Photography in the Classroom
a workbook

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Ralph Levinson
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Preface

The Illinois Arts Council worked with the three members of the photography team—Nancy Langsan, Ralph Levinson and Alan Teller (who also served as the team's coordinator)—to develop the visual arts component for the Council's 1974-75 HEW/ESAA Title VII Special Arts Project. The team's special combination of talents and personalities made for a unique program, one which we found exciting, successful and meaningful enough to again use as the visual arts component for our 1975-76 Title VII grant.

This workbook so thoroughly contains the team's sense of accomplishment and delight, as well as their frustrations and resolutions, that it is unnecessary to say more here, but this: we hope your reading of this workbook triggers your curiosity and sense of discovery. With care and attention, you can use this tool to realistically begin plans for your own photography program.

Jane Turczyn, Director
HEW/ESAA Title VII Special Arts Project 1974-75

Introduction

The photography component of the HEW Title VII Artists-in-the-Schools program was designed primarily to get kids in touch with their feelings and their selves using the medium of photography as a tool for self-awareness, communication, and creativity. Exercises were structured to facilitate "intercultural" and "interethnic" understanding by having students become more aware of themselves and more able to share this appreciation with others.

We taught with the belief that all students are unique human beings, capable of real perception (as opposed to mere "seeing") and real creativity. Photography, particularly relevant and enjoyable to TV-raised children, is a medium which virtually all students can practice with little difficulty, and one where the tangible end product produces a real feeling of accomplishment.

Our program was not designed to use photography as a vocation, hobby, or replacement for reading and writing skills, but rather as a tool for other ends. The program is experientially rather than technically oriented, and leads the student to concerns that run deeper than how to hold a camera or how to develop film. Our belief was that cameras don't take pictures, people do. How they do it tells us a great deal about them. Our exercises stressed how eyes alone are not the sole prerequisite for photography—all the senses, ideas, and past experiences of an individual are used in creativity.

Drawing, writing, role playing, body movement, music, fantasy, were seen as legitimate aspects of our photography program, as we encouraged the students to explore themselves and their environment through personal assignments and group discussions and exercises.

The learning skills fostered through the learning of a craft and its application for personal statements are essential for mastering traditional subjects. The motivation acquired through this program may well transfer to other areas. (Photography appears to be independent of reading, writing, or verbal skills; we have had technically sound, sensitive, and eloquent statements come from non-verbal students or "slow-learners," as well as from those deemed "average" or "gifted.") As the mastery of the photographic process will ideally increase a student's confidence to tackle other skills, the success of this program multiplies as it is integrated with existing programs and curriculum.

Photography is a great deal of fun and provides an exciting window into another person's world. We would like to see the personal sharing photography enables increased, and offer this workbook as a chronicle of our experience and a guide for new programs.

Chronicle

At each of the three schools we worked in, we wanted to establish a permanent facility, hold classes, hold teacher workshops, train a teacher to continue the program after we left, and have a final show of student work. With varying degrees of success, we met these goals.

In all schools we taught 2 days a week, three 1½ hour classes per day, with 15-20 students per class. The first half of each class was devoted to experiential exercises, the second to technical photography. Our "team" consisted of two photographers and an art therapist. We were assisted by a differing number of aides and teachers in each school.

Our first school was the Fieldcrest Elementary School, District 144, Markham, Illinois. Being the first in the project, it suffered from our newness to the task. The "photo lab" at this school was an unused bathroom at the rear of the classroom. Our enlargers were set up in the stalls, over the toilets. While this worked and illustrates what is possible, it was, needless to say, far from ideal. We realized from this that a strong commitment from the school and a spelled-out space arrangement are necessary to avoid needless wasting of time and confusion. This facility also had the disadvantage of being less than permanent, and given the reality of school space limitation, the more solid a hold you can have on a physical area, the better. We did not realize the necessity of long term teacher or aide participation until too late, and consequently only had an aide working with us for the last few weeks. Relationships with other teachers or curricula were also minimal,

and we became increasingly aware of the need for improving this. Teacher training was also not as effective as it could have been. Despite these growing-pain limitations, we had a 90-print show at the end of our eight weeks, and succeeded in accomplishing much of what we had set out to do: a facility had been built, students and teachers were taught technical skills, the use of photography had been introduced as a tool.

The second site, the Coolidge Junior High School, District 151, in Phoenix, Illinois, received the benefits of what we learned at Fieldcrest. To develop the permanent darkroom, we had sinks installed, counters built, all the necessary construction done before the residency began. Teacher workshops were more publicized, better attended, and extremely effective. (A full time teacher was freed to be with us for the entire time we were in the school. He is now teaching the photo program as an elected activity.) We made some progress in our awareness of existing programs and curricula. Classroom exercises had the advantage of being field tested.

At the third school, the Algonquin Elementary School, District 163, in Park Forest, Illinois, the program continued to progress. A full room was carved out of an existing classroom, and a total, air-conditioned darkroom was constructed. The district media coordinator, school librarian, and curriculum teacher all attended our classes regularly and assisted in both experiential and technical work. As in the two other schools, the end-of-project show was a highlight, with great parent, child and photo teacher enthusiasm. A slide/tape documentation presentation of the project was made for the district by the media coordinator, who participated in classes.
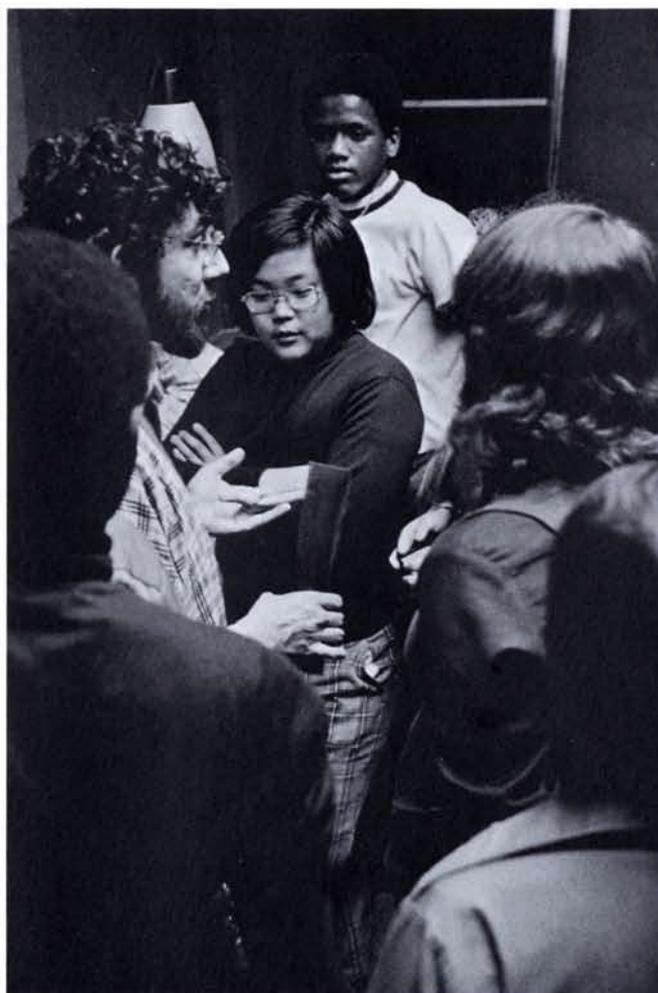
The sum of our experiences demonstrated clearly the need for the program's close coordination with already existing school programs and curriculum. Our time limitations of 8 weeks per school made this coordination far from complete but, nevertheless, practical connections were made. (For example, some teachers who had photography students in their classes occasionally provided photographic options to regular assignments.)

It also became apparent that aside from scheduled teacher workshops, informal, friendly contact is a must between the photo team and the regular faculty. This sort of communication is invaluable in dealing with difficult and hard to reach students, providing vital links between the photo experience and the learning process in other classrooms, and nurturing the interest in the program's possibilities so that meaningful continuation can be a realistic goal.

Organizing the program

Preliminary groundwork

Once the Arts Council had selected participating school districts according to Title VII guidelines, the superintendent appointed an in-school coordinator for the photography program to survey the individual schools and principals for school selection. Physical layout, scheduling and staff attitudes were taken into consideration. The principal of the chosen school then appointed a resource teacher to be trained by us. In District #163 the media director, Ardath Meeden, was assigned to actively participate in one class per day. During our three residencies we found the attitude of the principal to be the most important and often overriding human factor.

Resource teachers

Our most satisfactory association was with Dave Dudiak, a 5th grade teacher, who was assigned to work with us in all our classes during the eight weeks at Coolidge School. Dave thus experienced the continuity of our program, became familiar with our process and became proficient in the technical skills. He is now continuing the program as a daily curriculum elective.

In one elementary school we worked with a teacher's aide, whose assistance was limited by the fact that she couldn't stay after school (no money to pay her) and was occasionally yanked out of class to work somewhere else. The homeroom teachers in the other elementary school provided occasional assistance. An interested father of one of the students came to class a few times, as did the district's audio-visual consultant. Any person who came to class was an immediate participant and helper.

Scheduling

The use of both experimental and technical activities during each class session requires a substantial block of time. However difficult it may be to arrange, sessions of at least 1½ hours are necessary. We had to work around the firmly established lunch period in creating the schedule, so in all three schools we had two classes before lunch and one after. In two of the three we found the period just after lunch to be the most "up."

Meeting with teachers

In our preliminary meetings with the teachers, we found that a high degree of interest was accompanied, especially in the junior high, by a strong sense of caution. Teachers were delighted to have the program in the school, but when it came to having to relinquish some of their students for a couple of hours each week, some became very uptight about the loss of learning time in their own classrooms. Naturally, their concern became ours: we worked out an alternating schedule whereby a student would miss a particular class only once a week, rather than the two times per week that would have resulted had we had all classes meet at the same time both days. Other concerns revolved around the incorporation of their subject matter into our process. We discussed how documentary photography necessitates the writing of outlines and the study of sociology, how percentages and fractions are used in enlarging, and how we break down and study the new vocabulary words we offer. We tried to further develop their confidence in our willingness to incorporate their suggestions, their needs into our program.

Selecting students

We requested that the students be a cross-section of the general school population: by race and nationality, sex, academic achievement, social development, financial status. Fortunately, we had the funds to subsidize film and cameras for students with no money, and for students whose parents refused to cooperate financially. Teachers did not ask for volunteers, but assigned students. In two of the schools we had students from various homerooms and grades together in one class, so students who had never before worked together had a new experience. We had three "intact" classes in the third school. We requested that class size be kept to 15 students, but in actuality worked with classes ranging from 15 to 21. We found 15 to be a good working size for elementary and junior high.

