DOCUMENT RESUME

ED 289 729 SE 048 814

AUTHOR Cobern, William W.; White, John E.
TITLE Science Teacher Training In a Five-Year Developmental Liberal Arts Program.
PUB DATE 88
NOTE 9p.; Paper presented at the Annual Meeting of the Southwest Regional Division of the Association for the Education of Teachers in Science (1988).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Science; Course Content; *Course Descriptions; *Educational Philosophy; Education Courses; Higher Education; Internship Programs; Liberal Arts; *Preservice Teacher Education; Schools of Education; *Science Education; Student Teaching; *Teacher Education Curriculum; *Teacher Education Programs
IDENTIFIERS *Austin College TX

ABSTRACT

This report to the 1988 annual meeting of the Southwest Regional Division of the Association for the Education of Teachers in Science details the Austin Teachers Program (Austin College, Sherman, Texas). The paper discusses: (1) the underlying philosophy of the program; (2) organizational features; (3) the role of liberal arts; and (4) signs of effectiveness. A brief description of education courses for undergraduates and graduates (fifth year) is included. The focus of this report is on science education and concludes with a brief discussion of future plans for science education. (CW)

SCIENCE TEACHER TRAINING IN A FIVE-YEAR DEVELOPMENTAL LIBERAL ARTS PROGRAM

William W. Cobern, Ph.D.
John E. White, Ph.D.
Department of Teacher Education
Austin College
Sherman Texas 75091

A paper prepared for the 1988, annual meeting of the Southwest Regional Division of the Association for the Education of Teachers in Science.

INTRODUCTION

In 1968 a group of educational professionals at Austin College determined that an institution intending to adequately prepare teachers of tomorrow must use time allocations in other than traditional configurations. They further determined that a teacher education program driven by a philosophy such as theirs requires more time than is typically provided for in a baccalaureate degree in education. Therefore, in order to meet their goals they designed a program that naturally and logically spread itself through five years; then they went to the executive bodies for their authorization of both the program and the extra year.

The result, the Austin Teacher Program, abandons the traditional approach to teacher training. First of all, students major in academic disciplines - English, history, mathematics, biology - not in edcuation. Students in the program do take courses such as child psychology, educational psychology, and educational philosophy, but they take them through the departments of psychology and philosophy.

AC students' primary undergraduate exposure to the field of education comes in a four-year sequence of credit and non-credit "labs" that combine theory with practice. During the sophomore lab, for example, students design and teach a seven-to-ten-day unit as a culminating activity for a thirty-hour field experience. The senior lab requires students to teach, under supervision, a one-semester class. By the time AC students enter the fifth year of the program they are likely to have taught more hours in real classrooms than have most people who have finished student teaching elsewhere. It is during the fifth year that the student truly integrates all that has come before, so that when she/he is finally "turned loose" on a classroom as a student teacher/intern, the bulk of that time there is spent on honing skills previously acquired rather than on discovering major deficiencies that must be remedied in a few short weeks. To use Madeline Hunter's jargon, the Austin College student teaching experience is independent practice time - the time when student teachers are expected to perform with few errors.

In order to provide readers with an understanding of the Austin Teacher program, the rest of this paper will discuss (1) the philosophy that undergirds the program; (2) organizational features; (3) the role of the liberal arts; (4) signs of effectiveness.

PHILOSOPHY

What guides Austin Teacher Program are beliefs that the Liberal Arts should serve as a basis for teaching, that pedagogical goals should reflect current knowledge, and that individualized learning will enable our students to provide that same individualization to their students. The following list of philosophical positions best illustrates that philosophy.

Position 1 The Austin Teacher Program is committed to meeting the changing needs of a changing social context. Therefore, it is developmental and flexible in structure, able to make changes as needs arise, basing such change on planned, periodic, qualitative evaluation of the program's effectiveness and of the professional and social contexts in which the program operates.

Position 2 The Austin Teacher Program is based on a Liberal Arts education.

Position 3 The Austin Teacher Program is a five-year program designed to include a professional graduate year which terminates in a master of arts degree.

Position 4 The curriculum of the Austin Teacher Program is designed to assist the student in the development of the knowledge, attitudes, and skills that will enable him or her to teach effectively.

