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CHAPTER SIXTEEN

The ADAPT Workshop and Its Legends

Robert G. Fuller

Almost from its beginning, the ADAPT project had faculty development workshops as one of its products. Early in the ADAPT project the staff agreed that ADAPT was not a set of curricular materials to be developed and marketed. Rather the ADAPT faculty saw the insights gained from Piaget's work as a different way of understanding college teaching. This understanding may manifest itself in active learning classroom exercises based on the Learning Cycle. Perhaps, more importantly, the constructivism of Piaget transforms the mission of the college teacher and it provides clues to proper teaching behaviors. The best way to share the Piagetian ideas with others is through an active learning experience. Hence, the workshop on *College Teaching and the Development of Reasoning* was developed by the ADAPT faculty.

The Development of Reasoning workshops date back to December of 1973. At that time, Professor Robert Karplus was putting together a proposal to the National Science Foundation to develop a workshop on Piaget for physics teachers. After a visit to Lincoln in 1973 he invited me to serve on that AAPT task force to develop the workshop. During that same time our team at Nebraska was writing our proposal to submit to the Exxon Education Foundation. It was only natural that we include a workshop for our UNL colleagues in the proposal.

In many ways our present workshop is the same as the original workshop constructed by Karplus and the AAPT task force in 1974. The first workshop, *Physics Teaching and the Development of Reasoning*, was offered at the annual AAPT-APS meeting in Anaheim, California in January of 1975. Almost all of the content in our present two-day workshop was in that first workshop. It was offered in a three-hour period. More than 100 physics teachers walked through the workshop that first time.

I returned to Lincoln with the AAPT materials in hand and one days experience in leading the workshop. Our ADAPT task was to broaden it to include other disciplines besides physics. In addition, Carol Tomlinson-Keasey urged us to add a section on self-regulation. We offered our broadened and modified workshop on our own campus in late March of 1975. During the last week before the workshop we all worked hard to get our own materials ready. We had to show our materials to our faculty colleagues. This workshop process changed us from a group to a team.

We maintained our contact with Karplus and his group at the Lawrence Hall of Science. They generated additional workshop materials for biology, chemistry, earth science, and general science. These materials are primarily intended for pre-college teachers. They have been printed and bound into book form¹.

The description of the ADAPT workshop follows:

The Workshop on College Teaching and the Development of Reasoning can be flexibly offered within a 12 to 16 hour time period. It is a modular, reasonably self-paced, opportunity for faculty members to become aware of Piaget's theory of cognitive development, its relevance to college teaching, and strategies for effectively incorporating these ideas into classroom instruction. The Workshop includes participant analysis of reasoning skills (one's own first and then those of students), film and videotape portrayals of levels of reasoning, sample classroom demonstrations, analysis of educational materials, and substantial reading of relevant articles.

The Workshop offers teachers not only information about, but also experience with, the Piagetian stages of the learning process: teachers are then encouraged to discover the implications for their own disciplines. They receive sufficient Piagetian theory to have a model by which to interpret the different ways students cope with college level material.

Research findings have shown that most college freshmen have great difficulty applying what Piaget describes as "formal operational thinking." Our own experience and research confirms these findings for freshmen at the University of Nebraska. Yet satisfactory understanding of nearly all college level courses presupposes that all students are using formal thought.

Learning to distinguish concrete operational from formal operational problem solving behaviors is very useful to educators. Through this training, workshop participants learn to recognize student behaviors which they had previously been unable to account for -- much less respond to -- as a function of cognitive levels. The ability to recognize the Piagetian stages is a promising first step toward promoting student growth.

Furthermore, we have found that as college teachers we are no less dependent upon experience for learning new material than are our students. We can confirm, and our workshops demonstrate, that even formal thinkers learn more quickly and surely in situations where they engage in concrete activities. The knowledge derived from reading about theory and application is no substitute for the comprehension derived from the active learning situations provided by the workshop. Participants who have explored and defined their own learning processes are much better to apply what they know to develop learning in others.

