drawing instruction would be conducted through descriptive research.

**Developing a Method of Inquiry**

In art education, both descriptive and experimental studies are used. In deciding which method to use for any given research project one should choose the method that is most useful for indicating probable consequences of a particular educational action. Another consideration in choosing a method should be its usefulness in bringing about change (Eisner, 1972). The decision to use the field method of research for this study was made after the review of right-brain literature. Among studies selected through the literature search, no descriptive information was found that dealt with what actually happens in art classrooms wherein
the right-brain theory is implemented. Although several quantitative studies (Chambliss & Hartl, 1987; Clare, 1983; Clare & Suter, 1983; Doerr, 1980; Youngblood, 1991) testing the validity of the right-brain theory have been conducted, none has focused on the reason for the theory's popularity. It was concluded that the type of knowledge sought through this study would be best gained from an in-depth interaction with a teacher in the field. A decision was then made to utilize the strengths of both participant observation and ethnographic research as means to discover more about a teacher using the right-brain theory as an instructional tool.

The overlap between participant observation and ethnography played a substantial part in the development of this study. Knapp (1979) defines ethnographic research as follows:

(a) an initially exploratory and open-ended approach to the research problem; (b) intensive research involvement of the researcher in the social setting being studied, as observer and in varying degrees as a participant; (c) the use of multiple intensive research techniques, with emphasis on participant observation and key informant interviewing; (d) an explicit attempt to understand events in terms of meanings held by those in the social setting; (e) an interpretive framework which emphasizes the important role of context in determining behavior and events within a functional system; (f) a research product in written
form—an "ethnography"—which interprets events along lines suggested above and describes the setting in sufficiently vivid detail so that the reader "knows what it feels like to be there." (p. 119)

Alexander (1982) defines participant observation as "a group of methods that stresses observation in the setting, informant interviewing, respondent interviewing, document analysis, artifact analysis, and informal counting of events" (p. 63). The process of developing a sequence of research techniques for this study entailed drawing ideas from both participant observation and ethnographic methods.

A variety of terms are used to describe the methodology of descriptive study, e.g., ethnography or microethnography (Smith & Geoffrey, 1968), social anthropology (Lutz & Iannaccone, 1969), participant observation (McCall & Simmons, 1969), some point between the complete observer to the complete participant (Gold, 1958), field studies (Scott, 1965), simple observation, (Webb, 1966), and qualitative research (Glaser & Strauss, 1967). As Pohland (1972) concluded, after reviewing a collection of "participant observer studies", there is "no such reality as 'standard' participant observation" (p. 6). Maintaining this sense of "no standard" in addition to the knowledge that "flexibility" was "desirable" affected the development of the research stages and even the title of this dissertation. This study
is referred to as an "ethnographically informed case study," conducted through the combined use of participant observation and ethnographic methods. The stages that emerged from both methods of inquiry and guided the observations and data collection were: (a) locating a social situation, (b) conducting a participant observation, (c) making an ethnographic record, (d) making descriptive observations, (e) making selected observations, (f) conducting informal interviews, and (g) making a domain analysis (Spradley, 1980).

Concerning the field research, Gans (1968) expresses three roles of the participant-researcher: (a) the total participant—one who is "completely involved emotionally in a social situation and who only after it is over becomes a researcher again" (p. 302); (b) the researcher-participant—one who "participates in a social function as a researcher, but is personally only partially involved so that he [sic] can function as a researcher" (p. 302); and (c) the total researcher—one who "observes without any personal involvement in the situation under study" (p. 303).

In this study, the field researcher initially assumed the role of total researcher but became a researcher-participant for several reasons. One was the informal nature of the art classroom involved in this study. As students
became familiar with the researcher, they felt free to ask questions, elicit conversations, and request help. A second reason was the researcher's teaching background and experience, which resulted in the desire to answer student questions, elicit student conversations, and give assistance. Another possible explanation for the change in research strategy was that the students were not aware of any guidelines pertaining to the role of the "ethnographer as the total-researcher," and/or could not have cared less. In any case, the researcher role became that of a researcher-participant because the students insisted on receiving personal attention from the participant-observer. As it turned out, taking an active part in classroom assignments enhanced perceptions of the research subject.

This ethnographically informed case study is based on data collected through notes, photographs, questionnaires, and informal interviews. Descriptions of specific events and participant responses provided detail and observable characteristics which could only be discovered through observation and only be recorded through description. These findings provided insights for recognizing and, more importantly, understanding the specific situation involved in the present study, an understanding Stake (1978) characterizes as "a full and thorough knowledge of the
particular" (p. 6). The knowledge acquired through this study was then compared and analyzed with current literature and research to form a conclusion and recommendations for further research.

The data for this study has been collected through classroom observations of one art teacher who uses right-brain drawing instruction in the curriculum. As already noted (see chapter 1), two classes were observed 4 days a week for a period of 9 months during the school year of 1992 to 1993. The observations were recorded through journal notations, photographs, and tape recordings.

In addition to observations, two informal participant interviews were conducted, one in December of 1992 and the second in July of 1993. The second interview was conducted after the participant read several contradictory articles concerning right-brain drawing instruction (Dobbs, 1989; Gainer & Gainer, 1977; Hines, 1991). The purpose of requesting the participant to read these articles was to determine if their content would produce any changes in how the participant perceived right-brain drawing instruction. In addition to the participant interviews, a survey was conducted to assess the prevalence of instruction based on the right-brain theory among secondary art educators in the spring of 1993.
Survey

Ethnographic research involves a flexible method of inquiry that encourages multiple techniques for data collection. "Interpretive research on teaching is not only an alternative method, but an alternative view of how society works and of how schools, classrooms, teachers, and students work in society" (Erickson, 1990, p. 187). Although data collection for this study was primarily focused on observations of one art teacher's application of right-brain drawing instruction, additional information was needed to support this study's assumption that right-brain drawing instruction is also popular among other art educators. A survey was considered the most viable method of investigation to obtain this additional information. Borg stated, "Survey research typically employs questionnaires and interviews in order to determine the opinions, attitudes, preferences, and perceptions of persons of interest to the researcher" (1987, p. 155). Thus, a questionnaire consisting of 10 questions was distributed to a limited number of secondary art educators throughout Louisiana to determine the prevalence of right-brain drawing instruction among those surveyed. As mentioned in chapter 1, information collected from this survey was used only as an indicator of popularity; facts
from the questionnaire were not intended to be analyzed statistically.

To conduct this survey, art education supervisors from each of the 64 parishes—geographical divisions equivalent to Counties—in Louisiana were asked to distribute an explanatory letter along with the questionnaire to the secondary art educators under their jurisdiction. The responses were then tabulated and the resulting information combined with the data collected from the observations. This combined information added strength to this study's view that there is an immediate need to address the current application of right-brain drawing instruction within art classrooms.
CHAPTER 5
RESEARCH FINDINGS

Anthropology begins with a journey into the field to see what others are up to: Ethnographic methods explore that journey, both as a means of securing information and as a special type of existence. Ethnographers do their best to tell about people who change their minds, do things they say they don't, and sometimes say nothing at all. Ethnographers watch, listen, and record trying to tell a story, the truth from the participants' point of view. (Richardson, 1992)

This chapter contains a description of the field research conducted for this study. The field research was structured so that long-term observations could be made of a particular teaching method used in a classroom. There are two methods that can be used to conduct an ethnographic study. One method is the "emic" approach which is concerned with the study of behavior from the perspective of the participants--from inside a single, culturally significant unit" (Sevigny, 1977, p. 84). Another is the "etic" method involving an approach that comes from outside the system being studied. In other words, it is an "investigation from the perspective of the scientific community" (Sevigny, 1977, p. 83). The emic method of participant observation, as opposed to the etic, was chosen for this study because it better suited the search for a deep understanding of one high
school art teacher's reasons for using the right-brain drawing strategy.

This chapter is divided into four sections. Section 1 contains detailed descriptions of the community, the school, the classroom, the students, and the teacher. Section 2 consists of the actual sequenced observations for this research project. The first 4 days of the observations are described in detail as they typify subsequent days, which are described more briefly and generally. Section 3 contains a discussion of the two informal interviews and section 4 includes the results of the survey. The chapter concludes with a summary.

Because of the ethnographic nature of the research presented in this chapter, the content has been delivered in a different manner from the one used in previous chapters. The most significant changes in presentation are the usage of the personal pronouns—"I", "you", "me", etc.—and the inclusion of quotations transcribed directly from the field notes. I feel that without these changes the presentation of the data would lack the human quality which is so much a part of this study.

Observations and discussions are interwoven among the transcription of data in order to highlight meaningful behaviors. The importance and relevance of these
observations were continually analyzed and compared with the research reviewed in chapters 2 and 3.

Section One

Community

The high school in this study is located in a parish in the southeastern portion of the state. It is said by local citizens that this parish is one of the fastest growing parishes in Louisiana. Once quiet and secluded the parish is at present in a state of transition owing to the influx of young families and the construction of new housing developments and large chain businesses. All this activity is partially due to location of the parish near a larger, more industrialized one. Many inhabitants of the larger parish have begun moving to the less technically advanced neighboring parish in search of a quieter and safer place in which to live and raise their families. The citizens of this parish are primarily white and belong to the middle class; they reside in rural communities or very small towns and typically commute to the city for work.

The intersection of two major highways marks the center of the town in which the high school used in this study is located. One of the highways runs directly north and south, and the other runs due east and west. Each of the four corners of the intersection is occupied by small businesses.
There are the typical gas stations located on two of the corners, a fruit stand on another, and a "quick stop" on the fourth. The town has one recently built shopping mall that consists of a chain grocery store, a locally owned video store, a beauty shop, and a pharmacy. The rest of the town is made up of two banks located directly across the street from each other, a feed store, a veterinarian's office, a town hall, and a house built in the 1960s that has been converted into a jewelry store. The main road running east and west is lined with mobile home lots and used car lots. Various small businesses are scattered among homes belonging to long-term residents who have yet to relinquish their prime, road-front property to the building frenzy. In front of one mobile home lot an old man sits on the side of the road selling fruit from the back of his truck. He arrives at 7:30 a.m. and stays until everything is sold or darkness sets in. No one knows when he started this routine, only that he's "always been there."

Although it is one of the larger and older towns in the parish, there are no landmarks or clusters of very old buildings indicating what used to be. There is just the crossing of two roads. As one turns off the main highways, one may find oneself on narrow roads, dead ends, or culs-de-sac in need of repair. The visual diversity displayed in
these areas reflects the varied backgrounds of the inhabitants, including students who attend the high school. For example, a well-manicured, freshly painted, new home may exist near or just around the corner from an older, off-the-ground, neglected home with partially disassembled old cars, washing machines, and worn-out tires scattered in the front yard. What remains of the once large tracts of farmland and woods is intermingled with trailer homes and houses built very close together. The overall spaciousness and feeling of countryside is fast disappearing. As younger families from other regions replace the older established families, the community's attitude, environment, and landscape change. The new replaces the old.

School

The high school was built in 1968 and is similar in design to other schools in the area. It is located in the western part of the town, one block from the highway that runs east and west. The school's student body of approximately 900 and a teaching staff of 45 reflect the predominantly white population of the parish. Due to the parish's scattered population, busing the students 5 to 20 miles is common. Because the students are brought from various parts of the parish, they have a variety of social backgrounds.
The school is a one-story structure with four main buildings. Each building has eight classrooms, four on each side of a locker-lined corridor (see Figure 7). Every classroom has one door that is located near the front of the room and opens onto the hall. The wall opposite the door is lined with windows along its full length. This floorplan is characteristic of most classrooms throughout the school. Two of the buildings have rooms added at the end of the hall, formally used as the administration's storerooms. The floorplans of these two rooms are different from those of all the other classrooms. Now one of these rooms is used as the classroom as art, and the other is used for the science classroom. The boys' and girls' gym, football/track stadium combination, and baseball field are fairly new structures. In 1993 a new administrative building was completed.

Classroom

The art classroom in which the observation for this study took place is not like the classrooms described above (see Figure 8). The art classroom is located around a corner at the end of a hall. It is not as large as a regular classroom because at one time it was used as a store-room. Sinks and cabinets were added to the room at the teacher's request.
FIGURE 7. Floorplan of school buildings.

FIG. A STORAGE CABINET WITH SINKS

STORAGE ROOM: CONTAINS SUPPLIES, COPY MACHINE, PORTFOLIOS, OPAQUE PROJECTOR, PAPER CUTTER, ETC.
A light blue-green, almost celery, color is painted on the walls and floor cabinets. The floor is covered with grey multicolored tile. The space provided for the students' work area is well lighted by two rows of fluorescent lights in combination with the two wide windows on the outside wall. The windows on the outside wall almost reach the floor and are separated by a floor-to-ceiling storage shelf.

Immediately to the left of the door leading into the classroom is a floor cabinet that extends almost the full length of the wall. It is about 36 inches high with three sinks that are not centered but positioned slightly toward the door. A paper cutter rests on the counter top between the first and second sink. A raised still life, consisting of an oil lamp, bottles, and a green vase positioned on a purple burlap cloth, is located on the counter top between the second and third sinks.

The base of the cabinet that supports the sinks has three sets of double doors of equal size located near the classroom door and two single doors located toward the back of the room. Directly above the cabinet a long, one-inch by four-inch board extends almost the full length of the room. Clothes hooks are mounted about one foot apart over the entire length of the board. T-squares dangle on the hooks closest to the door while the remaining hooks are empty.
A black wall cabinet is suspended above the sinks and has nine doors of equal size that are painted with colorful designs. These designs were painted by previous art students and depict a variety of subject matter, mainly abstract designs. On top of the cabinet are student projects collecting dust. This location may have been an alternative to the trash can. Directly to the left of the black wall cabinet and protruding from the wall is an elephant-grey television, displaying itself as the essence of scientific technology. Centered over the wall cabinet is a speaker framed in a plain wooden box that houses the school's intercom system. These two items seem to conflict with all the colorful artwork adorning the rest of the classroom.

In the far corner directly opposite the entry door sits the teacher's desk, immediately to the right of which is a locked door leading into the copy room, which will soon be vacant. The copy equipment will be relocated when the new administrative building is completed. The teacher hoped to acquire this room and ease her overcrowded classroom. Crowded next to the teacher's chair and butting up against a bulletin/black board combination on the back wall is a brown three-drawer file cabinet. On the bulletin board four pictures of old masters are displayed. Placed directly above them are white letters that spell out "Art is Everywhere."
Above the blackboard a green and gold sign welcomes students back to school and is placed among student photos and three-dimensional masks that are constructed of various materials. In front of the blackboard a stack of plastic baskets rests on the floor. A very uncomfortable green plastic chair, in which I, the researcher, sat throughout the entire observation, is wedged between the plastic baskets on the floor and a small table stacked with student drawings. A 6 ft. long brown table supports a cream colored paper cutter and a shop-made file box with four compartments, used to hold student portfolios. On the other side of the table and placed close to its edge is an overhead projector and stand. A projector screen leans between the projector stand and a wall heater in the far corner of the room.

