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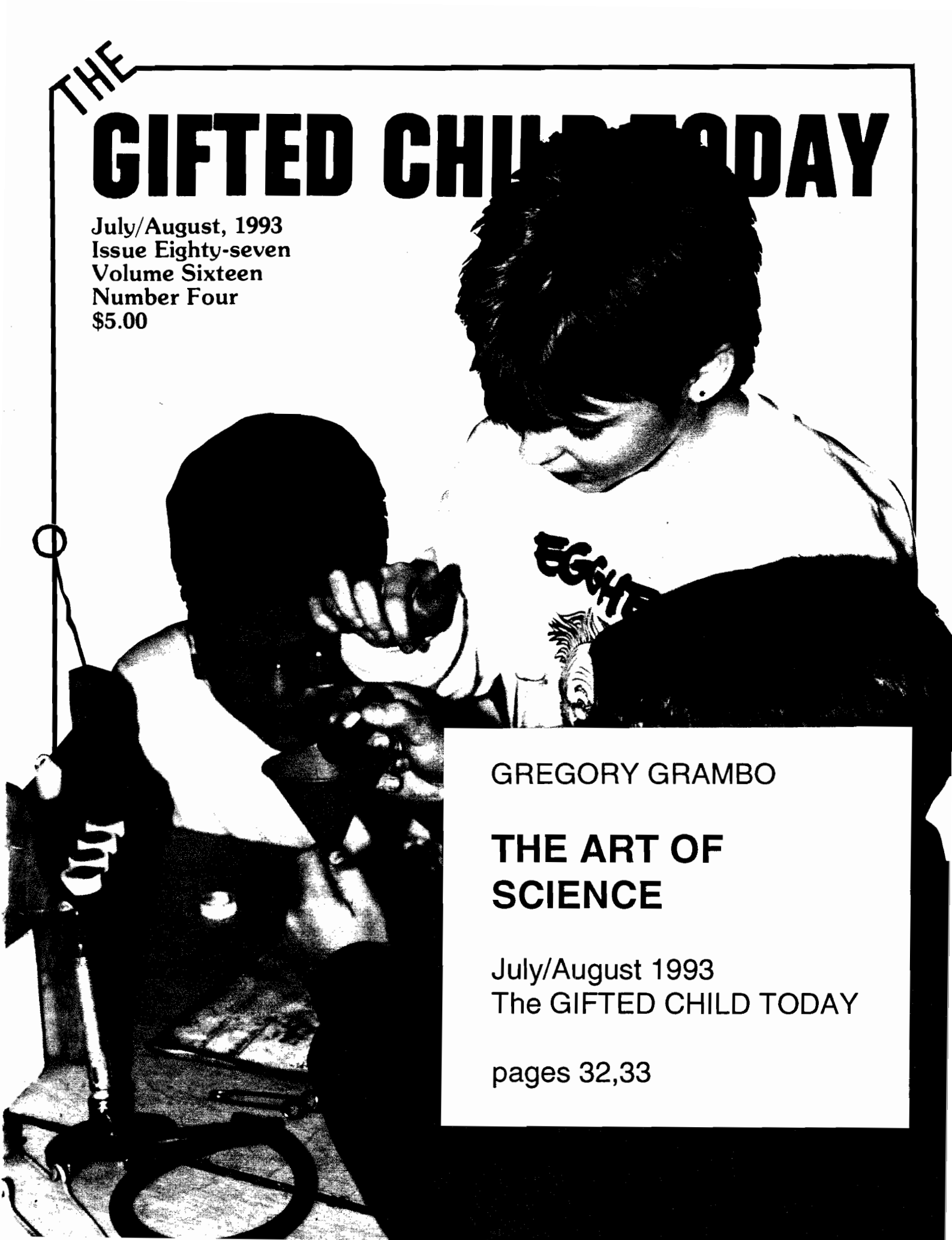

GREGORY GRAMBO

THE ART OF SCIENCE

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32 **Gregory Grambo** *takes a hands-on approach to* The Art of Science. *Dr. Grambo is a teacher of Science at The Louis Armstrong Middle School. He can be contacted at The Louis Armstrong Middle School, 32-02 Junction Blvd., E. Elmhurst, NY 11369.*

The Cover:

- The cover picture this issue was taken by Gregory Grambo. Dr. Grambo authored and took the accompanying photographs for his article "The Art of Science," pp. 32-33.

The Art SC

Above, students examining a crayfish.
At right, students testing soil pH.

Science is a method by which solutions can be found for many problems: it is not just a series of facts and figures. In many elementary schools, science teaching may consist of a table in the back of the room with a dinosaur model and a shell on it. This happens because many elementary school teachers are not science majors and may feel very uncomfortable and inadequate teaching science to their students. I began my teaching career as an art teacher and then changed fields and became a science teacher.

I found that many of the ideas and concepts for teaching both art and science were very similar. Art is usually taught through a hands-on approach because paint, markers, pencils, and crayons lend themselves to this method of teaching. Teachers in an art class usually have their children in small groups or clusters working together or individually. In an art class there are monitors for handing out supplies and there is time for clean-up. Science can be handled this way also, if one can live with a lot of activity going on at the same time.

In both art and science, children have a better chance of progressing if they are allowed to actually perform tasks rather than just seeing something on the board or hearing elicited responses.

Before beginning a hands-on science lesson or unit, the teacher must accept and adhere to the following: it is more important for the children to learn the process by which an outcome arises rather than just remembering the outcome. The process teaches the child how to think and how to reason out an answer. The outcome only teaches the children to memorize a fact.

Science experiments employing a

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By Gregory Grambo

Science student testing soil samples.

hands-on approach should begin with an idea and a desired outcome for students. There must be ample "play time" for students to arrive at that outcome. When I began writing science tasks for my classes, I began to think of questions and experiments that the children could do to reach the outcomes that I wanted them to know.

The use of every day objects rather than fancy scientific apparatus in my science lessons, makes science more real and less distant to the children. I give them objects they can relate to and can also find at home in case they wish to show someone or test their results at another location. The children are given a box of labeled equipment that they will need and a list of all the materials in that box. In order to keep the materials neat and in one piece, I try to make the children understand that they will be held responsible for all materials in their box.

The children now get the experiments which have been designed for them. There are several ways to set up hands-on experiments. Activity cards, posters, experiment sheet demonstrations, and learning centers are only a few of the ways. In all the methods, questions and directions are written down or taped, which direct the children to do some task and record the outcome in some way.

In any hands-on approach there will be noise and movement. Students will learn how to share ideas as well as equipment. Classroom management is important in a hands-on science room. Since there is noise, sometimes it will be hard for you to get control of the children unless you set up some system in advance by which the children will stop and look for you when you count, ring a bell, press a buzzer, or use any other pre-arranged signal. Safety is also important, as noise and movement may sometimes lead to confusion for the children. If your lesson is structured, confusion will diminish.

In summary, for a successful hands-on approach to science teaching to take place, the leader must remember that:

1. Science should be an activity subject.
2. Learning the process has more value than memorizing the outcome.
3. Use everyday objects (as opposed to fancy scientific apparatus) whenever you can.
4. Aid the youngsters in becoming responsible citizens by making them responsible for their equipment.
5. Questions and directions for the task as well as recording its outcome should be made clear to the students.
6. Some noise and movement should be expected, but chaos should not be tolerated.

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SCIENCE

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