Position 5 The Austin Teacher Program assists the student in designing and implementing an individualized, personalized program of preparation for effective teaching.

Position 6 The student must assume an active role in his or her program of preparation to become a teacher.

Position 7 Just as the Austin Teacher Program is developmental and flexible in nature (designed for planned, periodic change), so, too, are the roles assumed by its faculty.

Position 8 Evaluation of the prospective Austin Teacher- for the purpose of determining teaching effectiveness-is continuous, pluralistic, and subjective.

Position 9 The Austin Teacher Program is based on a cooperative alliance of Austin College, the education department, and the public schools.

Position 10 The Austin Teacher Program assists the student in identifying and responding constructively to the rigorous, sometimes conflicting standards of performance and behavior expected of teachers by society and by all partners to the teacher education process.

ORGANIZATIONAL FEATURES

The program is organized in a way that allows students to concentrate primarily on their majors, electives, and Liberal Arts requirements as undergraduates. During that time they also are allowed to enroll in four "labs" that, beginning with the first one, progressively orient them to the totality of teaching. The fifth year coursework is devoted to one semester of student teaching/internship and two of methods and curriculum courses and/or further academic electives. A list of the courses taken and brief descriptions follows:

Undergraduate Courses

Education 11 — an introduction to the profession, with special focus on the Austin Teacher Program, general educational issues, and the roles and characteristics of teachers in schools. Students observe twelve hours in schools at various levels and try their hand at teaching each other.

Education 12 — an in-depth look at what constitutes a lesson plan. Students spend one third of the time learning how to plan and write up a lesson plan, another third of the time observing teachers, focusing primarily on the lesson, its content and sequence, and the final third of the time in teaching a unit that they have planned for.

Education 51 — an introduction to elements of effective teaching. Using materials developed by Performance Learning Systems students learn how to more effectively interact with their students, as disciplinarians, questioners, counselors, and learning facilitators. A special emphasis is placed on understanding learning styles and incorporating that understanding in lesson plans.

Education 52 — an extended miniature student teaching experience. Each student is assigned to teach one class per day for a twelve week period. During this time students are extensively observed so that they can remedy major deficiencies.

Graduate Year Courses

Education 556 — Topics in Education - a general survey course for all students in which they are exposed to major discipline theories, legal aspects of education, multicultural issues, special education issues, and educational technology.

Education 557 Topics in Elementary Education - basically a course on the elementary curriculum, with other depth studies of general methods, such as learning centers, cooperative learning, and inquiry lessons.

Education 558 Topics in Secondary Education - a course on the secondary curriculum, with special focus on each student's individual teaching field(s), and other depth studies of general methods such as inquiry strategies, research projects, lecture-discussion methods, and group learning.

Education 491 Developmental Reading - a course in which students are exposed to major theories of literacy development, with special emphasis on using whole language strategies to foster literacy development. Included in this course is a thirty-hour practicum. Elementary teachers and secondary English teachers take this course.

Education 598 Research and Synthesis - a course in which students learn to apply research principles to teaching decisions. Included are studies of tests and measurements, analysis of research methodologies, and in-depth analysis of the research in an area of special concern to the student.

Education 576/584 Student Teaching Experience - this is either a fourteen-week experience for those students assigned to student teaching, or a full semester assignment for those assigned to an internship. An intern is a student who has been approved to take a class on his/her own, mentored by a fellow teacher and supervised by one of the AC faculty. Those who have not been approved for such total control of a class, and those for whom an internship is not available receive the more traditional student teaching assignment.

Electives Two or more courses, usually in the student's teaching field(s) or in some academic area which is approved by the department.

ROLE OF THE LIBERAL ARTS

As noted in the philosophical positions the Austin Teacher Program is based on a Liberal Arts undergraduate education. The rationale for that position states the following:

"The Liberal Arts education involves the prospective Austin Teacher in the study of the collective wisdom of humankind's most important learnings, accomplishments, and modes of

thought across a broad front described by the Arts and Sciences. In addition, intensive study in one or two areas of the Liberal Arts provides the student with a comprehensive fund of knowledge and methodology in the discipline(s) s/he intends to teach."