On the outside wall there is a storage cabinet between a set of windows. An air conditioner is located in one of the windows to the left of the storage cabinet. The storage cabinet is painted dark brown with two full-length sliding doors that are adorned with student paintings, abstract in nature. The shelves in the cabinet exhibit student work in addition to housing art tools, magazines, and textbooks.

Students

Although the students in Ms. Bates' class have similarities in to students in other schools, this study does
not imply that they are like any or all other high school students. These students represent only two classes from one school in a small community.

Two classes containing Art I, Art II, Art III, and Art IV students participated in this study. Art I students had taken no previous art classes, Art II students had completed Art I previously, Art III students had successfully finished Art I and Art II, and Art IV students had passed art for three years prior to the fourth year. One class observed included only Art I students, while the other included a combination of Art II, Art III, and Art IV students (referred to as the "combination class" for the remainder of this study). The combination class did not have any freshmen enrolled in it because Art I is a prerequisite to the other art classes.

Art classes are offered as electives to students in all grade levels. As a result, Art I classes may contain students from grades 9 through 12. In the Art I class that was observed there were 32 students from various grade levels; 13 were male and 19 were female. The combination class contained 21 students of which 9 were female and 12 were male. Only one African-American was registered in the Art I class, and none were in the combination class. After about 4 weeks, the African-American, a girl, no longer
attended class because of health problems. In both classes exceptional children with mild disabilities were included. Most of these students' disabilities were academically oriented, and any physical limitation was not easily detected through their art work.

The mood in the classroom among the students was quite congenial. Each table in the classroom had space for six students. Students were not assigned seating arrangements and sat in groups that consisted of their friends. The only time groups of students were separated was when they became too noisy and did not concentrate on their work.

Teacher

Ms. Bates, an attractive Caucasian woman in her middle thirties, was well groomed and usually dressed in a blouse and pants when she taught. In 1988 she received her Bachelor of Arts degree in art education from Southeastern Louisiana University. Conversations that centered around her family and their relationships suggested that, in addition to teaching, Ms. Bates maintained multiple roles in the everyday course of living.

Ms. Bates said that she first realized she was interested in art when she was very young, around the age of four. Her mother used to read mystery books, and each book would have blank pages at the end. Ms. Bates recalled:
Every blank page was colored on and drawn on because that's what I did when I was three and four years old. I would find every book and find every blank page and draw on them. That's what I always wanted to do, I just always did it.

Ms. Bates went on to say:

When I was in the 5th-grade I had a teacher that was a nun in a Catholic school who just really pushed art. That was the first teacher that I had that really taught art as a subject. She actually had books! She's the one that really got me enthused, and I decided that that's what I wanted to do.

After the 5th-grade, Ms. Bates did not have any more art instruction until the 7th-grade. Between the 7th and 12th grades she took art as one of her scheduled classes. During those years, Ms. Bates said she was not taught very much. "I was not taught how to draw. Other than some instruction on perspective, items were put in front of the class, and the students were instructed to draw. There was very little guidance from the teacher. Gridding was not taught." The art classes, Ms. Bates explained, concentrated mostly on drawing. The only painting she did was on her own. Her first painting consisted of the school's logo, which was done for the choir director's office. A student teacher gave Ms. Bates the most memorable art experience from her high school art classes. She taught the students batik and sculpture. During the 6 years Ms. Bates took art, this was the only time
she had been taught to use media other than drawing. Ms. Bates said that she still teaches these techniques to her students today.

In 1977, immediately after high school, Ms. Bates enrolled in college. Her undergraduate work began in the area of fine arts. Ms. Bates complimented the fine arts teachers and said they were wonderful. "They taught me a lot, and they were good teachers." After two years, she dropped out of college to get married and have a family. When Ms. Bates returned to college in 1985, she pursued a career that would allow her time with her family; she chose teaching. Ms. Bates began her studies in elementary education, but after observing several elementary classes, she decided that "it was not for her." Ms. Bates then decided that if she were going pursue a teaching career it would be in something she liked, i.e., teaching art. Although she praised the fine arts teachers at her college, Ms. Bates did not have complimentary things to say about her art education teacher. The art education teacher, according to Ms. Bates, did not show her how to teach her drawing skills to students. Ms. Bates said, "To make matters worse, my student teacher supervisor, although very helpful and encouraging, just told me that it would come in time."
explained Ms. Bates, left her totally unprepared to teach art on her own.

Ms. Bates began her teaching career as a part-time employee in the Spring of 1989. In the Fall of the same year, she was hired as a full-time science teacher at the school where she is presently located. Gradually, Ms. Bates began incorporating art classes within her curriculum until all the classes she taught consisted of art classes.

Ms. Bates explained that the administration at the high school and school board were not very supportive of the arts. However, she received encouragement from the other teachers. The teachers would make comments to her about how they had recognized a difference in some the students' attitudes after they began taking art. These changes were especially noticed after the students realized that they were capable of drawing. During registration one year, she found out that the counselors were discouraging the students who wanted to take art. When a student would sign up for art, Ms. Bates said, "They [the counselors] would ask, 'What do you want to take art for? What can you do with it once you graduate?''"

When she found this out, Ms. Bates went to the principal and said, "I'm going to quit if another counselor advises a student not to take art." Ms. Bates said the principal advised her that he was not aware that this type of
counseling was going on and would take care of it. She went on to say:

After that I never had any more trouble. I teach about 150 students a day, and I have a waiting list of students who want to sign up. The students need art to learn some of the skills you can't learn in other areas. There are problem-solving skills you can learn in art that you can't learn in other areas. Like working with negative spaces and the use of color.

Ms. Bates had many outside professional involvements other than her teaching duties. Two of the outside professional activities included the organization of the Youth Art Club of America (YACA) group at her high school and participation in the Very Special Arts Festival presented every spring. Ms. Bates attended as many of the YACA conferences as possible. When time and money allowed, she also took a group of YACA student members to the conference. Ms. Bates' involvement in art education conferences other than YACA was occasional. Although she attended as many of the in-service days as the principal allowed, she was not a member of the Louisiana Art Education Association or the National Art Education Association and had not attended any of their conferences. Ms. Bates explained that the dues for membership were too expensive, and she could only afford YACA. This particular club seemed to benefit the students more than the others.
Outside of school, Ms. Bates drew and painted as much as her schedule allowed. Because she was a single parent and needed to make a little extra money to support her family, Ms. Bates said she taught private art lessons. The private students were taught painting because they were able to provide their own supplies. Expensive paints, brushes, and canvases did not limit the teaching possibilities for the private students. Ms. Bates was not able to accomplish this in her regular classroom because there was not enough funding for supplies. The principal and school board allowed Ms. Bates to use her classroom at night to conduct her private art lessons. Ms. Bates would allow some of the students in the day classes use supplies that she bought for the night class.

Ms. Bates believes she is very skilled technically but lacks the imagination to conceive unique subject matter. She is very open with her thoughts and stated that she conveys these feelings to her students "so they will not become discouraged if they have problems in producing ideas for their art." Ms. Bates expressed a desire to further her education in order to become a better teacher. She commented to me that she had future plans to attend Louisiana State University in pursuit of a Masters of Fine Arts or Masters of Art Education degree.
Section Two

Preliminaries

A major turning point in my search for a dissertation topic came with the arrival of an article from the Times Picayune (1991), which was sent to me by a fellow faculty member at Delgado Community College. This article, "Learning Difficulties of Artists are Studied," featured the chairperson of the Visual Arts Department at a local university. The article, previously discussed in chapter 2, stated that "artists with learning disabilities may be quite normal" (Kemp, 1991, p. 10D). and that:

Many art students, especially sculptors, are learning disabled. They often have a difficult time reading, writing, processing ideas, or even communicating verbally. They see and interpret the world differently. Some have trouble taking notes in class. Others drop out because they cannot function in an academic world. (p. 10D)

Kemp attributed this "disabled learning" to deficiencies in hemisphere development. He also maintained that artists develop the right half of the brain and neglect the more logical and problem-solving left side, and that artists "have strong innate talent to begin with. The development of that portion of the brain [right] leads to deficiencies in the other part of the brain [left]" (p. 10D). This particular mode of thinking is directly related to the theory promoted
in *Drawing on the Right Side of the Brain*. For artists to be placed under the blanket of "learning disabled" was, at best, absurd. It was difficult to comprehend why an administrator would promote an idea that is not supported by research. In conversations with some students who had been counseled by this chairperson, it was discovered that they were quite taken with the right-brain theory and believed the concept to be valid. The students also seemed relieved and willing to place the blame for poor math and English grades on this theory instead of connecting them with lack of interest or motivation. It was at this point that I wanted to know more about what supports this theory, and why it is accepted as a valid teaching strategy.

**The Search**

In the Spring of 1992, I first heard of Ms. Bates' teaching methods from a friend's son. One day, out of nowhere, he announced to one of my children, "I am a right-brained individual." This immediately caught my attention. At the time I was conducting an extensive literature search concerning the issues of right- and left-brain function and how it related to art education. When questioned further, the young man said that he was taking art at the local high school. The art teacher had been teaching him to control the
right side of his brain to improve his drawing skills. At that point it did not occur to me to use this particular teacher for my research subject. However, in the fall of 1992 I began hearing more reports of right-brain drawing instruction from several students that registered in art at the same high school and decided to attend to the situation more closely. I had wanted to conduct research for this study at an area high school when an opportunity arose.

Permission Forms

After the participant and high school were selected, I discovered that permission forms were required by almost every institution and everyone involved: the participant, Louisiana State University, my major professor, the school board, the principal, and the dean of my college. A plan was then devised and implemented to obtain these releases.

Participant permission.

On August 24, 1992 I arranged for my first meeting with Ms. Bates. I called the school secretary early in the day, and she scheduled a conference between Ms. Bates and me for 2:15 p.m. I thought it unnecessary to explain the purpose of my visit to the secretary. When I arrived at the school, the office was the first stop. Ms. Bates was waiting for me, and once we exchanged our greetings, we proceeded about four doors down the hall to her classroom. Although I had not
arranged for a parent-teacher conference, Ms. Bates assumed that was the reason for the meeting. I immediately informed her that, although I had children at the school, I was not there for a parent-teacher conference. I explained that I wanted to conduct my research project and focus on her teaching methods using right-brain drawing instruction. I went on to explain that she and the school would remain anonymous, and that permission would be obtained before any photos of children or their work were taken and used in the project. It was mentioned that the results of this study might help other art teachers in making curriculum decisions.

Ms. Bates was very enthusiastic about the study and agreed to participate. She explained to me that her own student teaching had not prepared her to teach art once she was out on her own and faced with a true teaching situation. Ms. Bates defined a true teaching situation as "a situation when you teach without a supervising teacher. You are on your own and make your own decisions." Ms. Bates went on to say that when she began, the students were drawing, but that she was not actually teaching them anything. About 1 year after she started teaching, Ms. Bates discovered Betty Edwards' book *Drawing on the Right Side of the Brain*. Although she could not remember where she bought it, she felt that she had found the answer to her teaching dilemma. Once
Ms. Bates started teaching from Edwards' book, she said her students' drawing skills improved, and she was "finally teaching them something." Ms. Bates believed in her methods and felt that they work because she has finally realized that she was using the right side of her brain. The enthusiasm that Ms. Bates had when she talked of the right-brain method of teaching was quite contagious. She said she taught five classes, three beginning classes, and two advanced, with the 2nd hour free. Ms. Bates left the decision up to me as to how many classes I wanted to observe.

During our conversation Ms. Bates stated that she would like to attend graduate school and get a Master of Fine Arts Degree. We briefly discussed the pros and cons of her pursuing this idea. Toward the end of our conversation, I explained to Ms. Bates that I would need some forms signed before I could begin observing. She agreed to sign them and said that I was welcome to begin observing whenever I wanted. Our conversation ended with both of us eager to begin the study.

**General permission.**

On August 25, 1992 I contacted a school board member and requested that written permission be sent to the principal of the high school in which this study was to be conducted. He suggested that a phone call be placed instead, granting
permission, and that the details should be worked out among the principal, the teacher, and me. The school board member said he would contact the principal immediately.

Later during the day I called the principal and asked if he had been contacted by the school board member. I received a negative answer. Then I asked for a letter granting permission for my research from the principal of the high school. The principal agreed, provided I received permission from the school board member. Next the principal told me the letter granting permission would not be available until the end of the week because the secretaries were all gone. The school was closed due to Hurricane Andrew. An attempt to have the permission forms signed by the teacher and principal failed on August 27 because of bad weather and rising flood waters. Ms. Bates was unable to leave her neighborhood because of the flooding and the principal was not available. However, I was successful the following day, August 28, in getting all the paperwork from the principal and teacher completed and signed.

Earlier during the week I obtained a "request for research" form from the department head at LSU. By August 29, 1992, all permissions were granted, and my research began.
Observations

The following observations were tape recorded and logged in a research journal concurrently. The information presented in this section was selected on the basis of how the behaviors observed related to right-brain instruction.

Observations began Monday, August 31, 1992, and continued until the end of the school year on May 28, 1993. Of the five classes that Ms. Bates taught, I observed one beginning class and one advanced class. These particular classes were chosen in order that I might observe a difference in right-brain drawing instruction between the two levels. One class which contained Art II, Art III, and Art IV students (combination class) was observed during 5th hour. The other class was observed during 6th hour and contained only Art I students from different grade levels.

In the combination class, Art II, were students who were taking art for the second time, and in Art III and IV were students taking art for the third and fourth times, respectively. This class contained students from the 10th through the 12th grades and started at 12:28 p.m. and ended at 1:23 p.m. The 6th hour class consisted of only students taking art for the first time. This class contained students ranging from the 9th through the 12th grades and started at 1:27 p.m. and ended at 2:22 p.m.
I had missed two days of instruction in the previous week. During the first few weeks of school Drawing on the Right Side of the Brain lay open on the Ms. Bates' desk. This book was used as a reference as Ms. Bates began introducing her right-brain drawing technique.

The First Day

5th hour.