Notifying parents

When the final selection of students was made, we sent a mimeographed letter home with each student explaining the program, the procedure through which their child was selected, the estimated cost to the student, etc., and left a space for the parent's signature. We made a small alternate list, as some parents refused permission at the start and one or two others withdrew their children later on.

Surprisingly, we did not encounter any objections due to financial reasons—this in neighborhoods ranging from middle class to poor, black and white. The only consistent objection, again, was the fear that the child would be missing other important school work. Although we do acknowledge the loss of study time in the more traditional areas, we feel that the unique opportunity for personal growth and increased motivation our program offers is invaluable. We encouraged the students to take responsibility for their more complex work load.

Scavenging cameras

We arranged our finances (see Budget Appendix) to allow the purchase of many older cameras from thrift stores and flea markets. We also publicized that we were looking for cameras, and asked that people scavenge their attics and basements. Cameras were given free to those students who could not afford them and were rented for a small fee ($1.00 to $3.00) to those who could afford but didn't already have one. At the end of the course these students were told the cameras were theirs for the keeping. We feel the rental idea created a sense of responsibility, since most of the students came up with the money from their own savings. We supplied film free to those students who couldn't afford to pay anything. In one school the film was subsidized by the district, so the students paid only 50% of cost. We bought film in large quantities from less expensive sources in the city, where it was also easier to find the Verichrome Pan film we used. We kept the supply at school and sold it as it was needed. An unsubsidized roll of film cost 60¢-80¢. Any and all savings were passed along to the students.

Recommended cameras

We would recommend almost any functioning camera, preferably fitted with flash, for which it is possible to buy Verichrome Pan film (see Technical Appendix). If a camera is erratic, forget it, as it will cause great frustration for the student and will be a time waster.

Most Instamatics are excellent, although we did experience inconsistency with the Soligor brand. Pocket Instamatics which take the miniature size 110 film make excellent negatives. However, there is a problem in processing the film, as Kodak does not make a plastic developing apron for it. (Theoretically, Kodak does make a tank for it, however, it is impossible to find or even order. It has to be either tray developed in total darkness, or wound on a fine metal reel made by Kinderman, which is difficult for some to use, and more expensive.) In one school we blocked out light in the john, set a tray over the toilet, and had the students develop their 110 film there.

The old Kodak Brownies and Hawkeyes, box cameras, folding cameras, Arguses and Yashicas are excellent. A small majority of the students used similar 126 Instamatics, making it necessary to label the cameras. We did not use 35mm cameras as they are expensive and film for them can only be purchased in 20 and 36 exposure rolls, as opposed to the 8 and 12 exposures possible with the majority of the cameras mentioned. Progress is enhanced by using shorter rolls: students can have a greater number of chances to see and correct mistakes (bulk loading of short 35mm rolls is an option if 35mm cameras are available).

Testing cameras

The three main aspects that need to be checked carefully are the body, the lens, and the shutter. Ask yourself the following questions before you plunk down even $1.00 at the Salvation Army: is the body solid, with no missing pieces for light to seep through? If it is a foldout camera with bellows,

are they intact? Does the film advance knob interlock with the takeup spool (does the spool turn as you turn the knob)? If there is a re-wind knob, does that work? Angle the lens to the light; is it free of bad scratches and ground-in dirt? Open the back of the camera, look through the lens and press the shutter release button; is the shutter there? Does it have a firm, steady sound? Does it work every time? If there are any other adjustments, such as f-stops and shutter speeds, do they work?

In some roll film cameras it is necessary to cock (set the spring for) the shutter, by first either moving the cock-lever or turning the film winding knob. For testing Instamatic models, open the back, move the small metal catch to the right, cock the shutter by turning the film winding knob, and press the shutter release.

What about Polaroid?

Polaroid is excellent for certain activities when immediate feedback is desired (Exercise #1, page 17). Continual reliance on this camera, however, robs the student of involvement in the very important sequential processes which are at the core of our program. The most suitable Polaroid model we used was the 440, which will produce good black and white pictures in even low light situations. It runs from $30 to $50 used.

Facilities

The most feasible working situation would include two rooms: one a permanent darkroom facility for making proof sheets and enlargements; the other an activity/developing room with a closed-off film-drying area. A good activity room would be private, spacious enough to allow for group and individual work, have good natural and artificial

lighting, window shades, running water for film washing and mixing the monobath, and a closet or closed-off area for hanging developed film. Wooden clothespins, each labeled with a student's name, can be clipped on wires in an unused coat closet for an excellent drying system. Garment bags with clothespins clipped on hangers will do.

The size of the darkroom facility is dependent upon the number of students you want to accommodate at one time. This room need not have running water, although it is desirable if you should ever want to switch from stabilization processing to the traditional tray method. (Details on the stabilizer, as well as other technical processes and terms, are in the Technical Appendix.) Windows will have to be sealed to fully block light—masonite nailed into the frames is adequate, ventilation provided—fan or air conditioner, as well as a sufficient number of electrical outlets installed—one for each enlarger, contact printer and stabilizer. Permanent darkroom equipment includes: enlargers, timers, safelights, contact printer, and stabilizer. A light baffle system should be devised to permit students to come and go freely from the darkroom into the outside white-light area. This can easily be done by hanging two sets of floor-to-ceiling black darkroom cloth curtains. Easy access to a white-light area during the enlarging process is necessary for checking contact sheets, test strips, and enlargements.

For the elementary school that chose not to build a permanent facility, we made, off of the activity room, a four-person darkroom out of 8'x8' two-stall bathroom. We removed the swinging stall doors, keeping the partitions in place, and placed a desk over each toilet. We added one other desk and a folding table for more counter space. However well these cramped quarters functioned, it's important to remember that *this space could not have been utilized this well if we had not been working with the stabilization process.* As it was, we had to move the contact printer into the classroom and devise a setup for making proof sheets off in a darkened corner. Contact paper is different from enlarging paper in that it can be handled in low white-light situations. Students made their exposures in the contact printer, slipped the paper into a folder and carried it into the darkroom for processing. Enlarging paper, whether it is stabilization or the conventional type, is always handled under red or amber safelights.

Outside resources
We budgeted money for field trips—both to take photographs and view photographs—and for visiting artists. Although eight weeks is a very limiting amount of time, we felt a need to have the students begin to interact with the photographic works of others, and the potential for source materials outside their own immediate environment. Photography books, slides, newspapers and films provide excellent opportunities for students to learn how to view, analyze, and discuss these images. Be sure to carefully look over our bibliographies for ideas of the kinds of supplementary materials available.
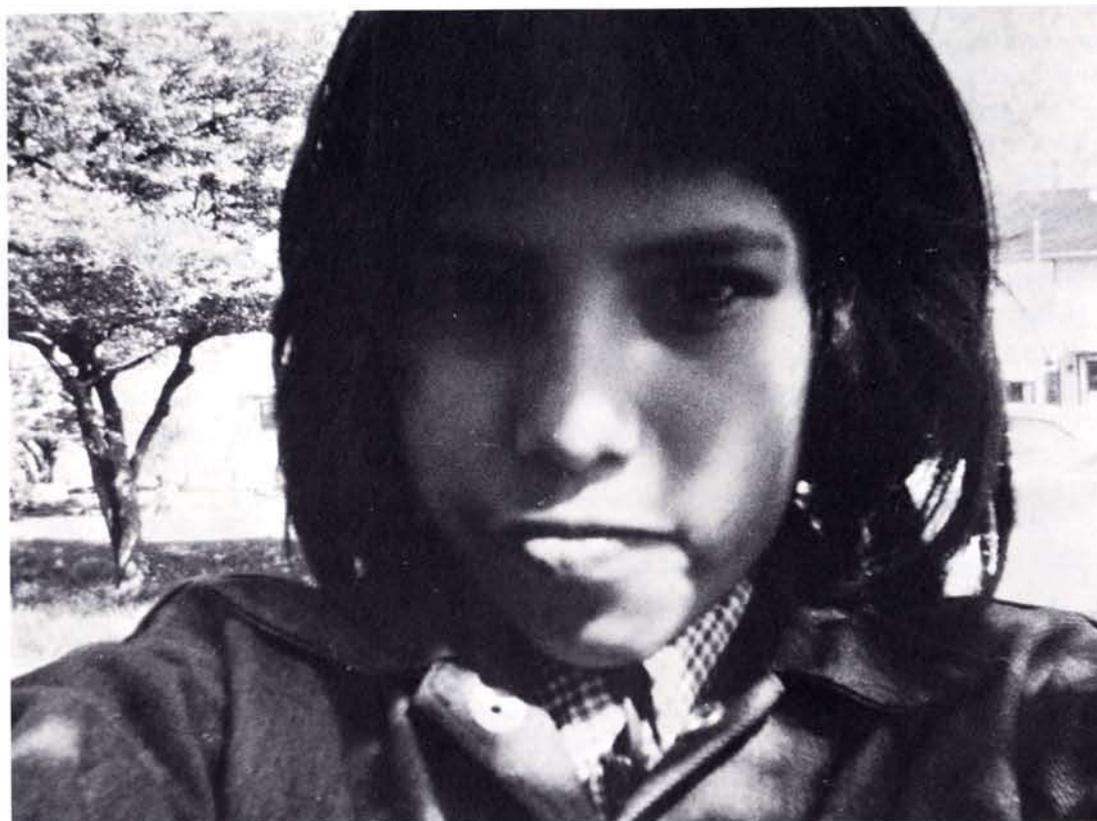
Nicky Tamayo

Relationship to other photo education programs

There are currently two organized and overlapping movements which emphasize photography's educational significance, and which are actively engaged in its promotion: the Visual Literacy movement, and *Popular Photography's* "Photography as the 4th R" program. While our approach shares many of the same aspirations these programs have, there are significant and basic differences. We all agree on the positive effect on self-concept, the enhancement of students' learning and developmental processes, the importance of creativity in general, and a belief in the power of photography. The differences lie in how we each go about teaching this, what we feel students are truly capable of, and what the end product of education should really be. Some differences are subtle, some obvious.

The Visual Literacy movement tends to see photographic communication as a lineal phenomenon —that there is a picture language with grammar and structure akin to those of words. In its simplest form, this means a *picture* of Dick, Jane, and Spot, instead of those familiar words. It is subject-oriented (i.e., *what* you photograph, instead of your way of doing it), without a real awareness that photography is an extremely subjective medium—not the objective one we are often told it is. The beauty of photography is that it is not specific: each person interprets the meaning of images his own way, based on who he or she is as an individual human being. There is a basis for discussion, not a new hieroglyphics.