Students at Austin College are required to take a three-course sequence, the Heritage of Western Civilization series, in which, among other things, students are exposed to not only early Western thought, but also to later events, such as the incursion of new scientific modes and their effects on human development. Another requirement is that students select at least one course from each of ten different Exploratory Dimension areas, such as "Formal Thoght and Reasoning", or "Contemporary Social Policy Issues". In addition, Austin Teachers are required to have a sophomore-level proficiency in a foreign langluage.

Preparation to Teach Science

As one can see from the list of courses above, the Austin Teacher Program is a general teacher training program. Just as the study of medicine has basic fields such as physiology and anatomy that must be mastered before a medical student begins a specialty, so we believe that in teacher training there is an essential, common core content. This core includes the areas of basic instructional planning and methodology, interpersonal communication, management and discipline, the nature of professionalism. The core program also includes the very important aspect of attitude development. What we promote is the creative and innovative, the self-confident and independent, the decision maker teacher.

The one area that has received a methods-course treatment is reading. The program has always had a developmental reading course. Later reading in the content areas was added. Now the reading program has evolved into a whole language, literacy approach to reading and writing.

Medical students go on to specialties after their core curriculum. How does the Austin Teacher Program prepare students to teach science? In a since, we do not; that is, we do not graduate master science teachers. What we do is prepare students to <u>begin</u> teaching science, and with the vision and knowledge to become master science teachers. In other words, we graduate students with solid, basic teaching skills and the rudiments of science pedagogy. Our students are good beginning teachers. But we also instill in our students the vision for developing and honing their skills after graduation. In part we do this by acquainting them with professional journals and organizations and by stressing the need to be a lifelong learner. We also do it by keeping in touch with our graduates and through our yearly Bright Ideas workshop. This is a special workshop attended by ATP students, graduates, and area educators. It is a workshop conducted by ATP graduates based on submitted proposals concerning creative teaching ideas or professional issues. Our students gain not only from the presentations but also from seeing our graduates model the concept of self-development and self-motivated, professional growth.

As I mentioned above our students do graduate with some knowledge of science pedagogy. We cannot teach our general curriculum without touching on special methods. For instance, in Lab 12 when students are introduced to basic lesson planning and have to produce and teach a unit of instruction, they do it in some content area. If the lesson is to be a science lesson, the student is referred to the written resource materials available in the Education Department and to the Department's science specialist. When the student is observed in the field, it is both by his lab coordinator and by the science specialist. In the post-observation conference the student and the science specialist specifically discuss content-related issues.

Our students observe in classrooms for many hours. They learn science pedagogy from their critical observations of experienced teachers in these classrooms and through lab seminars where they discuss and assess what has been observed.

We constantly encourage our students to assess their own strengths and weaknesses. We encourage students to develop their own ways of learning science pedagogy by encouraging the use of independent studies with the Department's science specialist or with a member of the science division. Finally, in the fifth year our students take a curriculum course. The elementary curriculum course has a science section. In the secondary curriculum course the science students complete a special module on science pedagogy.

How successful is this approach? We have indicators that it has been quite successful. We have extensive contacts with school principals in Texas and we find that they are very pleased with our graduates. The Texas teacher appraisal results that we have seen indicate that our new teachers rate as well as teachers with several years of experience. Finally, our own follow-up studies indicate that our graduates feel well prepared to begin teaching and have a high degree of self-confidence.

Of course this is not conclusive evidence of the success of our program, and one of our major Departmental goals for the next few years is to develop and implement a scheme for accurately assessing the effectiveness of our program.

Future Plans for Science Education

Our concern at this time with respect to the preparation of secondary science teachers is that they graduate with sufficient knowledge of secondary school laboratory procedures. Our science majors complete a good series of laboratory experiences in their degree programs, but we have found that this does not adequately prepare them to plan, prepare and direct secondary school laboratory exercises. Our plan is to offer directed study courses through the Austin College Science Division in which science students would plan, prepare, conduct and critique a series of laboratory exercises designed for secondary school use. A science professor would consult with students on content and the Education Department's science specialist would be consulted on matters of pedagogy. Assessment would be the joint responsibility of the science professor and science education specialist. These directed study courses would be offered at the graduate level and students would be able to use them as graduate level, discipline electives.