The first day of observation was definitely harder on the observer than the observed. All those young faces peered rather distrustfully at me and my black notebook that I used for a data log. After finding a corner in which to position myself, I attempted to blend into the celery green walls. At first I felt a little nervous about producing the tape recorder hidden in my bag, but soon relaxed as I began to take notes. Occasionally, while looking up, I would have eye contact with some of the students. They would quickly look away as if embarrassed. I knew eventually harmony would prevail, and I no longer would be considered an alien.

The observations for this study began one week after school actually started. The first week of school was more a period of adjustment for the students than an actual learning time. It was amazing to witness the ease with which Ms. Bates accepted my presence and activities, which included note taking, recording, and picture taking. She seemed to be
very proud and confident with her method of teaching. She introduced me to the students and treated me as a welcomed guest.

Immediately after the bell rang on the first day, Ms. Bates asked for portfolios. These consisted of folded pieces of poster board stapled at two ends to form a pouch to hold student art work. The students had been assigned to create a picture of their choice on the front of the portfolio. Most of the pictures were very personal and realistic. Not all of the students had finished the project. Ms. Bates told the students that they would receive a grade for the project. Ms. Bates asked for, what she referred to as, "punish work" from one student and then began collecting art fees from anyone who might have remembered to bring them. Only one student had remembered.

At the beginning of each class Ms. Bates did two things: she asked for "punish work" and for art fees. Roll was usually taken after the day's project was started. In regard to the "punish work," Ms. Bates had an unusual method for maintaining good behavior in her class. When a student displayed unacceptable behavior, which ranged from talking excessively to disrupting the entire class, Ms. Bates would allow each student two warnings. On the third offense Ms. Bates would give the student what she called a "lollipop."
The "lollipop," which was written on the board, consisted of a math problem that involved multiplication and subtraction. If given a "lollipop," the student was required to multiply a three digit number, such as 814, by a two digit number, such as 17. The two digit number, e.g. 17, would then be subtracted from the product, e.g. 13,838, repeatedly until zero was reached. This procedure would take the student at least an hour to complete. It was mandatory that the student hand it in the next day. If they failed to do so, they would be sent to the office. If they were sent to the office three times, they would be suspended for three days. The "lollipop" took care of most discipline problems. The "lollipop" was changed periodically during the year. In severe cases of disruptive behavior, Ms. Bates would bypass the "lollipop" and send the student directly to the office.

The other ritual that took place at the beginning of each class was the collection of art fees. This was, as I discovered through the days, like squeezing blood out of a turnip. Ms. Bates was only allowed to ask for $20 from each student for the year. She collected $10 for the first semester and $10 for the second. The money collected from the art fees constituted 90% of what Ms. Bates received for supplies. Very little was available through the high school budget. About one-half of the students did not pay their art
fee until Ms. Bates finally refused to submit a grade for their report cards.

Ms. Bates also obtained supplies by offering bonus points to students who would bring in supplies. Five points were given for paper towels, 409 cleaner (to clean the tables), Q-Tips, and various objects they might be working on. Ms. Bates put a maximum of 25 on the number of bonus points that could be obtained. This maximum prevented the students from abusing the point system. The bonus points were added to the total number of classroom points at the end of the semester. This system was used by most of the teachers at school. Bonus points would be given for bringing egg cartons to the science teacher or newspapers to the English teacher.

Before Ms. Bates began giving instructions for the day's lessons, she announced that they were going to work on right-brain functions. Many references were made to what was and what was not considered right-brain thinking on the first day I observed:

If you [students] get bored you are not using the right side of your brain.

If you daydream you use the right side of the brain.

It feels different when you daydream than when you think regular.

Dull things take place in the left side of the brain.
The more you practice right-brain activities, the more the right-brain will work.

You will relax more, the more you use the right side of your brain.

Artists that get in the right-brain mode get lost into their work.

When you work and things are quiet, how do you feel when someone interrupts you?

This means that you went to the left side of your brain.

When 1st hour beginning students got into their exercise and the intercom came on, it was very disturbing, it interrupted right-brain functions.

After the initial discussion of right-brain activities, Ms. Bates began instructions for the day's right-brain exercise, i.e., contour drawings of the hand. Some of the students expressed a desire to "start on some good stuff." These comments were ignored. I was given the impression by the students that they had done these exercises in previous art classes.

Ms. Bates handed each student a small piece of masking tape. Then she asked which students were left-handed and which were right-handed. The answer to this question would determine to which side of the table the students' drawing papers would be taped. Students were then asked to tape their drawing paper to the table on the side opposite the hand with which they drew. Unless it was a special occasion,
inexpensive copy paper was used as drawing paper because there were insufficient funds to buy better paper.

The first exercise of the day required the students to complete a contour drawing (a drawing done without looking at the paper) of their own hand (the hand not used for drawing). Students were to use one hand to draw the outline of the other hand. The students were given 30 minutes to complete the project. Ms. Bates explained that contour drawing is like a puzzle. "If you are worried about what it looks like when you're finished, it is left-brain thinking." She continued by saying, "It does not matter what the drawing looks like when it is finished. You are to draw everything you see in your hand." The students were instructed to use their pencils as their eyeballs and, even if tempted, not to look at their papers. Ms. Bates said, "Taking a peek at what is being drawn is the left-brain trying to take control and must be overcome. You use your left-brain if you do. You cannot talk while using the right side of your brain; it is impossible." Almost immediately and despite Ms. Bates' warnings, the majority of the students began to whisper and sneak looks at their drawings. At the end of the time period, some of the students began to complain about various physical problems. One student said she felt stressed. Others felt nervous. Some complained of headaches,
confusion, and a strangeness. Ms. Bates explained that the left brain did not like these exercises and that these problems were the result of the conflict between the two halves of the brain. She went on to say, "This is O.K., because this is the way you are supposed to feel." Ms. Bates said, "After you use the right-brain more, the headaches will disappear. If you get confused, it means there is conflict between right and left hemisphere. This is good; at least something is happening."

A student asked Ms. Bates how long they had been given to work on the drawing (they had forgotten). When Ms. Bates told them they had been given 30 minutes, some felt the time spent was longer, and some thought it was shorter. "Those students who felt the time was longer," Ms. Bates explained, "were not using the right-brain mode. The right side of the brain does not register time."

At one point during the project the following conversation took place between Ms. Bates and the students:

Ms. Bates: "Don't let the left-brain criticize. How do you feel while drawing?"

Student: "Stressful."

To the class:

Ms. Bates: "How many looked at your paper? You must go slow; if you speed up the left-brain takes over. It was the cause of headaches last week in class. The left brain does not like these exercises."
Only a few of the students admitted that they had looked at their drawings. I knew all had looked. At the end of the class period the students were allowed 5 minutes to put their drawings away. For homework Ms. Bates wanted the students to repeat this exercise.

6th hour.

The students filed into the classroom, and it was not long before the room was packed to capacity. Extra chairs had to be brought in from the storage room. There was not enough room between the tables for Ms. Bates to walk. At times she was forced to lean across the table to help a student because she was not able to get around to the other side. Although the room was overcrowded, the students were quite well behaved and responded to Ms. Bates in a very positive manner.

The procedure at the beginning of the 6th hour class was the same as in the 5th hour class. Ms. Bates asked for punish work as well as art fees. Some adjustments were observed in the classroom procedures for this (Art I) class as compared to the 5th hour class (Art II, Art III, Art IV). Because this was a beginning class, Ms. Bates took her time with explanations and directions. Some of the right-brain discussion had been eliminated for the 5th hour students because they had heard it before.
Ms. Bates told the students in 6th hour that if they missed any assignments they could make them up at home. Each day the students would be given 25 participation points for doing their work. As the day's instructions began, one sheet of copy paper was handed out to each student by Ms. Bates. Tape was also handed out to the students, and they were given the same explanation as 5th hour students as to what it was to be used for. A discussion about the right-brain began:

Ms. Bates: "Sharpen pencils before class begins. What kind of activity are we going to do today?"

Class: "Right-brain function."

Ms. Bates: "Let's talk about the right-brain things we did last week. How did you feel?"

One student: "Strange."

Another student: "Confused"

Ms. Bates: "That's O.K. that's what you're supposed to feel. The right-brain and left-brain are fighting. After practice the confusion lessens as the right-brain starts to take over. Daydreaming is a right-brain function. How do you feel when you daydream? It is a relaxing feeling. That's how this should become after practice. Still lifes are stressful, but the upside down drawings are not. This is the best exercise to get you into the right-brain function."

Ms. Bates began the explanation of a contour drawing. She instructed the students to think about edges and outlines. The same instructions that the 5th hour class received for the exercise were also given to the 6th hour class. Some of
the comments made by Ms. Bates to the class referring to right-brain control were:

Today we draw hands, and you are all stressed.
The purpose of this exercise is to make you look at visual information.
If you look, you're giving in to the left side of your brain.
Draw slowly. If you go fast, you're getting bored, and your left-brain is taking over.
Your left-brain is saying, 'I don't like these activities.'

Some of the students began looking around at other students' work. Some started talking. One student finished in about 4 minutes. Most of the younger students were looking around as if confused. About 8 minutes into the exercise, several students were already finished. One student asked if they could look if they were finished. Ms. Bates replied, "If you are finished, you didn't do it correctly. Do it again right over the top of the other one." Twelve minutes into the exercise about one-third of the students were finished. Some had put their heads on the table. Ms. Bates stopped the class to show them examples of the 5th hour class's drawings. She asked the class, "How do you feel?" The class answered with words like "tired," "sleepy," and "headache." Ms. Bates would say:
The left-brain is fighting you and says 'I don't like this, and I'll give you headache.'

How many looked? If you did, you gave in to the left-brain.

The class then had a discussion on how all language skills are located on the left side. This, as explained by Ms. Bates, was the reason they would become confused when interrupted while drawing. She would continue to say:

After I read this book [Drawing on the Right Side of the Brain] I learned why I would get angry when my children would interrupt me while drawing.

They were making me use the left-brain.

After you use more right-brain, the headaches will disappear.

At the end of class the students put their drawings in their portfolios and placed them in the file box located in the back of the room. The file box sat on the table next to my chair, and at times this area became very congested.

Second Day

5th hour.

The class began as it did the first day with Ms. Bates asking for art fees. She had not given punish work, so she did not ask that any be turned in. She did, however, ask for bonus point supplies. This procedure preceded every class and from this point on will be referred to as "Class began" in this study.
One of the exercises for the day was to complete another contour drawing of the hand. Ms. Bates told the students to study the hand carefully before starting. They were given 20 minutes for the exercise. Ms. Bates announced to the class, "Don't finish the outline of the hand and then fill it in. Pay attention to relationships, how long each finger is, space between fingers, angles, and shapes." No mention of right-brain activity was made to the students at this point. Some of the students taped their paper to the table, and some did not. Most of the students worked quietly, which they had not done the day before. Some of the students did not draw. One student had an injured hand and was not able to do the work. A friend sitting across the table seemed compelled to join her by also not doing any work.

As Ms. Bates handed out another blank sheet of copy paper for the second exercise, she asked, "Who can tell me what a contour line drawing is?" Some of the students answered in unison, "Outside line drawing." The objects to be drawn had already been placed in the center of the tables. A clear plastic spray bottle with a nozzle was placed on one table and on another table a brass pot with a lid was placed. The remaining tables had florist vases that were green in color. The students were given 20 minutes for the
exercises. When the time was up, Ms. Bates showed the class the finished drawings.

6th hour.

Class began. Paper was handed out to each student. Ms. Bates told the students that they were going to draw their hands again today. First she reminded them, "We're going to get into the right-brain mode. Start thinking about relationships. Relationship of space between fingers and fingers to each other." The instructions for this class were identical to the 5th hour's instructions. The tape was handed out to the class, and the students began to draw. Ms. Bates walked continuously around the class giving individual instruction to each student.

Both of the 6th hour's exercises were identical to the ones done during the 5th hour. The students worked well and without incident. Overall the students worked more intensely during this class period than they had on the previous day.

Third Day

5th hour.

Class began. The lesson for the day centered around the use of negative space. Ms. Bates asked, "Where are drawing skills?" and the class answered in unison, "Right side of the brain." The first exercise for the day was to draw the negative space around a pair of scissors. Each student was
given a piece of paper with the negative space filled in with black. The area not blackened revealed the shape of the scissors (see Figure 9). Ms. Bates explained to the students that they were to fill the area around the scissors with a solid color and leave the shape of the scissors the color of the paper. This class already knew the routine; they had done this exercise before. In the middle of the exercise, Ms. Bates sent one of the students to the office for disrupting class. This is one time that she bypassed the "lollipop." The rest of the class immediately began to behave and began working on the exercise.

For the next exercise, the teacher placed pieces of paper on the tables in front of each student. On each piece of paper the negative areas were filled in with black around two different shapes. One was the shape of a pair of crossed legs, and the other shape was a pair of arms. The papers were not to be moved in any direction. The students were to make duplicates of these shapes without drawing an outline first. Other than the initial question and answer, there was no mention of right-brain drawing during this class.

6th hour.

Class began. Ms. Bates started class with a discussion of five art terms written on the board (composition, format, thumbnail sketch, positive space, and negative space). The
Figure 9. Negative space around a pair of scissors.
students were told that these terms would appear on the mid-term and final test. No mention was made as to whether the terms or the test were a right- or left-brain function. Ms. Bates gave a lengthy explanation of negative space. She used a chair as an example.

Ms. Bates: "If you identify the negative space, the positive space appears. What happens when negative space and positive space come together?"

Class: "It forms a line."

Ms. Bates: "If you blacken the negative space, what color will the scissors be?"

Class: "Black."

Ms. Bates: "If you blacken the negative space, what color will the scissors be?"

Class: "Black."

The class should have answered "white." Ms. Bates knew that they were not catching on and explained for a second time about negative space. The students were then reminded to "get into the right-brain mode before starting." Paper was then distributed to each of the students. The same exercise was assigned to this class that was given to the 5th hour class, drawing the negative space around a pair of scissors. Ten minutes were given for the task. Some of the students drew the outline and then filled in the negative space. This was exactly what Ms. Bates did not want the students to do.
It is possible they did not understand the instructions or were not paying attention. The students indicated that they lacked interest in this exercise by talking among themselves about social experiences in other classes.

Ms. Bates told the students that it was "O.K." if they did not finish the exercise and that it was just for practice. Ms. Bates asked how many in the class saw the negative space. Only a few raised their hands. Ms. Bates said, "If you look at the paper and recognized that they are a pair of scissors, you're using the left side of the brain."

Ms. Bates asked the class, "What happens if the left side cannot handle information?" The class answered, "The right side handles it."