While *Popular Photography's* approach is less didactic, it too, in its rush for public acceptance (and the inevitable market this will bring), smudges over individual differences. The words sound right, but the resulting images are not anywhere nearly as exciting as they could be.

Both Visual Literacy and *Popular Photography* offer a vast oversimplification of the potential of pictures, one which is certainly more marketable and easier to teach, but one which misses the subtlety, beauty, and excitement of meaningful images coming from within the students, and the celebration of their uniqueness. Our approach stresses that students perceive and respond with all of their senses, dreams, past experiences. It is not enough to teach photography's technical end for all of this to come out. We are speaking of another process which begins where the technical leaves off.

There is a fine line between education, indoctrination, and chaos. We are trying to tread it, leaving the students' uniqueness intact and free to fully develop.

Summary

In the same way a program can be born from wishes and dreams, it is made strong only if allowed to grow from constant questioning and careful doubts. Why were we knocking ourselves out; to what end for the students as well as ourselves?

We often thought that what we wanted for the students was different from what they seemed to want for themselves. While we yearned to convey the subtleties of feelings, communication, response and sharing, they seemed to delight more in the concrete experience of the doing and making. We worked toward both rewards by trying to create exercises that combined the concrete with the subtleties of new individual and group awareness.

The eight week/sixteen period course was barely long enough to touch on the meanings and potentials of the students' work. Our time with the students ended as they became familiar with a process of seeing and then translating experience into form. We couldn't remain long enough to grow with them from their initial familiarities to the individual confidence necessary to sustain prolonged interest and involvement.

In dealing with our doubts and frustrations, we struggled hard to see clearly what was, in fact, happening around us; we found that both ends were beginning to find ways to meet, even though much more work was asking to be done.

A situation at Fieldcrest School illustrates some of this. David was a fifth grade student. Two of his sisters, Kathy, a 3rd grader, and Susan, a 6th grader, were in our other classes, so there was a lot of photography activity at home. During the last two weeks of the program, when we put our emphasis on the discussion and sharing of the students' photographs, we display all the mounted prints and ask each student to select one to which they really respond, and to talk about it to the rest of the class. One day when we had gone about half way around the circle, sharing our immediate and intimate responses, David became quite agitated and started complaining about the activity. A girl had just been talking about the print she had selected—an out-of-focus photograph of a lawn fountain—when David got up and began denying the girl's reaction. He gave a little speech about irrelevancy and threatened to walk out of the classroom. Instead, however, he walked over to the water fountain in the room and took a drink of water. The entire class broke into hysterics—third graders on up through sixth graders. It was crystal clear to all of them that the photograph of the fountain and, in fact, what the girl had been saying about the fountain had indeed penetrated David's mind. A connection, albeit subconscious, could not be denied. (David never fully understood our laughter, although everyone else in the class was quite aware of what had happened and was enjoying it for all its worth. A photo-affirming irony!)

There are numerous sociological, cultural, aesthetic, educational and human arguments that, to us, support our program; that give it specific reasons-for-being because of where we are in time and history. Yet diversions into those discussions, however meaningful, are not the purpose of this workbook. What we've written in the way of narrative and listed in the appendices should be enough of what you need as you prepare to participate in the energy, the looking, doing and seeing, that we find so exciting and important.

Tonya Galbreath

Appendices
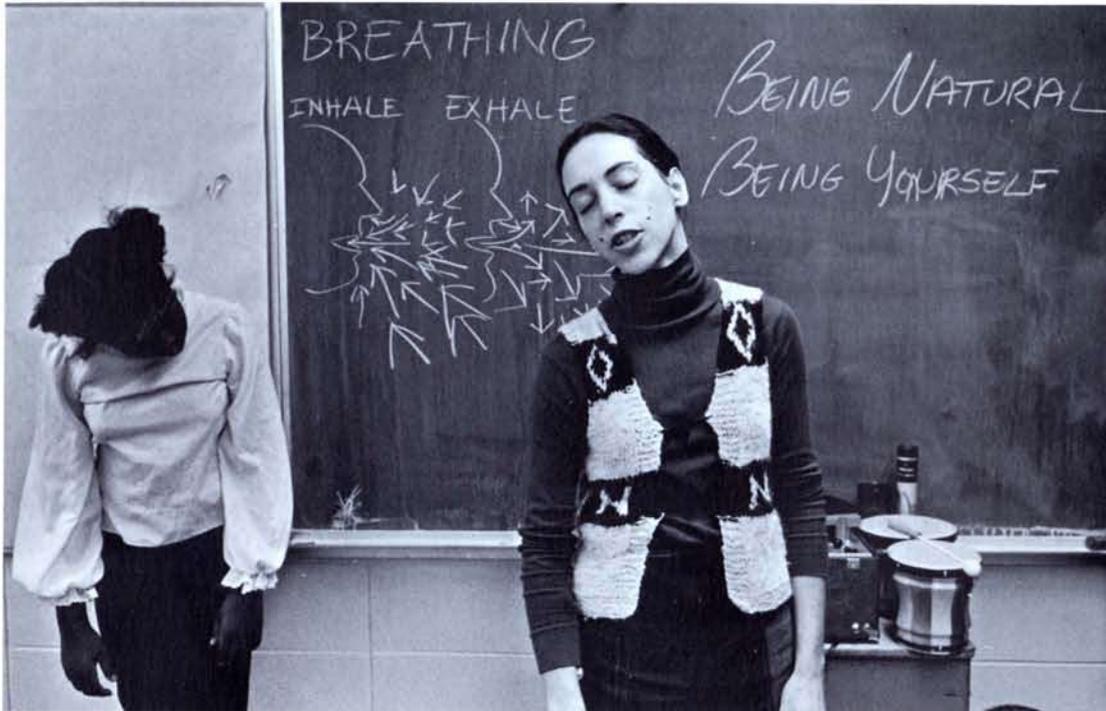
The following activities are the products of weekly photo team planning meetings. While each member of the team was expected to come armed with ideas for the coming week, the successful products of these sessions were gleaned from the spontaneous, free flow of ideas among the participants.

Many outside sources contributed to our exercises, but it was our combined brainstorming that produced truly constructive classroom learning.

Serendipity was frequently our guide: finding our enlargers still in their packing cartons with no one to assemble them, the idea of the Enlarger Ceremony was born—three classes, three enlargers assembled and ready to use.

The exercises and activities on the following pages have been found particularly useful in developing student self-awareness and growth. This list is by no means exhaustive. It is intended only as a starting point.

Blind picture-taking and trust walk

Exercise 1

Goals and objectives

To allow students to experience their environment using all their senses and bodily awareness; to foster a spirit of trust between pairs of students; to introduce the idea that photography is a process that requires all one's senses.

Time required

60 to 90 minutes

Materials needed

A Polaroid camera; enough film for each participant to take one picture; blindfolds; flash (for dimly lit rooms).

Physical setting

Any average size classroom with large size objects that can be moved about quickly and easily (chairs, desks, etc.)

Procedure

Participants are divided up into two groups of equal size, each member of one group paired with a member of the other group. After a short discussion of the goals of the exercise, one group of students leaves the room while the other group rearranges the room's furniture. This completed, each member of the group outside the room is blindfolded by his partner and led back into the changed area.

The sighted partner retains only a light contact with his blindfolded friend. The blind participant explores the room, his partner taking care he bumps into as little as possible.

Meanwhile, the teacher has readied the Polaroid camera and, as explorations develop, taps a blindfolded student and asks him to take a photograph while still blindfolded. The teacher is careful to adjust the camera properly and place the student's finger securely on the shutter button. Before the student snaps the shutter, the teacher should ascertain the student's awareness of just where he thinks he is, and tell the student to visualize the scene in his mind's eye. The instructor marks the name on the back of each photo. This entire process is repeated with each blindfolded student.

All remain blindfolded until every member of the group has taken a photograph. Blindfolds are then removed and the procedure is reversed. Those first blindfolded rearrange the room while the previously sighted group waits outside. When this second group finishes its blind explorations and picture taking, all participants are then given back their original photographs and asked to compare them with what they imagined they had photographed.

Discussion topics

Participants may be asked if they did indeed trust their partners. How far? What senses did they rely on to orient themselves? Did they know where they were most of the time? Did their partners let them hurt themselves in any way? Is their picture what they thought it would be?

Further possibilities

Any activity that requires vision can be attempted blindfolded with almost always interesting results: eating, writing, drawing, identifying another person, etc. Another setting, in a park or playground, may add to the sense of exploration and discovery.

Silhouettes

Exercise 2

Goals and objectives

To enhance a sense of group community; to present how one's feelings about a person influence the way one sees that person; to show the different ways many people view the same individual.

Time required

30 minutes for drawing; 30 minutes for discussion.

Materials needed

Sheets from a large roll of paper (each sheet should be big enough for a person to be traced, life size, on it); various drawing implements with an accent on color and large strokes (pastels, craypas, quick drying paints, compressed charcoal).

Physical setting

A regular classroom where large spaces may be cleared on the floor.

The process

Class is broken up into groups of four or five. Each group is given a large sheet of paper and selects one or more persons in the group to be traced. The person(s) lies down on the paper and is traced by the remaining group members. He gets up and all group members are asked to fill in the resulting figure(s) with whatever they feel or know about the original person(s). Anything goes, inside or outside the silhouette. When all groups are finished, the drawings are hung side by side around the room.

Discussion topics

Participants of different groups are asked what they felt about their roles in the exercise. Did they like being traced? What do they think of the way they were colored? The different styles that people used to describe their classmates should be noted. Is the figure sparsely filled? Is it filled with color, symbols, concrete things, or abstract shapes? What does each group think the other groups were trying to say about the people they traced? Were they friendly, angry, happy, or sad? Emphasis should be placed on the unique differences of each participant and how these differences are reflected in each group's drawing.

Further possibilities

Using a slide projector, silhouette murals of an even larger scale may be accomplished. (As participants move closer and farther from the light source, they illustrate the enlarging process that occurs in the darkroom between negatives and photographic paper.) Students may make a silhouette of themselves at home and bring it to class. Students may be asked what their own silhouette may be saying, or feeling, or doing.

Observation exercises

Exercise 3

Goals and objectives
To introduce the difference between perfunctory seeing and true study and observation; to increase observational skills.

Time required
45 minutes to one hour.

