Art Foundations Program: A Design Study Proposal

Behaviorist Design Project Study Proposal
for
ED333a

Submitted to Dr. James Greeno and Dr. Deedee Perez-Granados

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July 23, 2003
I. The Learning Problem

At North Central High School (NSHS), located in Houston, Texas, art seems to be of little importance to many of the students. Information from Principal Douglas McGee revealed that after taking the required one semester art class, very few students continue with additional art classes. Principal McGee’s main concern was that there was little interest in art classes, and he wanted to know what could be done to keep his students “well-rounded.” Principal McGee surmised:

“There could be a variety of reasons that students are not continuing to study art, such as students wanting to pursue other electives, or lack of confidence in their creative abilities.”

The initial research conducted for this study was to informally poll students. We were interested in determining why the students did not show interest in the art classes, and asked, simply “Why have you not enrolled in additional art classes?” Responses varied, from “Art classes are for the creative kids,” to “I can’t do art; I have no natural artistic talent.” Only 15 of the 125 students polled said they took and enjoyed additional art classes at NCHS.

During these initial interviews, we identified some former art students who revealed an overwhelming frustration with the classes and the way the classes were taught. The students did not feel their skills had improved, and therefore felt they had learned very little. Furthermore, they felt the teacher did not give them much encouragement in their work. The students appeared to lack motivation to even enroll in classes they felt were not giving anything back to them. Based on these initial conversations, we assume that students are not learning a foundational set of art skills. Symptoms of this include a lack of interest and lack of engagement.

II. Learning Goals

We understand that there are various aspects involved in creating art, outside of simply possessing a set of art skills. The artist's personality, freedom of thought, and perspective on the purpose of his work of art all contribute to its essence. But in order to draw, for example, a cat sitting on a fence, the artist must have the ability to apply a set of skills, which are rule-based. The artist, in this example, must be able to accurately portray the source of light, depth of the background, shape and texture of the cat, in contrast to the shape and texture of the fence, etc.

With this perspective, we set out to discover how to develop an artist who possesses, and is able to apply, this set of skills. The learning goals for our proposal are as follows:

- Develop stronger art foundation skills
- Increase interest in art and art classes
III. Design Principles

The proposed study, which is intended to address a learning problem at NCHS, has in large part been informed by the work of Robert M. Gagne (1965). As presented by Greeno, et al, the design principles which support the proposed study include:

1. **The learning environment should involve routines of activities for effective transmission of knowledge.** Incorporating routine into the classroom, as a method of practice and skill development, is an essential part of creating a successful learning environment. For the teacher to create a valuable lesson plan, he should provide opportunities for students to witness correct methods, as often as necessary. In concurrence with Gagne, we believe that people learn in the sense of a behavioral change that is observable by others. Therefore, as perceived by the instructor, students should be allowed to continue rehearsing their skills, as their proficiency will improve with practice. In order to create associations for the student, exercises should be repeated until the relevant skill has been appropriately acquired by the student.

In addition, we believe that expert knowledge should be solicited and incorporated in determining what type of routine should be put in place. The learning environment should be based on an understanding of how experts utilize a routine in developing more complex skills, and what types of routines those experts perform in both refining and maintaining their skills. **Assumption:** the current art curriculum does not effectively incorporate well organized lesson plans or expert knowledge.

2. **The learning environment should require clear goals, feedback, and reinforcement.** According to Gagne (1965) a learned capability refers to “what the learner is able to do when learning has been accomplished.” Therefore, we believe it is imperative to be clear about which capabilities students are intended to acquire. Since the learning goals determine the assessment focus, signifiers for what students are expected to achieve should be communicated with them up front.

Furthermore, motivation plays a crucial role in supporting the curriculum, given that students require reinforcement in order to further solidify their knowledge acquisition. We believe that understanding the students’ goals will help us determine what drives students’ motivation to practice, and thus learn, art. **Assumption:** students are not currently motivated, nor are they receiving the correct types of reinforcement, which should be integrated, routinely practiced, and run throughout the curriculum.