The directions for the next exercise were the same as those given in the 5th hour. The students were to fill in the negative space around pairs of legs and arms. One student made the comment that they liked seeing black shapes on white paper better. Ms. Bates answered, "Too much talking, you cannot do these exercises and talk." Although a low level of talking remained, most of the students appeared to be more willing to complete this assignment than the previous one. The students were having a problem getting the shapes to fit on the paper. They kept running out of room on the page. Ms. Bates stopped the class and said, "Listen
class, confusion is going on because of running out of room. This is because of the conflict between the left- and right-brain." Ms. Bates showed the students how to gauge the shapes and make them fit using a pencil. Because the bell was about to ring, Ms. Bates stopped the class and told the students to pick up their artwork. She also reminded them put it in their portfolio. The bell rang.

Fourth Day

5th hour.

Class began. Two sheets of paper instead of one were handed out to the students for this lesson. The students were instructed to draw on one of the sheets of paper a chair which was already set up in the back of the room. No instructions were given the students, they were just to draw the chair. The students were more settled and worked better in class on this day. The student who had been sent to the office the day before was very well behaved. Because my chair was located next to the chair which the students were supposed to be drawing, some of them just sat and watched me watch them. During this exercise there was no mention of right brain.

Then Ms. Bates explained that they were to use the second sheet of paper to draw the negative space around the chair. They were allowed 15 minutes to complete the drawing.
Ms. Bates then said, "If this exercise is done correctly, the chair will appear." She further informed the class, "If you look at the paper and know it's a chair, then you're using the left side of the brain. If the left side cannot handle information, the right side handles it." Ms. Bates moved around the room and helped the students with their drawings. Confusion occurred when it was discovered that the majority of students' drawings did not reflect the view of the chair from where the students were sitting. The students had drawn what they thought the chair should look like instead of what they actually saw. Ms. Bates explained that "this was the left-brain interference." When the students finished this project, Ms. Bates started another one.

More than two exercises were given to this class because they progressed at a faster pace than the 6th hour class. More confusion occurred when the students started to run out of room on their papers. They just could not get their pictures to fit on the paper. Frustrated, Ms. Bates said, "This is because of conflict between left and right hemispheres." Ms. Bates demonstrated to the class with the use of a pencil how to determine the correct angles from their viewpoint. She showed them how to hold a pencil horizontally in their hand with an extended arm. This pencil acted as a ruler and helped the students find the angles of
the chair. (This method of measuring is used with a 3-dimensional image when perspective lines cannot be used.)

Ms. Bates introduced another method to the class in order to help them with the angles of the chair. She had made enough viewfinders to give one to each student. The students had to return them to Ms. Bates at the end of class. The viewfinders were constructed by cutting a 1-inch hole in the center of a piece of construction paper. The students looked through the hole cut in the construction paper and drew what was seen. The third exercise for the day was to draw the chair using the viewfinder. The students were to position themselves so that the whole chair could be seen in the viewfinder. The chair was to "touch" both sides of the viewfinder. The students were to draw everything seen through the viewfinder. Each of the three exercises lasted about 15 minutes each. The last five minutes of class was allowed for students to put their work in their portfolios.

6th hour.

Class began. The same instructions for exercises one and two were given to the 6th hour class as were given to the 5th hour class. The only difference between the two classes was that the third exercise was eliminated for the 6th hour class. This elimination allowed the beginning class more time for the other two exercises. Ms. Bates told the
students, "If you get confused, it means that there is a conflict between the right and left hemisphere. This is good. At least something is happening." Several students did get confused, and Ms. Bates went around and individually helped each student get started. Finally Ms. Bates had to stop class and demonstrate how to fill in the negative space without drawing an outline. When asked how many in the class did not understand how to fill in negative space, only a few students raised their hands. From the looks of their drawings, most of them just did not admit to a lack of understanding.

Subsequent Days

During the subsequent days of observation, several right-brain exercises were introduced to the 6th hour class only. The 5th hour class began working on a design for the parish fair poster contest. There had been on going rivalry among the local art teachers to see whose students would win the contest. Ms. Bates had her advanced students start early this year. This project lasted for several weeks.

The 6th hour class continued working with right-brain exercises. The concepts presented to the class previously were reinforced each day. Although the subject matter changed, more positive and negative space drawings were assigned. As the number of projects completed by the
students increased, the subject matter became more complex. For example, one of the first projects only included one jar. The later projects included multiple objects, such as a box resting on a chair, still lifes with several bottles, boxes and odd shaped objects, and portraits. Sometimes the still lifes would consist of the same objects placed in different configurations.

As the 5th hour class continued working on their posters, the 6th hour class began the exercise for the day. The day's exercise was to draw a still life of three medium-size cardboard boxes, one food grater, and a zip lock bag. The still life rested on a platform that was covered with purple material. Ms. Bates instructed the class, "The still life is to fill the page. There should be no talking, because the right-brain does not function while you're talking." After the exercise began Ms. Bates realized some of the students were having problems in drawing the angles. She stopped the class and demonstrated how to draw the angles correctly. She explained, "I'm going to draw the corner of the box first, but I can't tell which way the line goes because my left-brain says 'back.' You cannot draw back on your paper. Only left, right, up, and down."

After she realized the students were still having problems drawing the still life, Ms. Bates again stopped the
class. Once again she tried to explain about perspective to the students.

You cannot draw back. You are trying to draw a three dimensional object on a two dimensional piece of paper. Things can go up and down and left and right, that is the only thing that will relate to the paper.

Ms. Bates went to one student that had raised her hand. Ms. Bates told her that she had done a good job and showed the art work to the rest of the class. Some of the students said that she was in a better position to draw than the rest. Ms. Bates scoffed at that remark. Several students held their drawings up for Ms. Bates' approval and received it. During this discussion no mention was made of left- or right-brain thinking.

Ms. Bates showed the students how to use the pencil to determine if the line they wanted to draw went up, down, left, or right. Ms. Bates asked, "Do you see where I got these angles? If not, raise your hand." One student did not understand, and Ms. Bates proceeded to help them. She went on to say, "Do not use a ruler; you do not need exact lines." Ms. Bates passed out viewfinders to the students that needed help creating formats and told them not to get frustrated. "Just remember, getting frustrated is the conflict between the left and right brain." Some of the students began moving around the room trying to get a different view of the still
life. Ms. Bates walked behind a student who seemed to be having a problem and in a low slurred voice said, "Leeeeftttttt-braaiiinnn, fix it." To the class Ms. Bates said, "Please don't get frustrated, ya'll. It takes practice. Sooner or later the negative space will be automatic and the right-brain will kick in." While helping a student with angles, Ms. Bates made the comment "Don't let logic get in the way. Draw what you see, not what you think you see, that's the left brain getting the way."

Because the class was so large, it was difficult for the students to get in a good position to draw. One day a student had to leave the room to get an extra chair. It was also very difficult for Ms. Bates to give each student individual attention. With 32 students and only 50 minutes in which to conduct a class, the time allowed for each student was 1.25 minutes. This amount of time was available only if the instructions for the day, role call, collecting art fees, and getting the students to settle down required just 10 minutes. Ms. Bates also had to deal with other interruptions, such as announcements from the office coming in over the intercom, students wanting to go to the bathroom, and student workers floating in and out of the room to bring various forms and bulletins from the office. During these interruptions, there was a lot of unrest and confusion among
the students. Some of them raised their hands for help but had to wait for long periods before Ms. Bates could get to them. One student expressed frustration about not finishing an assignment, and Ms. Bates replied, "Patience is a learned thing." Some of the students had their hands raised for so long that they had to prop them up with their other hands. Sometimes they shook their arms to get the blood circulating in them again, and some students just gave up. I asked Ms. Bates if I could assist some of the students who were starting to ask me questions. She gave me a look of appreciation as though I had been sent from heaven. It was impossible not to get involved. I sat within touching distance of one of the tables that accommodated six students. Although I began helping the students in the classes and walking around the room to look at their art work, I was very careful not to mention the right-brain theory. Actually, I was never asked my opinion. Only once did I inadvertently give a student information that contradicted Ms. Bates. I gave a student a mechanical pencil with a soft lead because the pencil they were using had hard lead. I soon found out that Ms. Bates was very much against the use of mechanical pencil in her classroom. Ms. Bates would lend classroom supplies to students that wanted to work on projects outside
of class. Before she did, though, she would ask for a watch, a set of keys, or some personal item to assure its return.

The 6th hour class began work on the same fair poster project as 5th hour. This class was rushed to finish their posters because they were 2 weeks behind the 5th hour class. The fair contest deadline was only two weeks away. In addition to the poster, Ms. Bates also began a lesson on lettering. No mention of right- and left-brain function was made during the lettering lesson.

The rest of the year consisted of a sequence of exercises and projects used by Ms. Bates each year. These included various art contests that the students were encouraged to enter. The lesson following the fair poster was an exercise in lettering. The students were to letter their name on a 4" x 7" piece of poster board. This project was called the nameplate. Ms. Bates encouraged the students to add graphics and color to their names. Some of the students wanted to take their projects home to show their parents. Ms. Bates told them they had to wait until after the parents came for open house. During class, one student got on the floor to demonstrate a choke hold on another student. When Ms. Bates spotted him, he was immediately given a "lollipop."
Midway through the year, Ms. Bates was still trying to collect art fees. She offered a party to the first class that was completely paid up. It was also time for midterm grades be given out. In Ms. Bates' class the students received points for their projects, participation in class, and supplies they brought to class (these were considered extra credit points). Although projects had to be turned in before the grades were averaged, Ms. Bates always allowed the students to hand in make-up work. Two report cards were issued during the year, one in January and one in May. Progress reports were given every 4 1/2 weeks to each student. Students obtained their progress report in homeroom and carried it to all classes. The teachers put grades on the progress reports while the students were in class. One student in Ms. Bates' class who was unhappy with his grade blurted out, "Didn't those right-brain things count for nothin'?" Ms. Bates answered calmly, "Yes." She then proceeded to explain how the student's points had been added. As other students began to complain about their grades, Ms. Bates said, "You make the grades; I just write them down." As soon as the next class entered the room Ms. Bates immediately put a stop to the issue of grades. She said, "If you have any gripes about grades, come see me. Do not go back to your seat and complain to your neighbor. They can't
do anything for you." As Ms. Bates called a student to her desk to get her grade, the student replied, "Everytime I use the right side of my brain, someone calls my name." Ms. Bates responded, "I know, life is rough." One of the students walked up to Ms. Bates' desk and wanted to make up some work he had missed while he was sick. Ms. Bates replied, "O.K., I would have called your mom and told her what your assignments were, but if I had told her you were doing right-brain functions, she'd think I was crazy!" Ms. Bates would spend a great deal of time recording the grades. She would go over them with each student. One of the exercises was labeled the right-brain hand assignment.

For the next project, the students were to enlarge a picture from a magazine using the grid system. One of the students wanted to do his work at home. Ms. Bates, said, "I can't help you at home. Although you'd probably get into the right-brain mode better there." The grid system entailed drawing 1-inch squares on an original picture cut from a magazine. On a plain piece of paper, 2-inch squares were drawn that corresponded in number to the 1-inch squares that were drawn on the magazine picture. The students were required to draw exactly what was in each square of the magazine picture on the corresponding 2-inch square that had been drawn on the plain piece of paper. The finished product
should produce an image like the original, but twice the size. Although I have no recorded information of the right-brain having been mentioned during this lesson, Ms. Bates did comment on it during one of our conversations. She said, even though the grid system was a left-brain function, because of the measuring, it also worked as a right-brain function. When the students worked on the small squares one at a time, they did not see the picture as a whole until it was finished. This was a right-brain function.

One event that always takes place during the first semester at this school is open house. I went to Ms. Bates' room in order to hear her presentation to the parents of the students in her classes. Each teacher was given 15 minutes to speak to a group of parents. Ms. Bates was dressed in a blue dress with a white lace collar. She told the parents that she taught out of Edwards' book, Drawing on the Right Side of the Brain. She said, "It is an unconventional method of teaching and not many teachers do this. I'm sure you have noticed odd assignments like positive and negative drawings and drawing backwards, or not looking at art work while they draw." Ms. Bates explained that the students were trying to learn how to switch hemispheres during the drawing process. She went on to say that lettering the nameplate was the first real project the students did after the right-brain
exercises. Right-brain functions were not mentioned again during the presentation. The rest of the time, Ms. Bates discussed the art contests and glass case in the lobby used for displaying student art work.

The students were given an option for the next project that was assigned. They had a choice between a football poster and a pancake poster contest. The pancake poster contest was not a poster contest but an art contest. One of the students wanted to know if they had to draw pancakes. Ms. Bates replied, "No, anything goes." This was a local Lions Club project, and the winner was to receive $25. The football poster contest did involve a poster and would go to a competition in New Orleans.

After the Christmas break the students began a variety of projects. None of these projects were related to right-brain instruction. The first project was a wire sculpture project. Wire was formed on a piece of wood, panty hose was stretched over the top, and then everything was spray-painted. The next project was a macaroni picture. Several different kinds of macaroni were glued to a piece of cardboard and then spray-painted. The following project was a piece of junk-sculpture. The students brought in junk from home and glued it to a board. This project was also spray-painted. Other projects included lessons on shading, batik,
still lifes, portraits, papier-maché bowls, calligraphy, Q-tip paintings, collage, papier-maché masks, and paper beads for jewelry.

As time went by and students began to improve their drawing ability, brain function entered into the discourse less frequently. Even in the 6th hour class, when the students were still doing right-brain exercises, the talk dealing with right and left hemispheres was minimal. It occasionally surfaced in individual conversations between Ms. Bates and a student. For example, one student was complimented on a job well done by Ms. Bates when she said, "Right side of your brain cookin'." When a student asked Ms. Bates what was missed while they were absent, the reply was simply, "More right-brain exercises."

Sometimes the students joked and had fun with the right-brain concept. During a demonstration by Ms. Bates on how to draw boxes in a still life the class began to talk among themselves.

Ms. Bates: "The right brain does not function while you're talking."

One student continued to talk.

Ms. Bates: "Brian! Stop that talking! The left brain's for language, right brain's for drawing."

Brian: "But I'm doing a left-brain function, erasing!"
Ms. Bates: "Oh, erasing is a left-brain function?"

At that point one student raised his hand and asked Ms. Bates when she was going to teach them to draw. Another student showed Ms. Bates his picture of flowers for approval. Ms. Bates remarked that he wasn't doing the project correctly, and he replied, "Fifty percent of these are left-brain flowers." The student pointed the pencil to his head and poked it real hard. Shaking his head, he moved to a table and showed his work to the students sitting there. He told them, "I have left-brain flowers." Ms. Bates had begun work with another student and just ignored him. He eventually put his drawing up, sat down, and watched the other students work. This class had a sense of humor. Ms. Bates did not seem to mind as long as the class did not display any behavioral problems.