Physical setting
An average size classroom.

The process
The instructor introduces the idea that people use their eyes all the time but often miss what is right in front of them. By way of example, the instructor may ask students to recall the color of several articles of the student's own clothing without looking at them.

Students are broken up into two equal teams. It is announced that one team will remain outside the room for five minutes while the other team changes four to six things within the room. Half of the changes are to be fairly obvious (e.g., turning a chair around), the other half may be as small as the team wishes to make them (e.g., changing shoelaces). The team that must go outside is first allowed five minutes to study the room. They may decide on any strategy for memorizing its components. They then leave the room, taking pencil and paper with them, and the changes are made. Those who remain to make the changes must be careful to move only those people or things that are to be changed. If a piece of chalk is moved to make a mark, it must be returned to its exact original spot.

The outside team returns and silently studies the room, each individual writing down the things she believes have been altered. They are given five minutes for this. At the end of this time, they are asked to indicate what was rearranged. Only after every list has been exhausted can they be told of any changes they have missed.

The teams then reverse their roles and the process is repeated. It is important that before anything is changed everyone on the team agrees on the changes. To this end, each member of the team should be polled for ideas on what should be altered. Votes should be taken.

Discussion topics
Students may be asked why some people were able to spot more changes than others. Did any one student see more than the rest of her group combined? If not, what does this mean? Do we notice everything in a photograph before we take it, or are we sometimes surprised at all the details in our final picture?

Further possibilities
Exercises of this nature are always helpful in developing observational skills. Students can be led to a large indoor or a limited outdoor area and asked to make lists of everything they see. Lists may be compared for both common elements and the uniqueness of each student's personal vision. Before taking such an observation walk, students should be reminded that everything is fair game for their lists, from different colored floor tiles to changes in the sounds of the wind.

Another possibility is to sit everyone in a circle surrounding some object. Each person relates to the group something different about the object in the center. Small objects may be treated in the same way by being passed around from student to student.

Contact sheet voting

Exercise 4

Goals and objectives

To demonstrate the importance of contact sheets in the process of photographic selection; to show how different students will favor different images on the same contact sheet; to learn and to grow from these differences of opinion; to share with one another why we respond to pictures in both divergent and convergent ways.

Time required

One hour to 90 minutes.

Materials needed

Each student must have her own contact sheet made from her own negatives; a grease marking pencil.

Physical setting

An average size classroom equipped with bulletin board or other suitable display space.

The process

The class is divided into two teams of equal size. One team is asked to mark on their contact sheets with the grease pencil three or four of their pictures that they respond to most favorably. Out of those four, they are to secretly choose their particular favorite and write this choice down on a separate sheet of paper. They are also to write their reasons for their choices. The choices made on the team's contact sheets are hung side by side on the board. (Another possibility is shooting several themes on one role of film and circling one theme on the contact sheet.)

The other team, meanwhile, is making ballots; one for each member of their team. Each ballot lists all the names of the opposing team with a small space next to every name.

When all the contact sheets have been displayed, the ballot team goes to the display area and views each contact sheet. Each team member marks on his own ballot the number (or a description) of the picture he most responds to, out of the three or four chosen by the original photographer. The ballot may look like this:

Alan   No. 4—picture of a large house
Nancy   No. 11—picture of the beach in the evening
Ralph   No. 7—picture of a cute but dumb cat

When each member of the ballot team has cast a vote for each contact sheet on the wall, the voting is over.

Votes are tallied for each contact sheet. The resulting majority vote is compared with the original photographer's choice. Sometimes this is the same, sometimes not. Feelings about this should be explored. When each vote is tallied and reasons for decisions understood, the teams reverse their roles and the process is repeated.

Discussion topics

How does it feel when other people agree with your choice? What happens when they disagree? Did anyone vote for what you picked? Did everyone? After the voting, would you still make the same choice? Do their feelings make you reconsider your selection or are you more sure than ever? Why did you choose the way you did? Why did the rest of the class vote as they did? How do their reasons sound to you? Can you persuade them to your way of thinking?

Further possibilities

The role of contact sheets has been underplayed and needs considerable reinforcement. In the darkroom, the teacher should be aware of the student's choice in making an enlargement. Discussions, some arising from disagreements as to which picture to enlarge, should be open and commonplace. On-the-spot group voting may be helpful here.

Enlarger ceremony

Exercise 5

Goals and objectives

To familiarize each student with the various parts of the enlarger; to enable each student to take part in putting an enlarger together; to introduce the idea of ritual and its importance as a teaching and a learning tool.

Time required

30 to 45 minutes.

Materials needed

An enlarger, taken apart, ready to assemble (the pieces should be in a single large box, easy to sort out); several candles; sticks of incense; music; anything the instructor feels will heighten the sense of ritual and mystery (costumes, masks, etc.).

Physical setting

The room should be darkened and the main light source should be candlelight. Background music (the Play of Daniel, soft religious chanting, etc.) also helps to set the mood. Chairs are to be arranged in a semicircle facing a low bench or table.

The process

Before any students are allowed to enter the room, music should be playing, the lights dimmed, the candles lit and the incense burning. One instructor speaks to the students before they enter the room, informing them they will be taking part in a ritual that demands silence from every participant. The instructor then escorts the group inside the room, making sure they put their books aside and quietly take seats in the semicircle. When all students are seated, the other instructor(s) enters the room bearing the box with the enlarger parts which is set down on the low bench.

This "bearer of the parts" then takes out one of the pieces of the enlarger, calling out its name clearly. It is then passed to the other instructor who first displays it to the entire semicircle before giving it to one of the students. This procedure is repeated with every part until each student possesses some piece of the enlarger.

If a third teacher is available, he may sketch and label, on a blackboard, each part as it is named and distributed.

The "bearer of the parts" then calls for each part by name and waits for the appropriate student to bring the part to her. The first time or two, a gesture that the student should come forward will facilitate student response. As each part is brought forward the enlarger is assembled. When this process is completed, the instructor then presents the enlarger to the class, inviting them to gather closer around it. A brief demonstration of how the enlarger works is given. The entire machine is then borne slowly (and if possible, reverently) to the darkroom where further demonstrations are carried out.

Further possibilities

The concept of ritual can be utilized in many ways. The taking of a picture can be ritualized, a small ceremony taking place before the shutter is pressed. Raising a hand to speak, already something of a ritual in the classroom, can be made more elaborate, almost playful. Ritual tends to make the activity more mysterious; yet, if it is done slowly and deliberately, it can aid in understanding. When common everyday things are ritualized, a sense of play, understanding and newness is frequently the result.

Family drawings

Exercise 6

Goals and objectives
To demonstrate the different ways we consider those people who are close to us; to show how these differences affect the way we view our family and friends; to indicate that our perceptual differences will translate themselves into the drawings we make and the photographs we take.

Time required
30 minutes for drawing, 30 minutes for discussion.

Materials needed
Sheets of 18 x 24 inch drawing paper and various black and white and color drawing media.

Physical setting
An average size classroom.

The process
The instructor asks who the people are that make up what we all call "the family." As suggestions are offered they are listed on a chalk board. Sometimes students will suggest pets, their house, or their car as a part of the family; these should be listed as well. Class discussion and voting can be held as to whether these last are to be considered a part of the family. The instructor should make sure that the list includes "You," the student himself, as part of the family. He may also suggest friends as a part of the family and see what class reaction is.

Each student is given a sheet of paper and choice of media and asked to draw his own family doing some activity. While this need not be stated, students may include or exclude whomever they wish in their drawings.

All drawings are then displayed together on a wall, discussed and compared, not for artistic quality but for differences and similarities in content, style, who was included, excluded, etc.

Discussion topics
Anything about the drawings may be brought up as significant. Is one figure bigger than the others? Are they stick figures or full bodied people? Are people all together, in small groups, isolated from one another? Are people touching, holding hands, side by side? Are they in black and white or color? To any of the above, what does this mean as we "read" the drawing?

Further possibilities
Drawings may be done of any subject that is common to the group: school, home, a field trip, etc. A good follow up to the above activity is assigning each student to take an entire roll of photographs of members of his family. The resulting pictures of course should be put to the same scrutiny as the family drawings.

Identification

Exercise 7

Goals and objectives

To allow students to experience more fully other people and objects by identifying with them; to introduce the concept that the more fully one identifies with one's subject, the more fully the representation of that subject (e.g., the photograph, writing, drawing, etc.) will be true to the original subject; to introduce the concept of the interrelation between perception and perceiver.

Time required

Approximately 15 minutes for the actual writing and 30 minutes for discussion. These times are doubled if identification with objects and people is attempted in the same session.

Physical setting

An average size classroom.

The process

Students are introduced to the idea of identification. Sometimes examples of identification with famous figures (athletes, movie stars, politicians, etc.) may be helpful here.

If the instructor desires, she may tell the students to bring in some object of importance to them from home for this activity. If not, students may find interesting objects within the classroom. Whatever their mode of selection, each student takes his or her special object and places it where it may be carefully studied. The instructor then has each student write several sentences about the object. Each sentence, however, must begin with either "I" or "My." In this way the student, while writing about her object, is also writing about herself. The instructor can present an example of this type of writing before asking the students to begin.

For instance:
I am hard and metallic.
I am flat and thin.
Some of my parts move and some do not.
I was made very carefully by an old man in a very old shop in another country.
I make a very faint sound.
People look at me a lot but I can be ignored for long periods.
I am a pocket watch.

The instructor should insist that the object being studied be named only in the final sentence.

Each student is asked to read her finished description to the class. Last sentences may be omitted and the class asked to guess if they know what the object is before it is told to them.

Similarly, students may be broken up into pairs and asked to describe one another, again using only the first person to do so. Physical descriptions here are only the beginning. Students may be encouraged to express the way they think their partner feels. As before, all papers are read to the entire group.

Discussion topics

What was included in the writings? In what ways are you and the object you described similar? Different? Was it solely descriptive? Was the history of the subject discussed? Its future? How does it feel? Does it change or is it always the same? Was it embarrassing to be someone else for awhile? Was your partner embarrassed? Do you like her description of you? Was she accurate about your feelings? Were you about hers?

Further possibilities

Students should be encouraged to identify with their subjects whenever they are given specific shooting assignments. What is it like to be a tree? A poor family? A schoolyard? An old house? Role play each one. Photographs, of course, may always be discussed from this revealing perspective.

Dreamwalk

Exercise 8

Goals and objectives
To introduce, in depth, a study and discussion of individual fantasy and imagination; to encourage freeing of each individual's imagination and creative processes.