Outline of the Workshop

- Modules 1-4: How people think; the Piagetian stages of development; Concrete Operations and Formal Operations.
- Module 5: Recent Research Findings
- Module 6-7: Analysis of Test Questions, Class Assignments, and Textbooks
- Module 8-9: Self-Regulation; The Learning Cycle, Sample Classroom Activities
- Module 10 Teaching Goals and Strategies
- Module 11: Implementation and Suggested Readings

{Note added in 2007: The workshop materials are available for examination on the ADAPT website: <http://digitalcommons.unl.edu/adaptworkshopmatls/>}

The Staff of the Workshop

The faculty who lead the workshop learned to apply Piagetian theory to a variety of disciplines through their association with the multidisciplinary experience-based program for freshmen at the University of Nebraska-Lincoln. That program, called the ADAPT Program, was begun in 1975, with support from the Exxon Education Foundation. Workshop staff members have developed materials for use in their disciplines and will help participants to do the same.

The workshop team includes professors of anthropology, economics, educational psychology and measurements, English, history, mathematics, philosophy, and physics, associated with the ADAPT program at UNL.

Since our first workshop we have done workshops at institutions all over America. We did our first off-campus workshop at Xavier University of Louisiana early in 1976. Since then we have lead workshops from Canada (Calgary University) to Florida (Miami-Dade Community College), from the East Coast (College of Charleston) to the West Coast (Grossmont College). We have been to large universities (University of Michigan) to small private colleges (Suomi College). We have even been invited back to the same institution (Western Michigan University and Baylor University). In addition to these local workshops, we have lead regional workshops at eleven field centers for the NSF-AAAS Chautauqua Short Courses from 1976 to 1979. We even offered our workshop at a Jean Piaget Society meeting in Philadelphia.

Since our workshop is a human process activity rather than content transmission course, no discussion of the workshop would be complete without some mention of its legends.

We travel to our workshop sites accompanied by a 90 lbs. wooden box of mirrors, dice, and miscellaneous apparatus as well as a cardboard carton of printed materials.

So far, we have never arrived at a host site without these two items. We have had some close calls with our baggage being separated from us by the airlines. But the two boxes have always arrived at least before we have needed them for the start of a workshop.

On one trip our wooden box was dropped by some airlines person and the side split off. Our gracious host, a mechanical engineer, kindly glued the side of the box on the top so were not able to put the top back on the box.

One team of leaders sought to return to Lincoln with freshly picked grapefruit from an orchard in Florida. As they rushed to the airport with their luggage and car full of grapefruit, they were passed by a truck loaded with grapefruit. While turning off the highway, the truck generously and accidentally dumped its load of fruit onto the car of our heroes. As they drove squishing and frantically down the ramp towards the airport, they were rollingly followed by hundreds of grapefruit.

Another team, after emptying a suitcase of printed material, started back to Lincoln with a suitcase containing frozen shrimp. The shrimp brine was dripping across the floor of the home airport. The suitcase forever had a terrible odor and was finally destroyed.

One team, arriving late at night to lead a workshop the next morning, discovered the workshop rooms to be use were set up as lecture rooms. They spent two hours carrying tables and chairs from one part of the building to another.

Three of our team went out for dinner one evening only to find the college gates had been closed for the night when they returned. As two struggled over the top of the tall iron gates, the third discovered the gates were not locked.

As I said above, we never lost our materials on a trip. We never have lost ourselves either. We have had some mad dashes through airports and some white knuckle flights, but we have always been at the workshop site ready to go when the time came to start. Well, almost always! One time the airport nearest the host institution was closed because of fog. So our team was bussed from one airport to another. Instead of arriving in the evening they arrived about 2:00 am. The starting time for the workshop was put back to 9:00 am later that morning and the show went on as planned.

The workshops are best when the participants are selected from volunteers who are interested in the development of reasoning. I suppose we have had a total of about 1500 people in our workshops. We have met a few who turned their intellectual backs on all the ideas and activities in the workshop. But we have never had a workshop that did not really excite at least one participant. In every case, the Piagetian framework has spoken to the needs of someone. That makes the workshop a joyous experience for that participant(s) and for the leaders.

We have learned the workshops to be extremely rewarding experiences for us. We learn something new every time we offer a workshop. We think we have provoked a number of our professional colleagues to take another look at their teaching. Many have launched teaching projects of their own. Several have secured external funds and now direct Piagetian influenced projects on their own campuses.

¹ Development of Reasoning Workshops, Lawrence Hall of Science, University of California, Berkley, CA. 94720