One student went to Ms. Bates and said that he could not get "in the mood to draw" or "what-ya-call-it." He hesitated and then burst out with "right brain!" Ms. Bates responded, "That's no excuse. Compare this assignment to a job. What would you do if you went into work and said that?"

The students worked well as a group in both classes. They respected each other's allotted space. As the assignments became more art-oriented (from the students' point of view) and fewer exercises were done, the students
showed greater interest, not only in their own work but in the work of the other students.

At some point, around the middle of the first semester, the class observations began to merge into one long class. All talk of right-brain function ceased when the 6th hour class stopped right-brain exercises and began working on the same poster project as the 5th hour class. The students began to work on a multitude of sequenced lessons on two-dimensional and three-dimensional projects. Only special events seemed to break the routine established by Ms. Bates. One such event was the appearance of another observer. I was informed at a later date that this stranger (I was a regular member of the class by this time) was Ms. Bates' evaluator from the school board. We were both making notes about each other in our notebooks. Another event was sending a disruptive student to the office for disciplinary action. After the right-brain discourse stopped, most of the observations were spent recording common activities that take place in art classrooms on a day-to-day basis.

Section 3
First Informal Interview of Ms. Bates

At the end of the third month of observation, on December 18, 1992, an informal, personal interview was conducted with Ms. Bates during her free hour. To ensure
that I covered all areas related to this study, I had prepared a list of questions (see Appendix A) and had classified them under headings: educational history, changes directly related to right-brain drawing instruction, instructional goals, effect of instruction, knowledge of right-brain function, evaluation, and reasons for using right-brain drawing techniques.

I arrived at the school around 8:50 a.m. and encountered Ms. Bates in the hall. As we walked to her classroom, I asked if she would prefer that I conduct the interview in her van which was parked in the teachers' lot around the corner. At first she hesitated but then agreed. On an earlier occasion I had discovered that she usually went to her van to smoke a cigarette during her break. I believed we would have a more successful interview if Ms. Bates were in an environment in which she felt at ease. Interviewing in the van actually worked very well for several reasons: (a) the acoustics in the van were better for taping than in the classroom, (b) the janitors usually went into Ms. Bates' classroom to watch television at that time, and (c) Ms. Bates felt more at ease and could smoke when she wanted. The interview went very well and set the stage for a deeper understanding of Ms. Bates and why she adopted the right-brain method of teaching art.
As previously indicated in this chapter, Ms. Bates began college in fine arts at Southeastern Louisiana University and at that time she had no intention of becoming a teacher. Instead of finishing her fine arts degree, she got married and in subsequent years had three children. When Ms. Bates decided to go back to school, she wanted a career that would allow her to spend time with her family. Ms. Bates chose a career as a teacher. Art education, however, was not her first interest. Ms. Bates began taking classes in elementary education. After observing several elementary classes, she decided to leave that age group to "braver souls." Ms. Bates decided to change her major to art education for junior high and high school students. She finished her course work and graduated in the fall of 1988. She was immediately hired at a junior high school as a substitute teacher in math and science. After about two weeks she was hired on a permanent basis and taught in that position until May of 1989. In the fall of 1989 Ms. Bates began teaching at the high school where she is presently employed. Although Ms. Bates began by teaching science, she gradually introduced an art program to her curriculum. The principal initially allowed her to teach one art class. As this one art class proved to be successful, more and more classes were added to her teaching
load. Eventually all five of the classes she was required to
teach were art classes.

When Ms. Bates graduated from college with a degree in
art education, she felt inadequate to handle a teaching
situation. In the beginning, teaching art left Ms. Bates
frustrated and disappointed. She felt that she was not
offering enough solid information or motivation for the
students to acquire the ability to draw. During the second
year of teaching, Ms. Bates discovered Edwards' book, *Drawing
on the Right Side of the Brain*. As Ms. Bates started
including right-brain exercises into her curriculum, she
believed she recognized an improvement in the students' work.
From that point and for the past two years, she has been a
firm believer in Edwards' right-brain theory. During the
interview the following conversation took place:

Interviewer: "Has your attitude toward teaching art
changed since you started using right-brain drawing
instruction?"

Ms. Bates: "Definitely. I always thought the kids had
to have some talent to really do well, or they had
to have a pretty good feel for art, and now I've
found the kids that wouldn't draw anything can
really succeed at it. They may not do as well as
some of the kids that have a lot of talent, but all
of 'em can succeed at it, and all of 'em can learn.
I tell them, 'If you have the willingness to do it,
I can teach you how to draw.' I never had that
attitude before I read Betty Edwards' book and
started teaching that way."
This statement is quite similar to ones made by Edwards (1989) in her book. Edwards (1989) states:

The exercises and instructions in this book have been designed specifically for people who cannot draw at all, who may feel that they have little or no talent for drawing, and who may feel doubtful that they could ever learn to draw—but who think they might like to learn. (p. 6)

Interviewer: "So before you read Betty Edwards' book, did you not feel you had the ability yourself to teach them to draw?"

Ms. Bates: "That's a good question. I'm not sure. When I first started, and after my student teaching, I was lost. I've talked to a lot of teachers in art that felt the same way. I felt totally unprepared to go into a classroom and teach art. Part of it was because of a professor I had in art education who taught us 'didally skwat' for a whole year. I was very insecure my first year. I don't know if after reading her book it....I think it coincided with the fact that I had taught....After my second year of teaching I had gained more confidence, and I realized that I could do better than I thought I could at it. There's a whole combination of things... and also because I love it so much... I think."

Interviewer: "Has it changed your method of teaching?"

Ms. Bates: "Yeah, it has. I'm more organized because of the book. It helped me line things up and what I should teach first and what I should start with. Even though I start with line and all that, I'm spending more time on certain things. Like the right-brain function things, I had never done those before I read the book, the upside down drawing and things like that."

Ms. Bates went on to say that not only had her attitude toward teaching improved, but she could see an improvement in
the students' attitudes and self-esteem as well. She felt that once students learned how to draw, they believed that it was possible for them to excel in other areas such as math and English.

Ms. Bates said that she used right-brain exercises mainly in the first semester to give the students confidence in their abilities early in the school year. She maintained that copying realistic pictures gave them this initial confidence. These views are similar to the ones expressed by Edwards (1989) when she states:

The value of achieving realistic drawing skills has three aspects. First, through realism you will learn to see deeply and profoundly. Second, you will gain a kind of confidence in your creative abilities that, for many nonartists, cannot be gained any other way.... Using this book helps students--artists and nonartists alike--to unlock, thereby increasing their confidence to explore other kinds of art that call into play the ... functions of the whole brain. And third, you will learn to shift to a new mode of thinking, a mode of vast potential for insightful, creative problem solving.... In a sense, realistic drawing is a stage to be passed through, ideally at around age ten to twelve. (p. 7-8)

Doing something abstract did not give them the confidence that doing something realistic did. Ms. Bates stated, "That's the level of thought that they are on. They think at this age that if you can't do it realistically....artists that just don't do realistic work aren't any good." One of
the goals expressed by Ms. Bates was that she wanted her students to be confident in themselves. She wanted them to recognize that they have progressed in their abilities. One of the reasons that Ms. Bates encouraged the students to keep a portfolio was so that they could actually see how much their art work had improved. If the students could see positive results from their efforts, they would see that they could do almost anything if they tried. Since using Edwards' techniques, Ms. Bates said that her goals have changed. At one time her goals for the students had been more academically oriented. The emphasis had been on their learning design principles and art terms. Ms. Bates said:

"I used to make 'em take notes and write down all this stuff. Now I repeat things so that they've heard the art terms a lot in the classroom. I give them a study guide before the exam. I used to put a lot more emphasis on that. That's not as important now. That comes later. Mainly, it's pleasing themselves and their artwork. If I use the correct terms in class, they pick it up."

When asked her opinion on how right-brain instruction enhanced student art work, Ms. Bates replied:

"It helps them to see. I took for granted that everybody looks at things the way I do. The biggest advantage of reading this book is that I realized that things that I've known all this time, these kids don't know. I did it, but for me to tell other people how to do it, I didn't know how to tell 'em. I think she's given me a lot of the words on how to tell
them what to look for, to learn how to draw better.

When asked how the right-brain method of instruction works, Ms. Bates gave the following explanation:

Some of the exercises I repeat, and repeat, and repeat. To me, you can actually see when an exercise is working, where they're turning over to that right brain and they're starting to concentrate so much on that right brain. I try to get them to have that feeling enough to where... I mean, maybe that cannot turn it on automatically, but when they get into it, when they are finished with something, they can realize they were in it.

She continued with an analogy that she used with the students:

Before I start an exercise, I say, 'Remember when you go somewhere, and you don't remember how you got there, you know that's because the right-brain's taking over, and you're thinking about something so deeply that you don't realize how you got somewhere. It just happened automatically.' I try to get them to get that feeling and to get them to realize that, that they can switch it over.

Interviewer: "How does it work?"

Ms. Bates: "I always thought you could do it, or you couldn't. I didn't realize you could make yourself go over to the right brain and tap into that right brain and actually make yourself do that. I didn't know you could do that. I thought either people knew how to do it, or they didn't, and now I realize you can make anybody do it, because I'll do some of these exercises, especially the one where they do the vase backwards, and I'll ask them at the end of the exercise, 'How many people had a headache?' Ninety-nine percent of them raise their hand. You have a headache because of the conflict going on in your brain. The
right brain was taking over, it has to take
over to do this exercise, and your left brain
is saying, 'Uh, huh, I don't want you doing
this.' So the conflict is what's causing the
headache, and they (the students) go, 'Wow! I
was doing it.' They realize that the first
year or two that they are probably going to
get a headache. They're not used to having
the right brain take over."

Ms. Bates believed very strongly that individuals have the
ability to control the brain's function. The students were
not used to having the conflict and they had to, as Ms. Bates
put it, "Kick that left brain out." It was something the
students had to learn. Ms. Bates said, "It's a conscious
effort you have to put forth and sooner or later it will be
automatic."

Ms. Bates explained that when she painted she did not
hear anything going on around her. She always thought that
it was because she had an attention problem. When she read
this book, she realized, "Hey! It's because I use the right
side of my brain." Ms. Bates went on to say that she
"definitely believes it enhances anybody's drawing skills. I
feel like I'm drawing better since I've read the book. Even
though I've always done it, I can put a more conscious effort
toward it."

The conversation moved to the students' improvement in
artistic ability. Ms. Bates said that when a student showed
her an early work and a later work for comparison, she could
not believe the difference. The student said, "I just can't believe this. Look at last year's poster and this year's poster." When asked if Ms. Bates attributed this improvement to right-brain drawing instruction, she replied, "A whole lot of it is, a whole lot of it is. I've never seen students advance so fast. My first two years of teaching, students didn't advance that fast." Overall, she felt that the students' work had improved since she began teaching right-brain exercises. Ms. Bates believed this improvement was directly related to right-brain drawing instruction.

Ms. Bates said that everything the students did in her class was really a right-brain function. "I'm preparing them hopefully so that they're using their right brain more and more each day." Just out of the blue, I asked Ms. Bates, "Do you think one day you'll get them into the right-brain mode, and they will never switch back to the left?" Ms. Bates laughed and said, "I'd love to because I use the left brain as little as possible." This seemed to lighten the conversation to some degree and allowed Ms. Bates and me to relax before we proceeded with the final questions.

When asked to define what she felt were left- and right-brain functions, Ms. Bates had to stop and think for a few minutes. She then expressed her opinion that left-brain functions were "very analytical things, math-type things,
anything that uses math, or where they have to think logically." She went on to say, "Right-brain functions are very creative, but actually they coincide very much because they [students] do gridding which is very analytical and which is a left-brain function." Ms. Bates said she finally concluded that gridding was not a left-brain function because:

Even though they are doing all those little lines and all that, looking at squares individually and just drawing what you see, not what you think you see, they can't do that on an overall picture, but taken one square at a time they can do it...ummmm. Gosh, this is a hard question.

Although I felt that Ms. Bates had answered this next question, I went ahead and asked if she believed some of her students were able to control how their brain functioned. She replied, "Definitely." Ms. Bates was not sure that she had taught them this control because she felt that some of the students had been using the right brain already:

They came to me using it somewhat already. They didn't know they were, just like I didn't know I was. Now that I've pointed it out they go, 'Oh, Yeah, I've been doing that all along and didn't know it.' I think I've enhanced their use of right brain, even if it is just making them realize that they can switch over.

Interviewer: "What percent of your students have right-brain control?"

Ms. Bates: "About 20%.

Interviewer: "What happened to the others?"
Ms. Bates: "Only 20% know they are doing it. About ninety percent of the class are doing it, they just don't know they are doing it. With some of the exercises they can't help but use the right-brain, they're just not conscious of it."

The 20% that Ms. Bates referred to came from her advanced class, and they had had about 2 years of instruction. When asked how long it would take for a student to end up in that 20%, Ms. Bates calculated about 1 year.

When asked if she ever read anything negative about the right-brain theory, Ms. Bates answered that she had not, but that she had overheard positive discussions in small groups at several seminars. Ms. Bates was not aware of any other teachers using this book or method but felt that each art teacher should read the book. She said that even though they may not teach from the book, they should at least read it. Ms. Bates believed that if the art teachers were to read the book, it would "change art education." The only negative feedback she remembered hearing about right-brain drawing came from individuals who had not read the book. When asked if she would change her views if she were to read any negative information about the right-brain theory, Ms. Bates never hesitated and answered quickly, "Not at all! No one ever pointed out things that I should be looking for to draw before. There's no other way to teach to me."
What appealed to Ms. Bates most about Edwards' (1989) book was that Edwards showed her "that there can be a conscious effort to kick into that right brain and to use that creative part of your brain." Ms. Bates had not been aware that there was even a difference between hemispheres. She had felt that some people had the gift and others did not. Ms. Bates said that "Edwards made me aware that everyone has it. It's just how far you tap into it or use it."