Time required
At least 10 minutes for the dreamwalk and its preparation; 30 or more minutes for response and discussion.

Physical setting
A quiet classroom that may be darkened considerably; enough space for each student to stretch out and be comfortable, without touching anyone else.

The process
Students are asked to put all books, pencils, pens, etc. to the side. They are then told to find a comfortable spot in the room where they may sit or lie down away from all other participants. The lights are turned off. The instructor who leads the dreamwalk then states the two rules of the walk: (1) No one, except the dreamwalk leader, may make any noise or call out what they imagine, as this will interfere with the other participants' experiences. (2) No one may touch any other participant, as this too will cause interference. These made clear, the instructor asks the participants to relax by closing their eyes, concentrating on their breathing, and relaxing one part of their bodies at a time. The instructor begins the dreamwalk, suggesting some trip or journey that each student is taking.

The thematic material of a dreamwalk may be quite varied dealing with home, school, neighborhood, boats, shops, museums, outer space, fantasy, etc. The instructor relates the walk, the participants listen. The instructor purposefully leaves parts of his monologue ambiguous, asking each participant to use his own imagination to fill in the gaps.

For example, the instructor might say, "You are in a movie theater. The screen in blank. Suddenly the color red comes on the screen from the left but it has no particular shape. What does it remind you of? Can you make something out of it? A person, a place, a thing, something completely abstract?"

Every time the dreamwalk leader offers such an opportunity, he must pause for up to 30 seconds, allowing the students time to formulate their own mental picture of the scene.

The subject matter of dreamwalks should be chosen depending on the student population with which you are dealing. Dreamwalks within the school are not as favorably received as dreamwalks that remove the students from their immediate surroundings.

The instructor ends the dreamwalk by bringing the group back to its original environment in a gentle manner. Students may then be asked to draw or describe in words some scene they remember from the experience. Drawings and writings are then shared with the group.

A specific dreamwalk that we have found particularly useful in starting discussion about photographs is the following:

Each student is asked to pick one of his or another classmate's photographs which he responds to favorably. They then make themselves comfortable with the photograph directly in front of them. The dreamwalk leader asks each student to intently study the photograph they have chosen so that they may memorize it. Allow one or two minutes for this. Students then close their eyes and imagine the photograph within their minds. Each student is requested to identify with some person, place, or thing within the chosen picture; that is, he should actually become this other person, or place, or thing. Slowly, with significant pauses, the instructor tells each participant to imagine a past event which happened to him as this other person, place, or thing (e.g., the way it was made, an especially good time as a child). After this, a present event and then a future event are imagined concerning the object of identification.

These three scenes firmly established, the dreamwalk leader has each student go over all three events, past, present, and future, in his mind's eye, before looking once more at the actual photograph. When eyes are opened the instructor asks if the photograph looks any different after the experience. Students then share their experiences by writing, talking, and/or drawing. Recounting individual fantasies is often fruitful because of the incredible diversity and creativity of each student's imagination.

Further possibilities

Dreamwalks are extremely versatile in their applicability to different subjects. The themes of dreamwalks are virtually limitless. Group dreamwalks may be tried, wherein each person holds another's hand during the entire experience. More group oriented activities and themes lend themselves to this type of walk (a cruise, where each person chooses his or her role in the crew). Walks through famous historical moments or settings may also prove interesting.

Outdoor activities

Goals and objectives
To encourage the use of photography and observation beyond the classroom; to instill the idea that picture-taking is an "anywhere" event and has relevance in myriad situations, many just around the corner from where you are now.

Time required
From 30 minutes to one hour.

Physical setting
Any outdoor area within easy walking distance of the classroom.

The process
Taking pictures outdoors is an essential part of photography. Whenever weather permits, students and instructor(s) should go outside for brief walks to explore the area immediately around the school. Sometimes cameras may be taken and specific assignments given. At other times students may venture forth with just pencil and paper and write and draw about what they encounter.

Occasionally, physical exercises help to start things off. Running in a circle,

first one way then another, gets the blood running and the senses working. Sometimes photographing in an exhausted state leads to some unusual images. Here are several simple photographic assignments that work well outside.

1. Pick three or four objects and take at least three pictures of each. Each picture is to show a completely different aspect of the object chosen.

2. Stalk another student and see how many pictures you can take of her before she catches on to what you are doing.

3. Several students share one camera and have to work out just what pictures the group will take.

4. Pick a limited area and make each student responsible for completely documenting a specific part of it.

5. Take pictures of other students, taking pictures of other students taking pictures, . . . etc.

Discussion topics
Carry on your discussion outside as well. What is different about the light? If it is sunny or gloomy, will that affect the way things look, or the photograph? What you are interested in? Do you find it easier or harder taking pictures outside? Place your photograph next to the original subject. Is it the same? In what ways is it different?

Further possibilities
Combine indoor and outdoor activities. Document sporting events. Have half the class perform while the other reports the event. Have the class photograph the rest of the school as they arrive in the morning and depart in the afternoon.

Family role-play

Exercise 10

Goals and objectives
To enable students to experience one another's family situations; to aid in the student's perception and documentation of a specific situation.

Time required
Approximately 20 minutes for each role-play and discussion.

Materials needed
A Polaroid camera; enough black and white film so that at least two and up to four pictures may be taken of each role-play activity.

Physical setting
An average size classroom where tables and chairs may be easily moved to create different mock environments.

The process
A student is either selected or volunteers to use other students and direct them in acting out some scene from his own family life. The type of scene is entirely up to the student director. First, he picks other students to represent the members of his family, including himself. He gives them a general idea of what to do and to say in the chosen family scene. He also arranges the start of the scene (e.g., everyone sitting at a dinner table). The director then gives the Polaroid camera to another student and informs his actors when to begin. Whenever necessary, the director may prompt the actors, telling them to pause, giving them further instruction.

As this role-play continues, the photographer tries to capture highlights of the performance with the Polaroid camera. She is limited to four pictures or less, depending on the film supply.

Soon after the final picture is taken, the role-play ends and the photographs are exhibited to the rest of the group. A discussion follows each role-play photo presentation.

Discussion topics
Do the pictures made by the photographer truly capture the most important aspects of the role-play? What sort of family was depicted in the role-play? Large? Small? Friendly? Isolated from one another? Lots of closeness? Who seemed to get into the role most easily? Did the director give sufficient information so the scene was clear to the actors? Do the pictures, taken as a whole, tell the same story as

did the role-play? Do they show something the audience might have missed? Some people in the audience might indicate where they would have taken photographs in a different way.

Further possibilities
Role-playing may be done around any subject with which the student is familiar: classroom situations, sports, trips, etc. A set of students may act out some prearranged skit for the rest of the class, who then act as reporters, both verbal and visual, of the event. The scene may be concrete or abstract and it may prove a challenge to the reporters to figure out exactly what the skit represents, before it is explained.

Student grouping of photographs

Exercise 11

Goals and objectives
To show photographs as relating to one another in theme, content, darkness or lightness, tone, style, or any other aspect of their commonality; to demonstrate how different people's visions of similar phenomena can be meaningfully arranged; to strengthen the student's ability to find relationships between seemingly disparate objects.

Time required
Approximately one hour.

Materials needed
Twenty to thirty enlargements, mounted on equal sized boards, covering numerous themes and subject matter that the class has been engaged in. If possible, the students'own photographs should be used.

Physical setting
A classroom with sufficient ledge or table space so that photographs may be adequately displayed.

The process
The idea that professional exhibitors arrange shows very carefully is introduced to the class. The exhibitors try to find common themes between various pictures and then hang them according to these groupings.

The students are then told they are to arrange an exhibit of photographs. Half of the students are asked to leave the room. Those remaining arrange the photos according to themes the entire group agrees upon. These pictures are then displayed about the room in their appropriate groups. The rest of the students are then called back to study the

resulting exhibition and, finally, to guess what themes governed the choices of the exhibitors. After the themes have either been discovered or made clear, the roles of students are reversed and a new exhibition is set up by the other half of the class.

Discussion topics
Lively discussion may accompany both the selection of themes and the guessing of the jurors. Anything goes here. Students may insist on any theme as long as they can convince the remaining students of its validity. Sometimes students may find themes that are common to an entire set of pictures that the original exhibitors did not intend. This should certainly be discussed, as there is often more than one element that binds images to one another.

The following is only a partial list of themes students have presented in our groups: Inside activity, outside activity, school, home, family, self-portrait, close-ups, one person, many people, happy people, surprise pictures, pets, landscapes, outdoors, dark pictures, light pictures, out of focus pictures, sports, posed pictures.

Further possibilities
Students should have a hand in setting up exhibitions of work that will be seen by parents, teachers, and the community. This exercise is excellent practice for such a task. Furthermore, when a student sees his work in such an exhibition he will have a better understanding of why it is where it is.

Field trips

Goals and objectives

To allow students to directly experience their environment, using all the tools and self-awareness the photography program has fostered; to introduce concepts of documentation and the changing of one's reality to suit one's needs.

Time required

From as little as 30 minutes to the entire school day.

Materials needed

Suitable transportation for whatever size group is to go; cameras and film for every student; more than one roll of film per person for longer trips; flashbulbs, flashcubes, magicubes, batteries, to permit indoor shooting.

Physical setting

Any place that instructor and students feel is interesting and relevant, that fits into time and academic schedules.

The process

Preparation for a field trip, of whatever length, must be thorough. All students must be well equipped and have some insight into why this particular place was chosen. The field trip is to be work as well as fun. Expectations for thoughtful picture taking should be high.

If the main theme of the trip is to be documentary, this should be spelled out beforehand. Assignments on documenting the family, the school, may precede the trip. Students can prepare written outlines while thinking about the areas they wish to cover during the trip. This should be gone over with the instructor well before the start of the trip. It is helpful to stress the storytelling quality of documentary work. What story do you want to tell about the place you are going to visit? To this end, examples of other photographer's documentation (e.g., slides, prints, books) may be shown. Students may be asked to interpret or guess at the major themes of such work. Preparatory work helps students take advantage of the possibilities of a situation. It encourages them to be open and responsive rather than be limited and have preconceived ideas.

If the main theme of the field trip is to manipulate one's surroundings, then prior activities like role-playing, dream-walking, and student picture grouping are good lead-ins. Examples of fantasy work by photographers would, of course, be appropriate. Once again the student should be expected to make some outline of her shooting plan before departure.