3. **The sequence of the curriculum should focus on increasing levels of complexity.** In order to effectively present and teach new material, an instructor should control the sequence and pacing of the course. New concepts should be introduced consecutively, with the starting point based on the learner’s current level of understanding. Given that “super-ordinate capability will be more readily learned…
if the subordinate capabilities have been previously acquired and are readily available for recall” (Gagne, 1965) students should only be exposed to a higher level skill when they have effectively mastered the current skill.

Moreover, in order to guide the student along the best learning route, curriculum should be based on expert models that take into account the hierarchical progression of learning. **Assumption: expert knowledge is being neither solicited, nor used, in order to determine the most effective sequence of activities.**

4. **Assessment should focus on knowledge components.** The purpose for assessment in the classroom should be to elicit the specific skills which were indicated as learning goals, answering the questions, “what has been learned?” and “how much has been learned?” We believe a successful act of learning is demonstrated through a student’s ability to do something that he could not previously do, and that the knowledge a student has gained can best be measured through testing the skills he has acquired. Therefore, it is necessary to first determine what skills the student possessed previously, before attempting to determine what skills the student possesses now.

In order to help students continuously progress, achievement tests should assess if the student has acquired the basic components which are necessary for more complex capabilities, as well as if the student has successfully “chained” these basic components. The development and implementation of these pre- and post-assessments should be based on expert knowledge. **Assumption: effective assessment is not in place in order to determine student achievement in acquiring the desired art capabilities.**

**IV. Proposed Study**

In order to address the problem, there are key questions we intend to answer. Our questions are in alignment with the following theory, which (preface):

The development of these tests relies on participation by knowledgeable experts in the subject matter disciplines of the test who provide authoritative judgments that the items in the test accurately represent knowledge in the discipline. A combination of expert judgment and empirical results is used to characterize the difficulty of items. The development of tests also is supported by the technology of analyzing tasks in the domain in terms of component procedures and prerequisites (Greeno, et al., 37).

We must ask the following questions: What are the prerequisite skills that constitute expertise in the different domains of art? And in what order do those prerequisite skills need to be presented in order to foster expertise in a given art domain? And finally, how can we gather information from students about what motivates them?
1. **Determine the Prerequisite Skills that constitute expertise in each art domain.**

We assume there are certain basic skills one needs to know and master at different levels of every art domain (e.g. drawing, painting, sculpture, etc.). To identify these skills and understand the processes and routines involved in acquiring those skills, we will look to the knowledge of experts. We will first interview professional artists, and college-level art educators. The types of questions we should ask are:

1. How long have you studied?
2. What were the things you learned as a novice, as an intermediate and as an expert? (sequence of learning)
3. List the skills necessary for your field
4. What routines and practices do you follow in order to gain skills?
5. What routines and practices do you follow in order to refine skills?
6. What routines and practices do you follow in order to maintain skills?
7. Describe the elements of high and low skill level.
8. Describe your creation process.
   (e.g. sketching, to rendering, to shading)

![Expert Set of Prerequisite Skills, Expert Order](image)

**Figure 1**

From this inquiry we intend to gain clear guidelines for the types of skills necessary for mastery, a basis for evaluating those skills and a potential understanding of the types of routines useful in teaching those skills. (Figure 1)

2. **Determine appropriate sequence (in order of increasing complexity) of those prerequisite skills towards expertise in each art domain.**

After determining a set and number of prerequisite skills, we will seek to find the most effective order of those skills for instruction. We also intend to gain understanding about which skills reside at specific levels of a learning hierarchy (i.e.: which set of skills are dependent upon which)
We propose a series of prototypical lessons in pursuit of this understanding. Exercises will present component skill instruction in various orders. We will then evaluate a prototype’s effectiveness in the students’ acquisition of expert problem-solving skills.

Testing the Prototypes
1. Pre-test
   a. This involves testing students on an expert skill, such as painting a Still Life, thus establishing the current skill level
2. Implementation of 3 different Prototypes to 3 groups of students will take place over one week. (Figure 2)
   a. Group 1- Prototype will be the Expert Order as determined by the expert.
   b. Group 2 - Prototype will be specifically developed to preface lower level Component Skills with higher ones.
   c. Group 3 - Prototype will be a combination of Component Skills selected by the expert to be close to the “correct” combination, but with 1 of the items out of sequence.
3. Re-test
   a. Students will paint the same Still Life, in order to evaluate improvement

![Figure 2: Varying Orders of Prerequisite Skills](image-url)
Students’ still-life paintings (pre- and post-) will be scored using the criteria established by experts during their interviews. Scores from the re-test will be compared to determine which Prototype was most effective in increasing expert skill (Figure 3). We assume that the students in Group 1 will create better still-lifes. There is room in this study then for our assumption to be disproved, such as if Group 3 created equally or higher-scoring paintings than Group 1.