The first year that Ms. Bates taught drawing techniques from Drawing on the Right Side of the Brain she did not let her students know she was using Edwards' book. The second year she used right-brain drawing instruction, however, she decided to tell the students about the book. She believed that if her students could see improvement in the drawing abilities of Edwards' students, they would have more confidence in the right-brain theory. In turn, this would increase the students' confidence in her as a teacher and, therefore, would give the students more confidence in themselves. Ms. Bates was not certain why she did not identify Edwards' book the first year. Toward the end of the interview Ms. Bates declared, "Everybody should teach out of this book. Everybody should have one of these books in their classrooms."
Second Informal Interview of Ms. Bates

On August 18, 1993, after the classroom observations were completed, a second informal interview was conducted (see Appendix B). I arrived at Ms. Bates' classroom during her 2nd hour break. Maintenance workers were sitting around one of the tables having a discussion. Ms. Bates smiled and stood up as I approached. When I mentioned to Ms. Bates that it might be better if we conducted the interview in the van as we had done before, the workers said that they would leave. The second interview was conducted in Ms. Bates' classroom and was very similar to the first. I asked specific, prepared questions about right-brain drawing instruction, and Ms. Bates responded. During the interview impromptu questions were asked as they arose. The questions for the interview pertained to three articles that had been given to Ms. Bates to read during the summer months. Ms. Bates had been asked to read the articles in a specific sequence, and she had agreed to do so. The articles, when read in the requested order, gradually introduced a view that contradicted the right-brain theory. The first article, "Educating Both Halves of the Brain: Fact or Fancy?" by Gainer and Gainer (1977), was published in Art Education. Gainer and Gainer did not refer to Edwards but did argue that the right-brain discoveries were not appropriate for
application to education. "One must conclude that these 'new scientific discoveries on the functions of the brain' while interesting for their own sake, can provide no solutions for the present-day problems of education" (Gainer & Gainer, 1977, p. 20). Ms. Bates was asked to read Gainer's article first because the views concerning over-simplification of brain research had been written with a disciplined and conservative approach. Gainer did not point any fingers nor make accusations but merely stated facts and drew conclusions.

The second article, "Some Second Thoughts on the Application of Left[-]Brain/Right[-]Brain Research" was written by Dobbs (1989), and was published in the Roeper Review. This author discussed the turmoil surrounding hemisphere research and the negative aspects of its literal translation into classroom practice. Dobbs stressed with greater force the dangers of presenting to a classroom overly simplistic ideas of how the two hemispheres function. Again, Edwards was not referred to or cited in the article's bibliography.

The third article Ms. Bates was asked to read, "The Myth of Right Hemisphere Creativity", by Hines (1991), was published in The Journal of Creative Behavior. Mentioned in this article were both Betty Edwards and, as Hines (1991)
referred to it, her "mythical model of hemisphere function" (p. 223). Hines also stated:

The assignment of art to one and science to the other hemisphere also, in effect, requires that there be no creative aspect to science and no logical aspect to artistic creation. This, too, is clearly false and such a position would be endorsed only by someone woefully ignorant of both scientific and artistic processes. (p. 223)

Specific empirical studies were cited by Hines to support his claims and conclusions. Because of Hines' abruptness and straightforward assessment that the right-brain theory is a sham instead of a relationship between hemispheric function and creative abilities, Ms. Bates was asked to read this article last.

Ms. Bates first reacted with suspicion when asked about the articles contradicting right-brain drawing instruction. Her first statement was posed as a question, "But that has been proven differently?" She did not seem completely convinced or ready to accept that the right-brain theory had not been grounded in research. As Ms. Bates began to ask questions about the research reviewed for this study, I briefly explained the findings. Ms. Bates showed a renewed interest in how the brain actually functions during the drawing process. When I presented Ms. Bates with copy of Nicolaides' (1941) *A Natural Way to Draw*, she immediately
noticed, without being shown, that some of the pictures were the same as in Edwards' book. She requested to see more research studies on the subject and wanted to borrow my copy of *A Natural Way to Draw*.

During the interview, Ms. Bates confessed that the articles I had given her to read were the first ones that she had read containing information about hemispheric function. She also explained that she had bought Edwards' (1989) book, because of the way the exercises had been presented in sequence and that they were easy to follow. She had been searching for something to help her design a curriculum that she could teach. Ms. Bates' decided that, because the students seemed to respond to the new lessons and their art work seemed to improve, the right-brain theory appeared to work. When she started using Edwards' book, Ms. Bates did not realize that the new techniques and method of presentation may have been responsible for improved student work. She believed that improvements in the students' work were results of using Edwards' book and had been giving her the credit.

The articles presented to Ms. Bates were not lengthy, nor were they statistical in nature. They were chosen intentionally to allow Ms. Bates enough time to complete the reading of each one without much difficulty. When asked if
she found one article more interesting or easier to read than another, she responded by saying, "Yes, the first one was easier to read. It was more to the point and short. Although the other articles gave more information and the last one was the most interesting." Ms. Bates seemed to enjoy reading Hines' (1991) article most. She also felt confident that the statements were grounded in research, because they were cited and listed in the bibliography. Ms. Bates said, "I will, from now on, look to see if the information presented in a book or article is supported by specific research that is cited in the text and listed in the bibliography." When asked if she would feel comfortable reading statistically oriented research about brain function, Ms. Bates said that she would read it, but she was not certain how well she would comprehend it.

When asked if she would change her method of instruction now that she had read these three articles, Ms. Bates replied:

The methods won't change as much as the way I present it. I won't be actually calling these right-brain functions, I'll be calling them, more like, drawing activities that will enhance your drawing skills, more than I will be saying, 'These right-brain functions really work!' 'These are tricks that I have learned that will help you.' That sort of thing. Generally that's what I've done before. It's just that I was giving her [Betty Edwards] credit.
Although Ms. Bates had already answered the next question with her previous statement, I went ahead and presented it to her. "Did the articles raise any doubt in the right-brain theory and its applications?" Ms. Bates said, "Sure, the theory, but the techniques still work." Ms. Bates asked more questions about where she could obtain a copy of *A Natural Way to Draw* and some of the research articles. I told her I would be happy to supply her with some of the articles from the literature review for this study.

**Summary**

The questions for the second interview were used to determine if Ms. Bates had any change in views after reading literature contradicting the theory concerning hemispheric function. They were also used to determine if one method of presentation was easier for Ms. Bates to comprehend than another. It was anticipated that responses to these questions might indicate possible areas for future research. From this interview it was concluded that Ms. Bates was very open to receiving knowledge about how the brain functions but simply had no prior knowledge that it existed.

Ms. Bates was delighted when she realized that it was probably her teaching techniques that produced positive results with her student drawings. But Ms. Bates was not
delighted with the knowledge that she had been transmitting unsubstantiated beliefs about hemisphere function, as presented in Edwards' book, to her students. She inquired as to why the research contradicting right-brain drawing instruction was not made more readily available to the public. This could also be a possible topic applied to further research.

Although the observations substantiated the fact that Ms. Bates did in fact use and promote the right-brain theory, the interviews provided more insight and a deeper understanding of why this method of teaching was used. The second interview in particular indicated that although Ms. Bates belief in Right Brain Drawing Instruction was strong, she was open to other concepts. She agreed that the right-brain method of drawing instruction was being used prematurely and that further research was needed. Ms. Bates requested more research information about hemispheric studies. She also wondered why no one had ever researched or studied this topic before. Had more information been presented to her as a student concerning the right-brain beliefs, Ms. Bates felt she would have been able to make a more knowledgeable decision about what to include in her art curriculum.
Section 4

Survey

In this study it has been assumed that a method of drawing instruction directed toward the right hemisphere is prevalent in the field of art education. It is also suggests that right-brain instruction oversimplifies hemisphere functions and that there is a need for further research before this method of instruction should be implemented in the classroom. In order to obtain a broader picture of this assumption, a survey was designed and mailed to a group of secondary art educators throughout the state school system in the spring of 1993. Obtaining a general count of how many art teachers within a selected group use right-brain drawing instruction was important to this study because the results were used to support its assumption and its call for further research by indicating the scope of the problem.

The survey asked two basic questions: (a) Do you teach and support right-brain drawing instruction? (b) What is the resource used to gain information about right-brain drawing instruction? This survey did not distinguish among age, sex, or educational backgrounds of the art educators surveyed, nor was it conducted to determine their attitudes concerning this method of teaching. These are questions that may need to be raised at a later date. The survey is biased in that the
participants were not selected randomly, and they responded strictly as volunteers. The survey was not intended to determine which teachers use or have used right-brain drawing instruction, nor why they teach it. It was conducted strictly to obtain some indication of how widespread this teaching method might be within a group of secondary art teachers. It was anticipated that the survey findings, in combination with the observation findings, would indicate to other art education researchers that there is an urgent need to address this issue.

A list of art supervisors was obtained from the Program Manager of the Arts for the state of Louisiana. This list consisted of 64 supervisors, one for each parish in the state. The information obtained from the state did not indicate if the supervisors were art supervisors or education supervisors in general. Supervisors from seven private schools were also included on the list from the north (Shreveport), central (Alexandria) and southern (Baton Rouge, Lafayette, Lake Charles, and Houma) parts of the state. No explanation was given as to why these particular private schools were on the list of state-supervised schools. Although the private schools were included in the survey, no distinction was made between private and public institutions in the collection of responses. On March 30, 1993, each of
the public and private school supervisors was sent a letter requesting their assistance in conducting this survey. A list of secondary art teachers was requested from each supervisor so that an accurate number of surveys could be distributed at a later date. Of the parish supervisors, 40 (62.5%) out of the possible 64 responded and agreed to assist in the survey. Of the 42 parishes that answered, two did not have any art teachers and were not included in the survey.

The supervisors who responded to the initial letter provided the names of 167 teachers who were possible survey recipients. On May 3, 1993, an introductory letter and a set of surveys (see Appendix C) were sent to 40 supervisors. Another explanatory letter addressed to the teachers and a self-addressed, stamped envelope were attached to each survey to encourage teacher response. The supervisors were asked to provide each secondary art educator under their authority with a survey and the attached letter.

Results.

Every effort was made to ensure that the survey reached all art teachers selected. Of the 167 surveys mailed, 69 (41.3%) responded. Only one survey was returned unopened. The following calculations were made only from the surveys (69) that were returned. Of the 69 respondents 53 (76.8%)
indicated that they presently were teaching or at one time had taught right-brain drawing instruction. Thirty-nine (56.5%) of the 69 respondents said that they used Betty Edwards' (1989) book, *Drawing on the Right Side of the Brain*, in conjunction with right-brain drawing instruction.

The 69 respondents to this survey were widely scattered throughout the state, with no great number being concentrated in any specific region. Although it was not indicated that Edwards' book was used as often as the right-brain strategy itself, over half (41, 59.4%) of the 69 respondents indicated that it was used in their classrooms as a source of information. Results from the 69 returned surveys supported this study's assumption in that it indicated that right-brain drawing instruction is prevalent among the art educators that responded to the survey. Since an accurate number of secondary art educators in the state of Louisiana could not be obtained the results of this survey are recognized to be limited.

**Summary**

This chapter has described the field research conducted for this study. The research involved a long-term observation of one teacher using the method of right-brain drawing instruction in the classroom. Section 1 contained detailed descriptions of the community, the school, the
classroom, the students, and the teacher. Section 2 described the actual sequenced observations, beginning with the conception of the research project. Data were recorded by hand in a research journal in addition to having been tape recorded. Although all observations were recorded, this study focused mainly on those that related to right-brain instruction. The first 4 days of the observations were described in detail. As less reference was made to brain function the description became more generalized. Section 3 recounted two informal interviews, which gave additional background information on the participant and her personal beliefs unobtainable through observations alone. The survey, described and discussed in section 4 showed that 76.8% (53) of the 69 secondary art educators that responded to the survey used right-brain drawing instruction.
CHAPTER 6
DISCUSSION AND RECOMMENDATIONS

To introduce this chapter it needs to be expressed that although every effort was made to maintain an unbiased perspective about right-brain drawing instruction the following discussion and analysis of the observations and interviews are not entirely impartial in origin. It is the view of the researcher that the right-brain theory has not been sufficiently supported by research and that left and right hemispheres cannot be controlled for drawing activities.

The primary purpose of this study has been to provide information on why one art teacher presented right-brain drawing instruction to her students. The field research has provided information regarding the reasons why this teacher chose this teaching method, why she believes it works, what attracted her to it, and how successful she feels it has been in her classes. The personal interviews allowed for a better understanding of why this method was used and how deeply it has become embedded in this teacher's way of thought. The survey indicated how prevalent right-brain instruction is among the 69 survey respondents. The results from this study generated questions that may also concern other disciplines, such as math, English, and science, concerning curriculum
decisions, what influences curriculum decisions, and the needs of teachers. Hawthorne (1992) suggests, "...what teachers know undoubtedly influences their curricular choices" (p. 3). Hawthorne continued by saying, "An integral component of the curricular decision-making process, teacher's values, and experience influence teacher curricular choice on a daily basis" (p. 2). Ms. Bates stated that reading Edwards' book influenced her curriculum decisions. "I'm more organized because of the book. It helped me line things up and what I should teach first and what I should start with." The observations and interviews indicated that Ms. Bates chose to use right-brain drawing instruction in combination with Edwards' book for a variety of reasons: (a) to maintain classroom control, (b) to motivate students, (c) to give structure and organization to the class, (d) to give students confidence, and (e) to give students confidence in her as a teacher. Ms. Bates also used right-brain drawing instruction because it: (a) contained sequenced exercises, (b) was grounded in what she thought was research, (c) was easy to apply in the class, (d) was accessible, (e) was easy to understand, (f) produced improvements, and (g) put into words techniques she wanted to teach the students. Findings from the field research, curriculum decision making, the
needs of teachers, and recommendations for future research will be discussed in this chapter.

Discussion

Right-Brain Dialogue

During the first weeks of observing Ms. Bates, much discourse was heard that related to right-brain function. Although discussions surrounding right-brain function decreased five weeks after classes began, the students' artistic abilities continued to improve. Classroom activities included a great deal of practice and many demonstrations, implying that Ms. Bates taught more technique than brain control. As the observations progressed, it appeared that Ms. Bates began making a conscious effort to include dialogue about right-brain function in the classroom, and these discussions did not seem to flow as they did during the first part of the year. Other than an occasional comment, remarks about the right brain were only linked to the right-brain exercises. When Ms. Bates was asked why she had not referred to the right brain continually during the whole year, she replied, "There was the time limit. I had all these other projects and contests for the students to do. I just use it to warm things up." Observations established that Ms. Bates did use right-brain exercises to "warm things
up, "as well as give structure and an organized base to her classes at the beginning of the year.

It was quite obvious through the observations and personal interviews of Ms. Bates that she was well versed in Edwards' method of right-brain drawing instruction. When reference was made by Ms. Bates to the right-brain during class periods, Edwards' book lay open on her desk. Many of the exercises she introduced and the comments she made to the classes came straight out of Edward's book. These included the contour drawings of the hand (pp. 84-93), the positive and negative space drawings of a chair (pp. 98-112), the viewfinder (p. 106), and the use of pencil edges to find angles (pp. 121-129). Sometimes Ms. Bates would simplify phrases in Edwards' book—for example, "Your left-brain's talking"—thus reducing a theory to its simplest form.