When time is short, a brief trip, called a "blitz" may be in order. A blitz may require only 30 minutes at the site itself. The site is divided into several areas. Each team of students takes a different area. If there are four areas in all, each team is allowed about 7 minutes per area. They are told to work as a team and avoid duplicate photos within their team. This technique is particularly effective in places of high activity, like a fast-food stand. It is best that you receive the proprietor's permission before blitzing. Twenty or more photographers in a small area can be overwhelming. Also, prior warning breeds good public relations and the owner may then allow you to photograph "employee only" areas.

Lots of time should be spent with the students as they take their pictures. Make sure each student knows the length of the trip and the total number of stops. Otherwise, students may shoot all their film in the first half hour of an all day excursion.

Make sure any adult helpers you have along are familiar with the goals of your photo field trip. A knowledge of cameras is not as important as a knowledge of what you are trying to accomplish and how you want the students to go about it.

Discussion topics and possibilities

As soon as possible, prints should be made from field trips shooting. Students should compare their interpretations with those of their fellows. Students may arrange different groups of photographs from the trip in various ways. Student representatives may revisit the site and give photographs to interested and helpful persons.

Applicability to other settings

This photography program is a concrete attempt to increase the self-understanding and the learning opportunities of elementary and junior high school students. Moreover, this approach is applicable to other educational and non-educational settings where personal growth and development is a primary objective. Hospitals, mental health clinics, halfway houses, day care centers, teacher training workshops, after-school community programs, and creative therapy institutes and training facilities would all profit from the type of photographic approach outlined on these pages.

For those lacking in self-esteem, the creation of a photograph can be a major therapeutic step in building self-confidence. Furthermore, the act of mastering the technical aspects of photography, which this program greatly simplifies and facilitates, is a dramatic sign of accomplishment both to the individual and to others.

It is our belief that people of all ages, backgrounds, and abilities can make meaningful and expressive photographs and that such activity is of definite positive value to the doer. Photography, after all, is not merely pretty picture taking, but is a reflection of the individual's state-of-being. As such its use should be broadened.
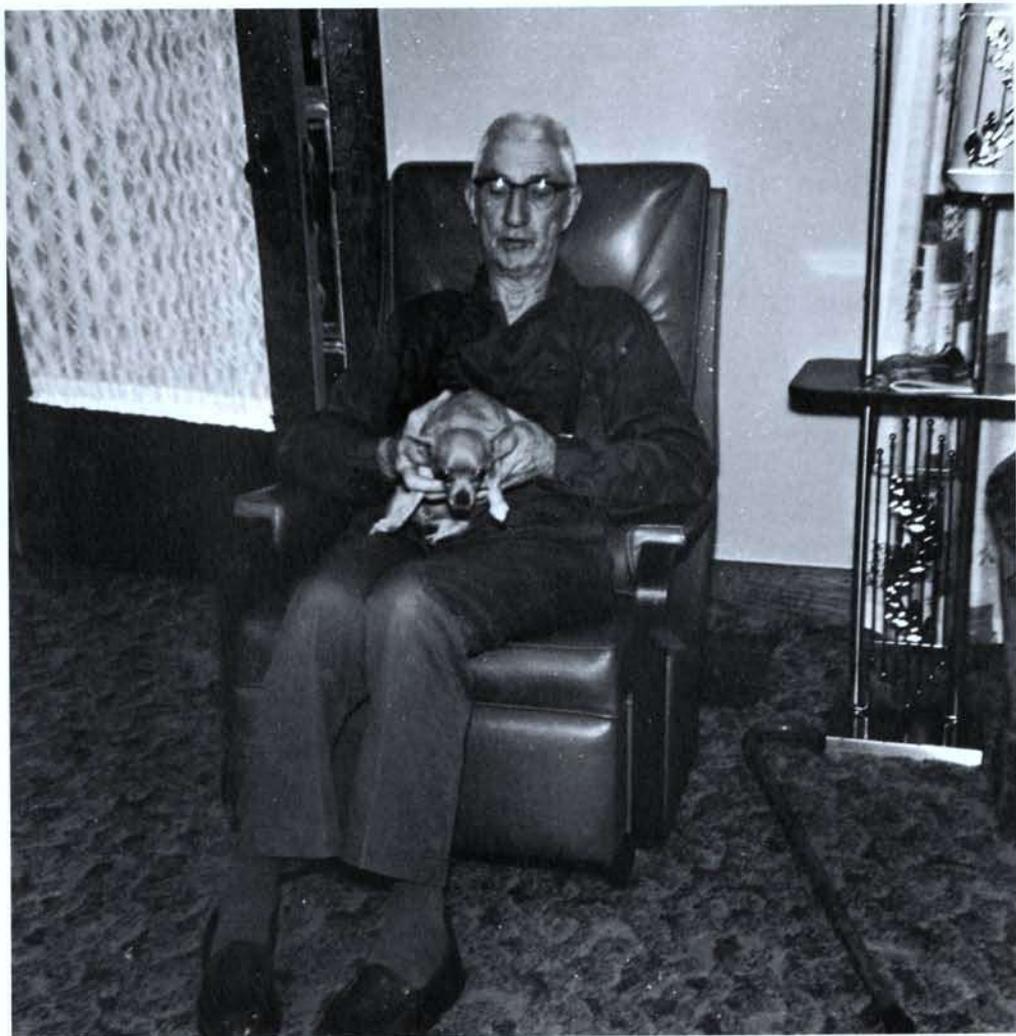
The following photographs are representative of the work done at the three participating schools. They were taken, developed and printed by the students.
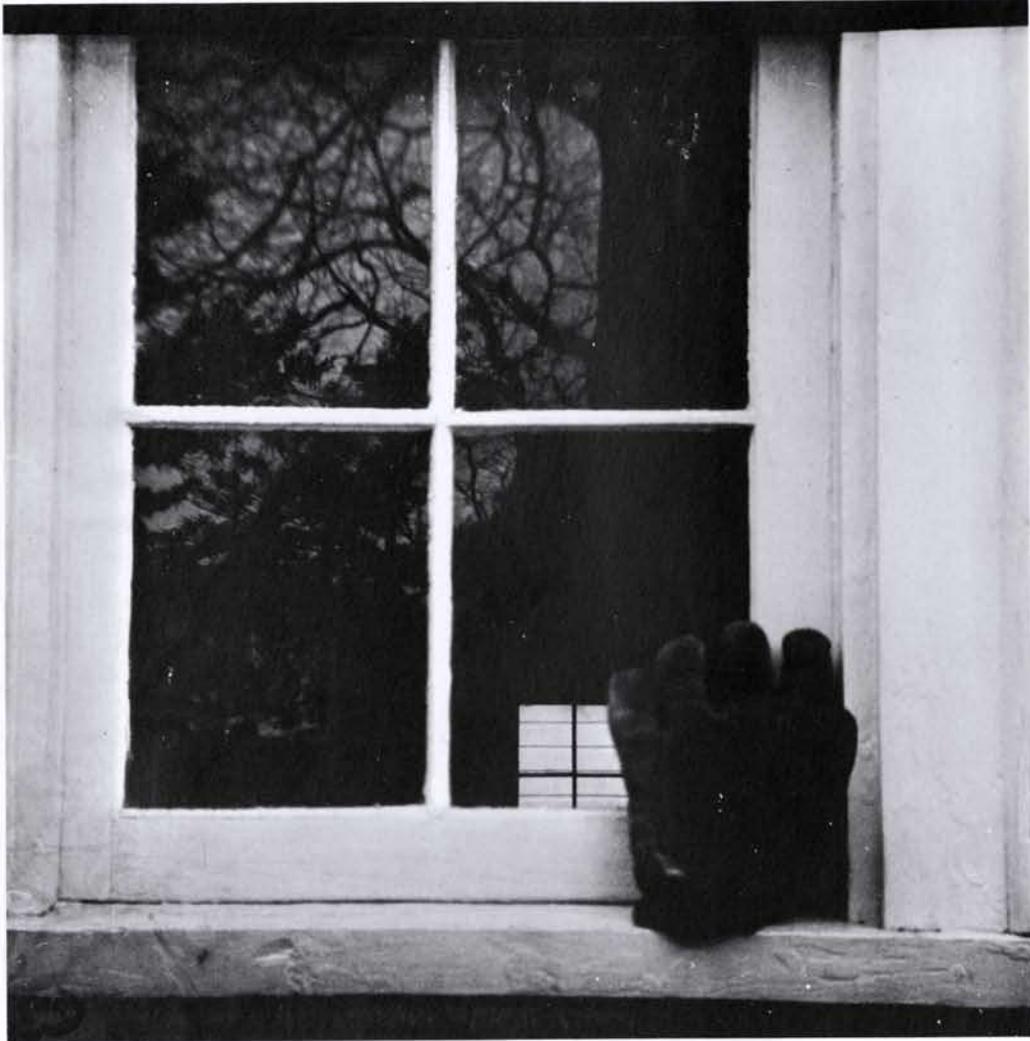
Tim Kremnitzer