What we also hope to learn from this study is students’ current proficiency in individual component skills. Understanding this can help determine at what level a proposed design solution should begin instruction, and which component skills need not be addressed.

### 3. Determine student motivating factors

In order to create desirable rewards for their efforts in learning art skills, we intend to find out what motivates the students at NCHS. The goal is to gain an understanding of what drives them in and out of school. We propose to survey a general population of students at the school, and ask some of the following questions:

1. What are motivating factors in the classroom?
   a. Do they like to hand in assignments and have them returned with letter grades and private comments from instructors?
   b. Do they prefer verbal feedback from the instructor, in the form of in-class evaluations?
c. What does success mean to them?

2. What are their interests?
   a. What are their favorite foods?
   b. What are their favorite types of music?
   c. Favorite films, TV?
   d. Where do they go with their friends on the weekends?
   e. What types of after-school activities are they engaged in?
   f. What kinds of sports do they play?

We also intend to talk to the teachers and athletics coaches at NCHS about motivating students. They are the closest to knowing what motivates students in a school environment. We believe the careful examination and informed combination of pertinent information gathered from the coaches, teachers and students surveys regarding motivational factors would give us a clear idea of what drives students at NCHS. Some of the questions we would ask teachers and coaches:

1. What types of rewards do your students most respond to?
   a. On the field (sports)
   b. In the classroom
2. Do you take them on field trips?

The goal is to find opportunities to create a structure around which we can design effective art instruction through these inquiries. This instruction must use motivation and reinforcement as a factor in the development of a very specific series of art skills.

V. Prospective Design Solution

We expect the results of our study to help us determine what is best for NCHS’ art instruction. A study should tell us whether the curriculum would benefit from incorporating the theories espoused by our Prototype Models. We assume we will find our Prototype Models to be effective building blocks for a solution to the school’s learning problem.

We are particularly intrigued by design foundations curriculum much like that of the Bauhaus whose instructional model lays an initial groundwork for many disciplines. We envision a comprehensive solution in the form of a foundations art program. This program would entail a series of exercises in the development of specific prerequisite skills (as determined by our study) common to all art domains. These exercises would entail routines and practices (determined through expert knowledge) that follow a component-to-composite structure.

Initially, simpler skills would be practiced regularly until they were thoroughly acquired. For example, the teacher will demonstrate how to draw a perfect circle. The students will repeat drawing a perfect circle over and over until the gesture becomes easier and more natural, and eventually every student will be able to draw a perfect circle. Exercises of greater complexity would follow, perhaps entailing the perfect rendering of more
complex shapes. This structure could be instrumental in a model for teaching skills in seeing/manipulating color. Initial learning of individual colors (signals) would evolve into learning to discriminate between the various types of colors - Red, Yellow, Blue. Learners could move on to understand the relationships between these colors - complementary, analogous, warm, and cool (concepts). Further development could explore the rules that explain the effects colors have on one another, and so on.

Motivation would be a fundamental aspect of our proposed solution. As acquired through an informative study, the students’ interests could be determinates in developing reinforcement. We assume that our proposed model would implement structures for two types of reinforcement:

1. Instructor-to-Student reinforcement- At regular intervals giving the student positive feedback on his or her skill development.
2. Class-to-Student reinforcement- Positive assessment, given by the group as a whole.

We believe learning is most effectively reinforced when instructors provide the type of feedback that students respond to most positively. Learning activities could be punctuated with personal rewards or class incentives drawn from a library of common interests and motivations. By creating a classroom model that relies not only on repetition and skill building exercises but rewards and motivation, we will undoubtedly enhance learning in addition to creating positive and fruitful learning environments.

VI. References