Reference to the right-brain theory was most intense during the introductions to the exercises from the book. Generally, after the activity began, comments about right-brain concepts became limited and were only mentioned occasionally. At times, citation of the right-brain theory appeared to be a convenient method of keeping the students quiet—for example, when Ms. Bates would say, "The right brain does not function while you're talking." Other times, the same phrase might be used to motivate the students to
concentrate more on what they were drawing. As the year progressed and the students' drawing abilities improved, the right-brain exercises were phased out. All reference to the right-brain theory was eliminated from classroom conversations and discussions by the end of the school year.

Although a strong reference was made to right-brain control during class instruction for the day's activity, it was observed that Ms. Bates did not mention the right brain as often when demonstrating how to draw to an individual student. This indicated a definite lack of continuity between talking about the right brain during the lecture and the art activity. Once the class discussion was no longer centered around the right-brain exercises, the dialogue concerning hemisphere function became almost nonexistent. Ms. Bates did not appear able to form a connection between assignments that were not right-brain exercises taken directly from Edwards' book and the right brain theory. It was not clear from the observations why references to the right brain seemed difficult to translate to other art activities or why they were phased out as the year proceeded.

Hearing so much about the right brain on the first day of observation, it was a surprise not to hear very much on successive days. After the first few days the 5th hour class received no mention of it, and the 6th hour class only
received a brief reminder. Observations indicated that the absence of right-brain discussion did not seem to affect the students' drawing performance or behavior. The students worked as diligently and as quietly as before. However, Ms. Bates felt that the quality of the drawings, which was equal to or better than the ones drawn during right-brain instruction, was due to the right-brain exercises. It was observed that the students were more inclined to complete their assignments after right-brain instruction was discontinued. It should be noted that the presence of an observer may have contributed in part to student behavior and class participation.

Although both classes observed worked on the same exercises, the 5th hour class received less reference to right-brain instruction. It was very apparent that the advanced students had already been exposed to right-brain exercises in previous classes by comments that were made, such as, "Oh! Not that again!" This may have played a part in the more rapid decline of right-brain dialogue in that class. Although the 6th hour class received more right-brain instruction than the 5th hour class, it became considerably less each day. The students in both classes were quickly bored and dissatisfied with one particular exercise—the negative space exercise—that used single images as subject
matter, a boredom possibly explainable by the monotony of the exercise. The students responded with more enthusiasm to the second exercise, which involved multiple images.

**Classroom Control**

Ms. Bates used references to the right brain to maintain control in her classroom. She would say, "You cannot talk while using the right side of your brain; it is impossible." Ms. Bates would praise the students for being quiet and completing their projects correctly. She would then tell the class that the right side of the brain was utilized. Notwithstanding, observations revealed a great deal of talking and peeking (meaning left-brain interference) during the contour-drawing exercises, apparent indications that some of the students did the right-brain exercises with the left side of their brain in full gear. Although Ms. Bates used phrases such as "Talking is a left-brain function," and "Drawing is a right-brain function," the students were allowed to talk softly among themselves. In fact, Ms. Bates tended to make such statements only when the class became too noisy. McNeil (1986) states, "School knowledge is shaped in the tension between the school's goal of educating and of controlling students" (p. 3). Ms. Bates did use right-
brain references to accomplish both educating and controlling her students.

**Students' Self Esteem**

Ms. Bates felt that right-brain drawing instruction directly affected students' self-esteem in a positive sense by providing students with a gratifying product. Moreover, she stated that "Once students learn to draw, they believe it is possible for them to excel in other areas such as math and English."

**Sequential Rules**

It did not appear in either of the classes observed that students possessed the ability or the desire to control which hemisphere was used in the drawing process. It was apparent, however, that her students learned to draw and be creative through the techniques she taught, which included clear and precise instructions, repetition, examples, and practice. Through continued observations it became evident that the end product produced by the students stemmed from sequential rules Ms. Bates used to develop drawing skills. Observations indicated that repetition, detailed demonstrations, and experience were Ms. Bates' main strengths in her instruction which resulted in student's drawing success. The teaching techniques developed and used by Ms. Bates suggested that being able
to draw may not be the result of a right-hemisphere shift but a lesson learned through repetition and practice. **Left- and Right-Brain Conflicts**

Although problem-solving methods, such as the use of the viewfinder and a pencil to find angles, were taken directly from Edwards' book, Ms. Bates made no mention of the right-brain theory in her demonstrations of these devices. The right-brain theory only resurfaced when students became confused about an exercise. On such occasions, Ms. Bates stopped the class to help her students collect their thoughts, blaming the left hemisphere for the confusion, and then repeating the instructions. "The right brain and left brain are fighting" she would say, "After practice the confusion lessens as the right-brain starts to take over."

At one point, Ms. Bates seemed to confuse herself on the distinction between what was and what was not a function of the right and left hemispheres. She began to question how it was possible to use a left-brain function, such as calculating measurements, during a right-brain exercise. When she tried to explain it, the comprehension was just not there. Ms. Bates became uncertain about the legitimacy of the right-brain theory and expressed that "something about the theory does not seem logical, but I just cannot put my finger on it".
Student Reaction

During observations there was no indication of the students visibly reacting to the information presented to them about the right-brain theory. They did not register surprise, discuss it among themselves, or ask for more information regarding these concepts. The students simply accepted it on faith, unquestioned. In conversations with Ms. Bates, however, she indicated that the students sometimes asked to borrow Edwards' (1989) book, and that they made exclamatory remarks such as "Oh!" or "Wow!" when certain right-brain concepts were presented. It was observed outside class that the students would mention the right brain when referring to their artwork or art class. In class, comments about the right or left brain were included in conversational dialogue. On one occasion, for example, when a student did not want to work in class he was heard to remark to Ms. Bates, "I can't get into the right-brain mode today." Thus, for the students, reference to the right brain appears to have become the excuse or justification for doing or not doing something.

Teacher Qualities Observed

Ms. Bates appeared to be a very experienced teacher. She managed the large number of students in the small classroom with relative ease. Her ability to purchase and
distribute supplies and equipment on a limited budget was excellent. Due to the amount of supplies the room had the appearance of being cluttered, but it was actually well organized, and Ms. Bates knew exactly where everything was located.

The instructions which Ms. Bates presented for her lessons were well planned and well rehearsed. She knew her material and her techniques. Problems were anticipated before they appeared. One of the nicest qualities about Ms. Bates was that she knew her students. She knew their personalities, their capabilities, and their attitudes, and she used this knowledge to help motivate and encourage each one of them individually. Ms. Bates showed genuine concern for and empathy with the students from the very beginning of the observations. She showed signs of being an accomplished artist herself and was willing to share her expertise with each group of students, as well as individually. The individual attention Ms. Bates gave each student was very constructive.

Ms. Bates displayed her diverse teaching capabilities with her "exceptional" students, those few in both classes who had mild learning disabilities. These students usually had trouble using the ruler to measure angles and draw
straight lines. Ms. Bates realized this and always found time to give each of them special attention.

Areas in art not taught.

Although some of the good teacher qualities Ms. Bates exhibited would meet the requirements--developed by the National Board for Professional Teaching Standards--for a Highly Accomplished Teacher (HAT), most of the art instruction she presented to the students related only to the area of studio. Very little class time was contributed in other areas such as criticism, art history, and aesthetics. These areas of study combined with studio work are components for a current trend in art education called Discipline Based Art Education (DBAE) (Greer, 1984). This strategy of teaching emphasizes not only the making of art, but the talking, writing, and feeling about art. Although there are DBAE workshops and seminars, curriculum guides or lesson plans are not readily available for teachers in the field. Actually, many practicing teachers are not aware that DBAE exists. Which again brings into focus the need to find a satisfactory way to distribute current educational information to teachers. Ms. Bates had never heard of DBAE nor had she seen any literature concerning it although DBAE has as a theory appeared in art education literature (Clark, Day & Greer, 1987; Greer, 1984, 1987; Hamblen, 1986, 1987,
She was not at all sure how to implement a curriculum that included criticism, history, aesthetics, along with studio work. Although Ms. Bates acknowledged the importance of this expanded art content, she felt her responsibility was to teach the students how to produce works of art.

It may be possible that because the music teacher offered an Art Survey class which dealt strictly with art history and criticism, Ms. Bates felt that her own students needed to focus on the studio aspect. It is also possible that combining criticism, art history, aesthetics, and studio work within an art classroom was not included in her own education as a teacher. Teaching right-brain drawing lessons also appeared to distract Ms. Bates from teaching in areas of art other than the studio. She was so intently focused on the exercises in Edwards' book that were designed to manipulate the hemispheres that anything else of significance was overshadowed.

**Research Contradicting the Theory**

The favorable reception given to the articles (Dobbs, 1989; Gainer & Gainer, 1977; Hines, 1991) read by Ms. Bates prior to the second informal interview was unexpected. At first, she was not completely convinced that the right-brain theory did not have a strong research base. After a brief
discussion, however, she showed a renewed interest in obtaining the facts about how the brain actually functions during drawing. It was not anticipated that Ms. Bates would be so open to information opposing the right-brain theory. She asked to see more research studies on the subject and to borrow a copy of A Natural Way to Draw. I concluded from the second interview that Ms. Bates was receptive to information about how the brain functions but had no prior knowledge that such information existed. Ms. Bates expressed that she was not delighted knowing that there was possibility that information she had been conveying to her students as facts were only beliefs associated with the right-brain theory. She questioned why the research contradicting right-brain drawing instruction was not made more readily available to art educators.

Teacher Needs and Curriculum Decisions

Ms. Bate's needs and her curriculum decisions seem to be linked closely together as are the needs and curriculum decisions of other teachers. A curriculum is usually designed by a teacher to satisfy that teacher's needs for a particular class, time, and situation. Eisner (1972) describes an art curriculum as "a sequence of activities that is intentionally developed to provide education experiences for one or more students" (p. 153). Ms. Bates felt it was
important that her curriculum be sequential, well organized, and representative of what she planned to teach with positive results. She wanted a curriculum that would meet the needs of her students. Because art teachers are not restricted to standard curricula, as are language, science, and mathematics teachers, Ms. Bates was ungoverned in her curriculum decisions. As a result, right-brain exercises became the base for Ms. Bate's curriculum for the first part of the school year.

In a study involving curriculum documents written by teachers, Anglin (1993) states, "the art teachers were free to be curriculum developers" (p. 62). She continued by quoting one of the teachers involved in the study, "No one [administrators] in the district knows anything about art so they leave us alone to develop and use our own curriculum" (p. 62). Anglin maintains that art teachers are an exception from other core subject teachers because "there are few art textbooks, no national art curriculum, nor [a wealth of] commercially prepared materials as in science and mathematics" which make art teachers "the authors of their own curricula" (p. 62). Although there are nationally known curriculum frameworks and textbooks that do exist but are not standard requirements for art teachers, Ms. Bates was unfamiliar with them. Ms. Bates may typify a number of
teachers that are unaware of the choices that are available and how to obtain them.

Because Ms. Bates was open to accepting more research indicated that the selection of right-brain instruction as a teaching method may have been done in an attempt to locate any usable teaching strategy. This again brings up the question of what type of curriculum material is available for art educators and how available it is. In number, there are more instructional books in art for elementary grades than for the secondary level. Locating and incorporating lessons from these books into an individual's curriculum may require a great deal of time and energy. Thus, a book with lessons that fit easily into a curriculum may become more attractive than one that requires some work and adjustments. This is a dilemma shared by many teachers regardless of discipline. Also, some teachers have better access to materials than others. They may have administration and community support, generous funding, and an accessible gallery, museum, or library. But what about the teachers in rural communities? How do they receive information? Art teachers are especially isolated from current research findings because there is usually only one art teacher per school. Being involved in art and/or educational associations may not be enough. Ms. Bates belonged to several art associations but during her
In the first informal interview, Ms. Bates stated that Edwards' book supplied her with words and techniques that assisted in developing her own teaching methods, especially in the area of drawing. She maintained that "Edwards' book supplied sequential, nice neat lessons. When other curriculums didn't make sense, I could follow this one." Ms. Bates explained that these methods, the use of the view finder and pencil to determine perspective, had not been presented to her during the course of her education, and she felt compelled to convey this knowledge to her students. After reading Edwards' book, Ms. Bates believed she had discovered a solid strategy for drawing instruction based on scientific knowledge. She stated that "Until I read the book (Edwards, 1989) I didn't realize you could make yourself go over to the right brain and tap into that right brain and actually make yourself do that." In teaching right-brain drawing instruction, she felt she had found a teaching method that obtained successful results, and she freely credited Edwards and her right-brain theory for these results. Ms. Bates expressed on more than one occasion, "I can teach
students how to draw. I never had that attitude before I read Betty Edwards' book and started teaching that way." One may wonder if Ms. Bates would not have felt the same had she originally discovered a copy of Nicolaides' (1941) *A Natural Way to Draw* instead of Edwards' (1989) *Drawing on the Right Side of the Brain*. One may also question whether or not the students would not have displayed the same positive drawing results. Indications obtained from the second interview implied that this was a definite possibility. Such observations suggest that there is a need in art education to assess curriculum materials and their availability to secondary art educators.

Another concern that appears to have prompted Ms. Bates to use the right-brain teaching method was that it appeared to make art seem more "scientific" and "standard" and thus legitimate. Hamblen (1993) states, "A great deal is happening at this time in art education in the forms of standards settings, program reforming, institutional instituting, and agenda planning" (p. 197). The setting of standards and "back to basics" trend in education has many art educators wondering how and what part the teaching of art plays in the current flow of things. The use of scientific research data may seem logical to some as a way of justifying a place for the arts in today's educational system.
Youngblood (1981) argues that the interest in the right and left dichotomy of the brain is "tied to its apparent scientific respectability" (p. 9).