Beth Mackey

Franklin laBadie
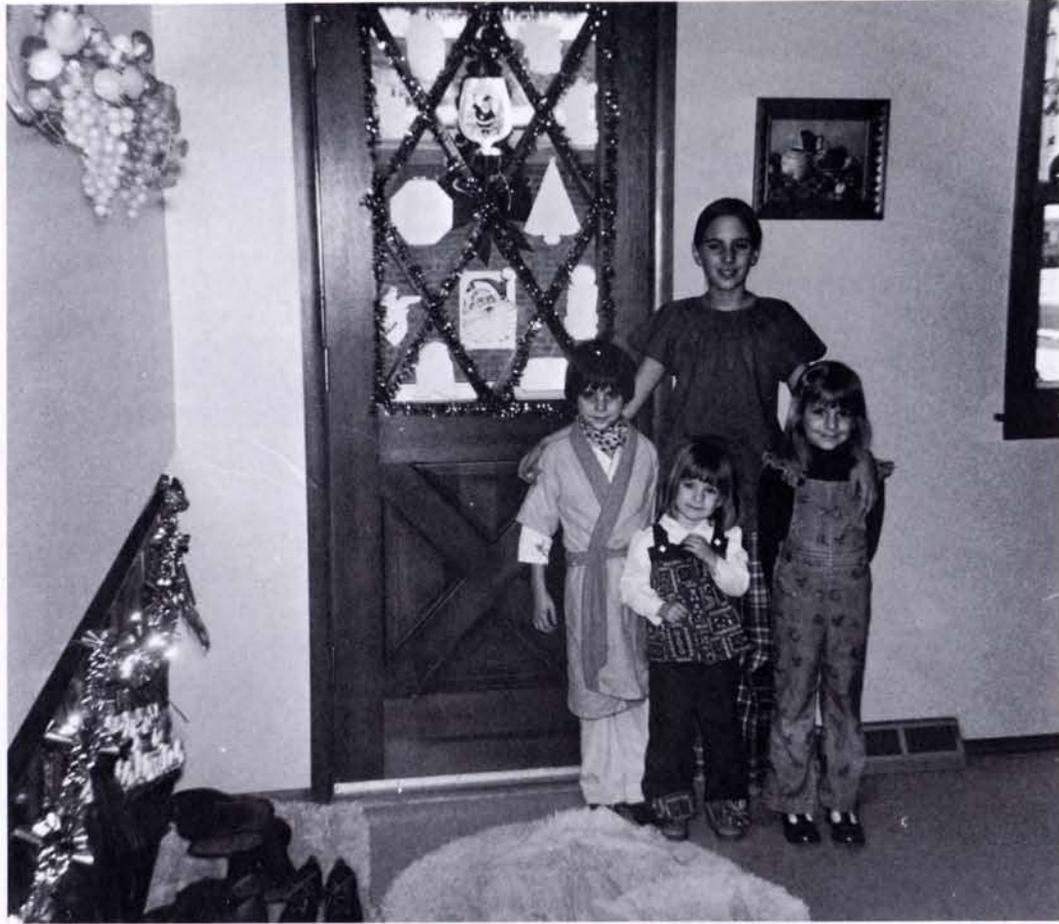
Angela Esposito

Brian Westphal

Marty Bechtel

Terri Robinson

Rosemarie Dobrez

Tonya Galbreath

Barbara Rinaldi

Renita Norris

Mike Byers

Technical appendix

There are other ways of doing all of this, but we found this system to be by far the quickest, easiest, and cheapest. It makes use of two technical innovations which are invaluable to the classroom teacher: the monobath developing system and the stabilizer printing system. Reference to photo books will help in this area (see bibliography). While this monobath is new, film loading and care is traditional, as is use of the enlarger.

Film Developing

Changing bags
These are two zippered light-tight bags, one within the other, with arm holes to load exposed film into light-tight developing tanks in any classroom (darkroom not required—the bags do it).

Developing tanks
Instamatic cartridges are broken and film removed, or roll film unrolled *(inside the bag,* by touch only), separated from the protective paper, and loaded first onto plastic "aprons," then dropped in Kodacraft developing tanks. Aprons are matched to the particular film size and are wrapped around the film to keep it from sticking to itself and to allow the chemicals to wash all surfaces effectively. In addition, a metal weight on top of the apron/film combination is used to hold it down once the chemicals are introduced. Of the numerous developing systems available, the Kodak apron/tank method is the simplest and easiest to learn and use. It is also the cheapest. It requires an out-in-the-open practice session with spoiled film first, for students to see what they will thereafter be able to do only by touch. A great learning experience. ("I can't do it! I can't do it!...This is easy!")

Monobath
Once film is loaded into the tank, we use a "monobath" developing system—one chemical which both develops and fixes the film (i.e., makes it no longer sensitive to light). The traditional system requires at least three separate stages where proper timing, temperature, and method of agitation are crucial. This formula makes the above concerns virtually irrelevant and is thus far more feasible for large numbers of children. This is one of the

technical hearts of our system. It saves unbelievable amounts of time and trouble, without losing any quality. Running water is needed only for film washing. A darkroom is not needed for developing at all. Any classroom with a sink will do. The solution needs to be poured in quickly, the tank turned gently ten times within the first 10 seconds of every minute for ten minutes, and your developing is done. The solution may be used four times during the day before discarding. The film is then washed for 5-10 minutes,

"seesawed" through a soapy solution (Photo-Flo), and hung to dry in as dust-free a place as possible. *This formula was developed for Kodak Verichrome-Pan or Plus-X film only;* these are the films we recommend a program be based around. Color will not work at all, and other films require modification of the formula (see bibliography).

Monobath formula

We mix 8 liters at a time. It keeps for a few weeks if anti-oxidation floating lids are used in chemical storage tanks. Somewhat expensive, but essential. Mixing takes some time, but after practice you can expect to mix 8 liters in less than half an hour. You will need a balance scale, raw chemicals, stirrer, chemical storage tank with spigot and floating lid.

This formula is not yet available commercially. It was developed by Charles Gold, formerly of Indiana University, now at Kenyon College, Ohio, and is available through his courtesy.

Mix in this order only:

	1L	8L
Water @ 90 degrees	600cc	4800cc
Sodium Sulfite	45g	360g
Phenidone[1]	4g	32g
Hydroquinone	3g*	24g*
Sodium Hydroxide (caution)	4g	32g
Sodium Thiosulfate[2]	100g	800g
Gluteraldehyde[3]	10cc	80cc
Water to make	1 liter	8 liters

*Add a pinch of the hydroquinone, then the sodium hydroxide, then the rest of the hydroquinone. This aids in dissolving the chemicals properly.

Foldout negative storage envelopes greatly aid students in keeping their negatives intact. Any dust, dirt, finger-prints, peanut butter, or scratches will show up on final prints.

1. Phenidone is difficult to obtain, and the single really expensive item in this formula; still worth it, it comes out to approximately 1¢ per roll for developing. You have eliminated other chemical costs. It is an Ilford chemical and is available in 1 lb. sizes through any Ilford distributor. Do not buy it in smaller quantities—its price is prohibitive.

2. Sodium Thiosulfate is substantially cheaper if you purchase this in 100 lb. bags. 85¢/lb. or $22 for 100 lbs. Available through large camera stores or on special order. It keeps, and is worth the investment. Similarly, sodium sulfite is cheaper in 25 lb. containers.

3. Gluteraldehyde is also difficult to obtain. It is an Eastman Organic chemical, available in 3 kg. bottles from any photo or chemical house which handles this line, usually on special order. (Fisher Scientific in Chicago has this in stock.) Allow time for this. You will need to buy it only once. It comes in two strengths, the weaker and cheaper is fine. All other chemicals are readily obtainable.

Printing

Contact sheets

Essential for study, exercises, and an awareness of where you're at visually at a particular time. Also the only way to seriously see what your negatives look like. It is one sheet of photographic paper with all the negatives of one roll of film placed on top of it (negative emulsion to paper emulsion), exposed to light, then processed. The result is a page, with photographs the same size as the negative. We used an old 8 x 10 contact printing machine, but a sheet of glass to hold the negatives down, and light from the enlarger works fine. We insisted that students make contact sheets before making enlargements, and carefully went over the selection process with them. (See Contact Sheet Voting, Exercise 4.)

Enlargements

You will need to read more extensively about this in any of the photo books listed, but basically an enlargement is made by placing a negative in the enlarger, which is a combination of light bulb, housing, condenser, bellows, and lens which projects the negative image onto a baseboard. Moving the enlarger up or down changes the size of the image, much as moving a slide projector closer to or farther away from a wall does. Photographic paper is placed in an easel on the baseboard, is hit by the required amount of light, and processed to give the enlargement. Light cannot go through the dark areas of the negative, does go through the clear, and since white light causes photo emulsions to darken after processing, the negative image is reversed and becomes positive. A test strip is required to judge correct exposure, and this process teaches mathematical concepts as well as aesthetic ones, while requiring a careful, step-by-step procedure on the part of the student. The strip is a small piece of photographic paper, placed in a significant area of the picture, exposed sequentially to different amounts of light. This indicates which time will produce the "best" print. Contrast can be controlled through different grades of paper available.

Stabilizer

In both contact prints and enlargements, we mention that the prints must be processed after exposure to light. This traditionally meant at least three trays of chemicals, taking up several feet of space, and approximately 15 minutes per print, plus the necessity of running water to wash chemicals off of the prints, which took an additional half hour. We have eliminated all of this through use of a stabilization processor, which takes approximately 1½ feet of space, does not need running water, and delivers a finished print after exposure in 10 seconds. This is the second technical heart of our photographic system. The quality is indistinguishable from conventionally processed photographs, and saves vast amounts of time. Large numbers of students could not go through this program without it. The prints last approximately five years, which seems long enough, but conventional re-fixing and washing can make the prints "archival" (50 years +). We went this extra step for all prints selected for final shows. It can be done at any time. This machine enabled us to produce over 15 prints in a half hour session.

Students on all levels had little difficulty in learning all the required photographic processes. Practice and almost one-to-one instruction in the beginning was essential. After that, we sometimes got in the way.

Budget

This is what we used. Your individual situation will determine how much of this can be cut, expanded, or changed.

Equipment

4 Bogen 22A enlarging kits with 2 lenses ea.[1]	@ $85		$ 340
4 Time-O-Lite GR-72 timers	@ 22		88
4 8x10 Speed Ez-Els[2]	@ 5		20
1 Agfa Rapidoprint LD-14 Stabilization processor[3]			445
1 kitchen timer			5
2 bulb type or other safelights	@ 10		20
1 glass for contact sheets			2
1 2½ gal. Arkay Vue-Thru Chemical Storage tank with spigot and floating lid			20
1 17 in. East Street Gallery Archival Film Washer[4]			26
		Total	$ 966

Materials and supplies

6 Kodacraft developing tanks with aprons and weights	@ $ 5		$ 30
4 changing bags	@ 6		24
1 thermometer			4
4 16 oz. Yankee plastic graduates	@ 2		8
1 chemical mixing paddle			1
2 dispenser kits for stabilization chemistry	@ 3		6
1 8x10 tray			3
		Total	$ 76

Chemicals

25 lbs. Sodium Sulfite		$ 10
1 lb. Phenidone		25
1 lb. Hydroquinone		3
1 lb. Sodium Hydroxide		2
100 lbs. Sodium Thiosulfate		25
3 kg. Gluteraldehyde		8
1 qt. Photo-Flo		2
2½ gal. cubetainer Agfa Activator chemical for stabilizer		15
2½ gal. Agfa Stabilizer chemical		20
	Total	$ 110

Paper

5 x 100 sht. boxes Agfa FC 1 #2 Contact paper, 8x10	@ $17		$ 85
5 x 100 sht. boxes Agfa FP 1 #3 Enlarger paper[5] 8x10	@ 17		85
		Total	$ 170

Other

5 100 pkg. folding negative storage envelopes	@ $ 5		$ 25
Clothespins, wires			5
2 negative cleaning brushes	@ 3		6
		Total	$ 36
		Grand total	$1,358

Optional

Gra-Lab Timer	$ 30
8x10 contact printer	50
Premier 8x10 paper safe	25
Dry mount press	100
Tacking iron	10
Mount boards and tissue	30
Beam scale	30

Camera stores

Find one you can rely on. In Chicago, we found Darkroom Aids, 3449 N. Lincoln Ave. to have the best prices and best attitude. They specialize in used equipment and you can find *anything* there. A pleasure. Central, Standard, and General complement this.