In the beginning after reading about right-brain drawing instruction, Ms. Bates was so impressed by the concepts supporting the right-brain theory that she wanted to share them with all her students. Yet her information on the subject was mainly derived from Edwards' book, and her perception of brain function seemed misguided. Through observations and conversations with Ms. Bates it became apparent that she might not be aware of what constitutes a theory grounded in empirical research as opposed to a theory that is not. Eisner (1979) stated that empirical research includes both quantitative (statistical) and qualitative studies that deal with observable, empirical phenomena or information (Hamblen & Smith). On a broader scale, if Ms. Bates is representative of other teachers, this finding could be significant not only to art education but also to other disciplines. If curricular decisions are determined by teachers who do not recognize the difference between a theory grounded in research and one that is not, selecting teaching methods and planning curricula may become a guessing game guided merely by popular trends and hearsay.
Another reason for Ms. Bate's adopting the book was its apparent usefulness in behavior control and classroom management. Statements telling the students not to talk because speech is not a right-brain function were common occurrences during the first part of the year. Ms. Bates also used references to the right brain in order to motivate the students to concentrate on their work and give structure to her classes. In the first few weeks of school, when it was difficult to motivate and gain control of the students, Ms. Bates maintained that right-brain exercises set the groundwork for the rest of the year. Right-brain drawing instruction was also used by Ms. Bates to give the students confidence. She wanted the students to succeed at drawing so that they would have confidence to accomplish other things, and she also wanted the students to have confidence in her. If the students saw an improvement in their drawings, Ms. Bates felt they would have more confidence in her ability to teach them. These ideas, delineated by Ms. Bates, suggested a lack of confidence in her teaching abilities that may stem from an educational background lacking in some areas. If this is true, there is reason to be concerned that teachers in any discipline who lack self-assurance in their teaching abilities may fall prey to any theories that are easily understood, available, affordable, and readily implemented in
the curriculum. If such theories are not grounded in valid research, however, the implications could be unfortunate. It is possible that information presented to students might be misinterpreted in ways that dramatically affect their lives.

Conclusion

Thus you have also heard that the left hemisphere is specialized for "verbal" functions whereas the right hemisphere is specialized for "non-verbal" ones; or that the left hemisphere is specialized for "linguistic" functions and the right for "visual-spatial" functions; or that the left hemisphere is specialized for detailed, "analytic" functions, whereas the right hemisphere is specialized for "propositional" functions, whereas the right hemisphere is specialized for "appositional" functions. Although none of these dichotomies has successfully integrated the wide variety of diverse functions attributed to each hemisphere, and almost no one today accepts them as valid generalizations, they nevertheless paved the way for the concept that there are left- and right-hemisphere "cognitive styles" or personality types. (Efron, 1990, p. 3)

Ideas of laterality have been sufficiently altered by right-brain advocates to fit specific concepts of how cognitive abilities are processed by the right hemisphere. Beliefs about how the right hemisphere functions in relation to artistic abilities have become overly simplistic, inaccurate, and potentially harmful (Dobbs, 1989). Over simplification and generalization of hemispheric research have intensified the belief that students can be taught a
method of drawing that is directed toward the right hemisphere.

Most of hemispheric function research located through the literature search for this study was conducted with split-brain patients. One of the oldest ways used to determine which hemisphere controlled a specific function in split-brain patients was by simple deduction. If a patient had a lesion and could not speak, then the damaged portion of the brain was considered to control language. If a patient had lesions and could not draw, then it was concluded that the damaged area controlled the ability to draw. This method of determining brain function was too simplistic and overlooked many complex cerebral interactions. "The basic problem is that there is no simple way to relate the function of a piece of destroyed brain tissue to the disabilities a patient seems to incur as a result of the damage" (Springer & Deutsch, 1989, p. 23).

The fact that the brain has the ability and tendency to continually adjust its activities to the degree of damage sustained presents a major problem with split-brain studies and produces inconsistencies in research results. When advocates of the right-brain theory use split-brain studies to formulate beliefs about right-brain drawing instruction, they erroneously assume that the remaining brain of a split-
brain or brain damaged patient is functioning as a normal brain. Although split-brain research has yielded a sizable body of information about both halves of the brain, none as yet has determined results specific enough to be generalized to art education. In addition, most research findings that have been adapted in order to provide a base for the right-brain theory were obtained in areas other than art education.

Despite the fact that the split-brain studies have been plagued with criticism because of inconsistencies, such as differences in lesions, age, sex, and focus of study, interpretations of clinical observations of split-brain patients have been continually used to support the right-brain theory (Springer & Deutsch, 1989). Before this theory is utilized in a curriculum, art educators should actively assess the research results concerning hemispheric function in order to conduct their own research relative to the field of art. It is imperative for art educators to think reflectively so as not to communicate unverified beliefs about hemisphere function and how it relates to artistic abilities.

The right-brain theory, advocating that artistic abilities belong to the right hemisphere, has influenced the writing of several publications in areas other than art ("Finding relevance," 1991; Kemp, 1991; Whalen, 1985).
Comments observed in these writings indicate that the beliefs associated with the right hemisphere are very much alive and that these beliefs are no longer limited to drawing skills but have been incorporated into other areas. In an article for *Roper Review*, Dobbs (1989) discussed the dilemma surrounding hemisphere research and expressed the danger in its translation into general classroom practice. Dobbs also suggested that it would be better to shift the focus toward the curriculum itself. Several published studies and articles not dealing specifically with art have opposed the over-simplified view that cognition is lateralized to a specific hemisphere (Corballis, 1980; Dobbs, 1989; Doerr, 1980; Gainer & Gainer, 1977; Youngblood, 1979). The fact that allegations about inaccurate interpretations of hemispheric research are being expressed in areas other than art indicate that hemisphere misconceptions are a concern across educational disciplines.

Advocates of the right-brain theory have employed beliefs about right hemisphere function to justify choosing right-brain teaching strategies. Efron (1990) states that it has been "seriously argued in some quarters that our European-based educational system, with its heavy emphasis on teaching the young to read, write, and do arithmetic is in blatant violation of the constitutional right of the right
hemisphere to an equal education" (p. 2). Unfortunately, right-brain beliefs, which are being transmitted to students, have not been proven through research or substantial study (DiBlasio, 1978). Because the right-brain theory has not been verified through research, it exists only as a hypothesis or belief. This creates a problem. If right-brain instruction is brought into the classroom, it may not always be identified as a theory or belief. When beliefs about the right-brain theory are presented in the classroom, students may interpret the information as fact. "No one should underestimate the power of beliefs or convictions in shaping one's view of the world and one's treatment of new evidence" (Eisner, 1973, p. 7). Cries of caution have been issued by some art educators (Clare, 1983; Dobbs, 1989; Doerr, 1980; Youngblood, 1979, 1981, 1983, 1985, 1991) but appear to have fallen on deaf ears. Although several studies (Clare, 1983; Chambliss & Hartl, 1987; Doerr, 1980; Youngblood, 1991) were initiated to dispel the right-brain theory, it appears to increase in popularity. It should be questioned, Why has this research been ignored? Who does know about it? How available is it to classroom teachers? Is it a concern? Why is the right-brain method of teaching so powerful? The results of the survey conducted for this study indicated that 53 (76.8%) of the 69 survey respondents
used some form of right-brain drawing instruction in their curricula. It is hoped that information provided in this study will go beyond the issue of right-brain instruction and encourage educators of all disciplines to thoroughly evaluate any theory that is incorporated in the curriculum.

Recommendations

The strategy of teaching drawing instruction to the right hemisphere has become so familiar to most art educators that it apparently goes unnoticed. Although there has been scientific research on the topic of hemispheric specialization, the findings have not validated assigning artistic abilities to the right hemisphere. If research does not support the concepts which created a base for the right-brain theory, then art educators need to be more thoughtful about this teaching method and what has promoted it to such heights. A variety of research interests for future development based on the insights gained from this study include:

1. This study should be replicated in other school settings to reflect a diverse population. An examination of the results with regard to the original study might reflect similarities in reasons for adoption of right-brain teaching strategies.

2. This study should be replicated enlarging the sample of subjects to increase the statistical significance.

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3. Further study is needed to determine if art educators are actually using research in their curriculum planning and why they are or why they are not.

4. Further study is needed in determining the most effective ways of transmitting the research to school board outlets such as staff development, in-service, and workshops.

5. Further study is needed to determine why curriculum development that incorporates strategies for both the right and left hemisphere is so powerful.

6. Additional research is needed to clarify the theoretical as well as the practical issues related to this topic.

7. More in-depth research is suggested in regards to meeting the art teachers' curriculum needs.

8. A longitudinal study should be considered to determine the effect right-brain instruction drawing techniques have on students' attitudes and their beliefs about brain function.

9. The use of right-brain drawing instruction in additional subject areas such as science and mathematics should be studied.

10. Further investigation is recommended to determine how much right-brain information is communicated to family and friends by art students taught with right-brain instruction.

11. A study is needed to verify how right-brain instruction influences a students general attitude toward art--separating art from "logic" as well as analytical, and verbal activities.

12. Further investigation is recommended to determine if involvement in professional art education associations relates to differences in curriculum choices by art educators. In addition, whether art educators who belong to professional associations are more aware of
research and if they are more critical of popularized approaches to teaching art should be investigated.

13. Further assessment of curriculum materials and their availability to art educators is recommended including the development of additional instructional materials for secondary art educators.

14. Further study is needed to determine the prevalence of right-brain drawing instruction among educators and other areas outside education. In addition to the reasons for this endorsement.

Assessing the prevalence and popularity of right-brain drawing instruction on a broader scale may indicate to art educators the scope of the problem and initiate further research to determine a viable solution. This study was designed to be the first step in initiating that research.
REFERENCES


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APPENDIX A

FIRST INFORMAL INTERVIEW OF MS. BATES

EDUCATIONAL HISTORY

When did you first realize you were interested in art?
When did you first realize you wanted to be an art teacher?
Did you take art in high school?
When did you complete your degree?
How long have you been teaching?
How long have you been teaching right brain drawing techniques?

CHANGES DIRECTLY RELATED TO RIGHT BRAIN DRAWING INSTRUCTION

Has your attitude toward teaching art changed since you started using right brain drawing instruction?
How has it changed your method of teaching?

INSTRUCTIONAL GOALS AND OBJECTIVES

What type of goals have you set for your students concerning their art work?
What type of objectives have you set by using this teaching method?
Are certain drawing methods and techniques repeated (such as value changes, light source, and perspective) in other drawing projects?

AFFECT OF INSTRUCTION

What impact do you think right brain drawing instruction has on students in other ways than artistic?
BRAIN FUNCTION BELIEFS

In what way do you feel right brain instruction enhances student art work?

Explain your understanding of how the right brain method of instruction works.

How strong is your belief that complete brain control enhances drawing abilities?

Do you consider writing or lettering a right brain function?

What do you consider right brain functions?

What do you consider left brain functions?

Do you feel it possible to completely control brain functions?

Do you know any of your students that can control their brain function?

How long does it usually take for a student to gain control of their brain function?

When teaching from Edwards' book do you follow the exercises exactly or do you change them?

KNOWLEDGE OF RIGHT BRAIN FUNCTIONS

Have you ever read any additional reviews or comments on right brain drawing instruction?

If so, what were they? Were they negative or positive?

Were you ever formally taught right brain drawing techniques?

If you were to read or hear anything negative about this method of instruction would it change your views?

EVALUATION

How do you evaluate student progress?

Is there a difference in evaluation when right brain instruction is used as opposed to when it is not?
Has student work in general improved since you began teaching this method?

If so, explain how.

Do you attribute improvement in student work as directly related to right brain drawing instruction?

REASONS FOR USING RIGHT BRAIN DRAWING TECHNIQUES

What appealed to you most about Edwards' book?

What prompted you to use Drawing on the Right Side of the Brain as a textbook?

Do you know other teachers that use Edwards' book or teaching technique in their classrooms?

Has this type of teaching method ever been encouraged through any seminars you have attended?

If so, where and how many?

Do you belong to any art associations?

MISCELLANEOUS QUESTIONS

If you could have some specific information given at a workshop, what would it be?

How did you obtain your copy of Edwards' book?

Would you be able to teach the same techniques without mentioning right brain function?

Do you feel you would get the same results?

Is there anything that you would like to add about this technique that we have not already covered?
APPENDIX B
SECOND INFORMAL INTERVIEW OF MS. BATES

1. What was your first response to the articles you were given to read on right-brain function?

2. Has there been any change in your opinion of the articles since you first read them?

3. Is this the first time that you read information concerning right-brain function other than Drawing on the Right Side of the Brain?

4. Would you like to read more information concerning right-brain function?

5. Would you feel comfortable reading statistically oriented research about brain function?

6. In regard to right-brain function, will your method of instruction change after reading these articles?

7. Did these articles raise any doubt in the right-brain theory and its applications?

8. Was one of the articles you were asked to review easier to read? If so, which one?

9. Did you find one of the articles more convincing than any of the others? If so, which one?
APPENDIX C

QUESTIONS FOR SURVEY

1. Do you endorse any specific philosophy for teaching art?  
   Yes ___  No ___  
   If so, briefly explain.

2. Have you read any research on the strategy of right-brain  
   drawing instruction?  Yes ___  No ___

3. Have you ever heard of or been taught right-brain drawing  
   instruction?  Yes ___  No ___

4. When were you first introduced to this teaching?  
   Elementary School _______ High School _______ College  
   ___________ Self Taught ________

5. Do you teach or have you taught this method of drawing  
   instruction?  Yes ___  No ___

6. If so, how long?  Less than 5 years ___  
   More than 5 years ___  More than 10 years ___

7. If you teach right-brain drawing, briefly explain why you  
   choose to do so.

8. If you teach or have taught right-brain drawing  
   instruction, did you use a textbook?  Yes ___  No ___  
   What is the name of the textbook that you used?

   If you do not teach right-brain drawing instruction,  
   briefly explain.
9. If you teach or have taught right-brain drawing instruction, did you notice any improvement or lack of improvement in student performance? Yes ___ No ___

Which category of improvement was evident?

Lack of improvement ____ Improvement ___

10. If you taught right-brain drawing instruction in the past, briefly explain why you stopped.
VITA

Sara J. Smith was born September 11, 1949 in Dallas, Texas. After graduating from Broadmoor High School, in Baton Rouge, Louisiana, in June, 1967, she entered Louisiana Tech University in Ruston, Louisiana where she completed her Bachelor of Fine Arts degree in 1970. She continued her education at Louisiana Tech University and completed her Bachelor of Arts degree in art education in 1971. In 1983, she graduated from Louisiana State University with an Masters of Fine Arts in drawing and painting. Between 1985 and 1992, Sara taught printing and computer design classes at Delgado Community College located in New Orleans, Louisiana. In 1989, she entered Louisiana State University to pursue her doctoral studies in art education. During the course of her studies, Sara participated as a graduate research assistant and taught several art education classes. During the summers of 1993 and 1994 she was part of the graduate faculty and taught graduate classes at Louisiana State University in Baton Rouge.
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Major Field: Education

Title of Dissertation: An Ethnographically Informed Case Study of an Art Teacher Using Right-Brain Drawing Instruction

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May 2, 1994