1 Enlargers—there are many different kinds and prices. This is a tested, basic, solid, cheap, excellent machine. Highly recommended.

2 Easels—paper slides right in. Adjustable easels tend to fall apart, unless you spend a fortune.

3 Stabilizer—this is an excellent, medium priced machine. Avoid the cheaper ones if possible— rollers do not last, and cleaning, which is essential, is more difficult. General Camera in Chicago offers this at this price with a lifetime guarantee, which helps school boards justify the expense.

4 Film washer—best and cheapest. Available from East Street Gallery, 723 State St., Box 68, Grinnell, Iowa 50112. This size handles an entire class.

5 Paper—you may wish to get some with a higher contrast. #4 is extremely helpful with "thin" underexposed negatives.

Bibliography

Annotated

A Handbook of Structured Experiences for Human Relations Training, Volumes I-IV. J. Williams Pfeiffer and John E. Jones, editors. University Associates, publisher.

A particularly useful set of books, including approximately 100 clearly outlined exercises and activities. This material is easily adaptable to various educational and therapeutic settings.

Taking Part: a Workshop Approach to Collective Creativity. Lawrence Halprin and Jim Burns. The M.I.T. Press, Cambridge, Mass. 1974.

A wealth of ideas and energy from a community of people who live and design their lives as art, tying in dance with city planning, Gestalt therapy, recycling, etc.

Photography: Source and Resource. S. Lewis, D. Tate and J. McQuaid, editors. Turnip Press, Pennsylvania, 1973.

An excellent sourcebook with many different teachers writing about their approach to photography. Information on workshops, publishers, galleries, bibliography, etc.

The Family of Man. Edward Steichen, editor. Museum of Modern Art, New York, New York.

The classic picture book from the photographic and anthropological point of view.

Just Before the War. Newport Harbor Art Museum, Balboa, California. 1969.

Urban America from 1935 to 1941 as seen by photographers of the Farm Security Administration. This catalogue contains the original assignments suggested by Robert Lynd, author of *Middletown,* for documenting the times. Interesting to compare and contrast it with how one would set out to document our own times.

Photography. Phil Davis. Wm. C. Brown Co., Dubuque, Iowa, 1972.

Good introductory book for the teacher, with summarizations in the margins. Covers all areas of photography from history of the medium to all technical processes. Extensive information.

"Monobath Processing as a Teaching Aid" by Charles Gold in *Exposure Magazine,* Vol. 12:2, 1974.

All the information on our monobath. Variations in formula, including how to use the monobath to increase or decrease contrast, problems and solutions, explanation of how it works, etc. Invaluable. Available from the Society for Photographic Education, P.O. Box 1651, FDR Station, New York, N.Y. 10022.

Supplementary

Ideas and orientation

Visual Thinking. Rudolf Arnheim. University of California Press. Berkeley, 1971.

"Cameras Don't Take Pictures." Paul Byers. Columbia University Forum, LX:1:27-31, 1966.

Gestalt Therapy. Paul Goodman, Ralph Hefferline and Frederick Perls. Delta Books. New York, 1951.

Second Collected Writings. Anna Halprin and others. San Francisco Dancers' Workshop, 1975.

Discover Yourself Through Photography. Ralph Hattersley, Association Press, New York, 1971.

Deschooling Society. Ivan Illich. Harrow Books. New York, 1971.

Art Therapy with Children. Edith Kramer. Schocken Books, Inc. New York, 1971.

100 Ways to Have Fun with an Alligator and 100 Other Involving Arts Projects. Laliberte and Kehl. Art Education. 1969.

Photographers on Photography. Nathan Lyons, ed. Prentice-Hall. Englewood Cliffs, New Jersey, 1966.

Dynamically Oriented Art Therapy: Its Principles and Practice. Naumberg, Grune, and Stratton. New York, 1966.

Art and Photography. Aaron Scharf. Penguin Books, Ltd. Baltimore, 1974.

Picture books

Jacob A. Riis, Photographer and Citizen. Alexander Alland, Sr. Aperture, Inc. Millerton, New York, 1974.

Sweet Flypaper of Life. Roy deCarava and Langston Hughes, Hill and Wang. New York, 1967.

Family. Ken Hyman and Margaret Mead. The Macmillan Co., New York, 1965.

Photography in the Twentieth Century. Nathan Lyons, ed. Horizon Press in collaboration with the George Eastman House. Rochester, New York, 1967.

The History of Photography. Beaumont Newhall, Museum of Modern Art, New York, 1964.

The Dream Collector. Arthur Tress. Avon Books, New York, 1972.

Technical information

Photography: A Handbook of History, Materials and Processes. Charles Swedlund. Holt, Rinehart and Winston, Inc. New York, 1974.

Organizations and institutions

1. Society for Photographic Education, Peter Bunnel, President, P.O. Box 1651, FDR Station, New York, N.Y. 10022. The national office is in New York; there are also several regional chapters, primarily college oriented. Holds annual meetings and publishes "Exposure" magazine.

2. The American Art Therapy Association, Don L. Jones, President, c/o Harding Hospital, Worthington, Ohio. Certifies art therapists and holds annual meetings.

3. The Illinois Art Therapy Association, Ralph Levinson, President, 923 W. Sheridan Rd., Chicago, Ill. 60613. Holds monthly meetings.

4. Photography Instructors' Association, California. Newly formed organization for elementary and secondary school teachers of photography. Open forum in "Petersen's Photography Magazine" through which this organization may be contacted.

5. George Eastman House, Rochester, New York. A museum of photography, a research and learning institution, and a publishing house. Membership available. Offers a slide set history of photography for $350 mounted or $250 unmounted. This is not recommended unless you have an exorbitant budget. Slides can always be made from books when necessary. Also, City and University libraries, the National Endowment for the Arts/Washington, D.C. 20506, the National Film Board of Canada, and several educational film houses offer a wide variety of films, either for free or for a nominal fee.

6. International Center of Photography. 1130 5th Avenue (at 94th Street), New York, New York 10028. A museum and educational institution which promotes the practice and understanding of documentary photography. Membership available.

7. Smithsonian Institution, Washington, D.C. The greatest repository of photographs and negatives of American documentary photographers. Copies of photographs may be ordered from their catalogue for a nominal fee. A gold mine. Membership in the total institution available.
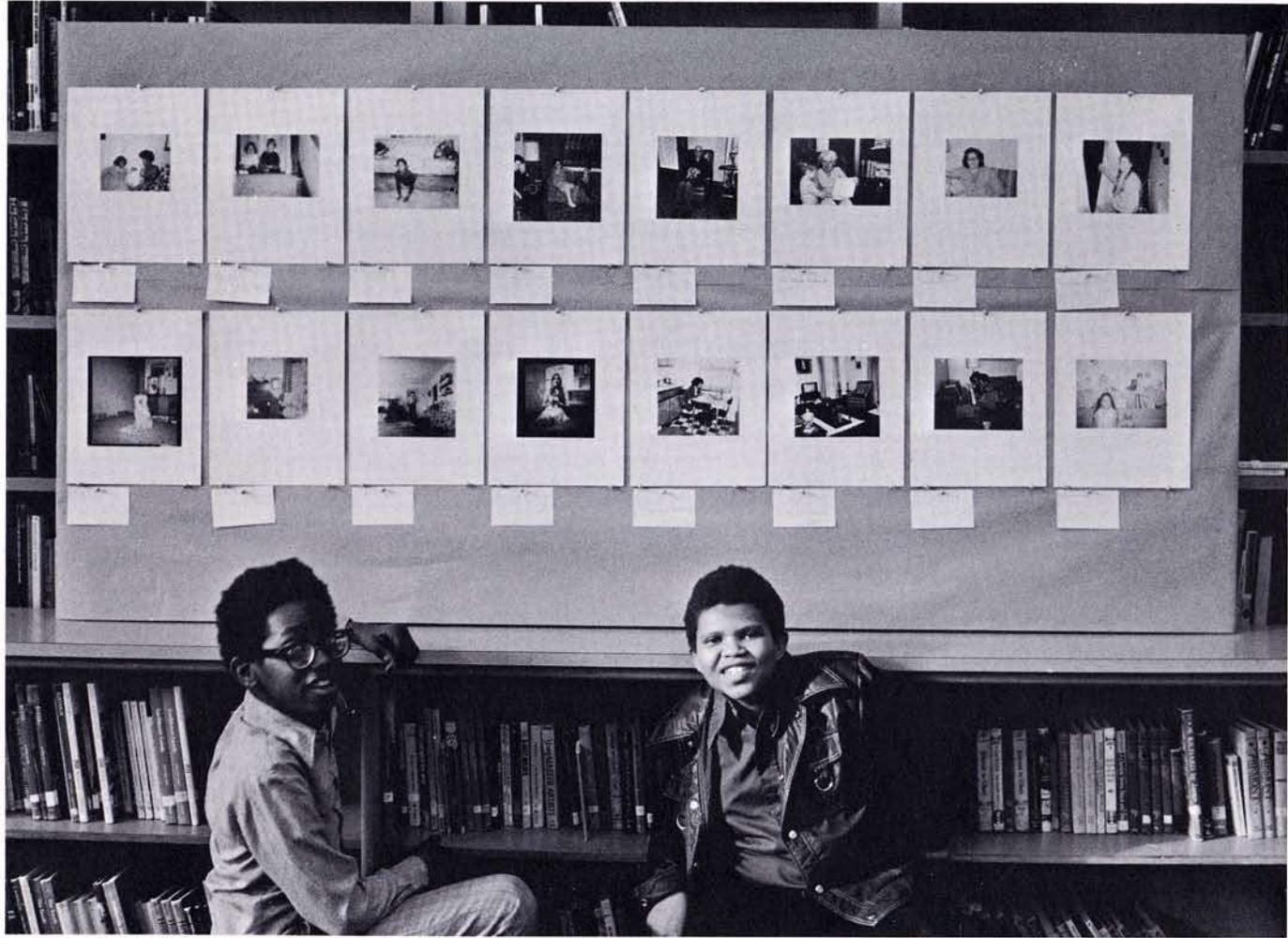
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