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ABSTRACT

The School of Education at the University of Pittsburgh is discontinuing its undergraduate program in 1990 and will prepare only postbaccalaureate students as teachers beginning in 1990-91. The Master of Arts in Teaching (MAT) program had been developed as a one-year program for liberal arts graduates who want to become teachers. In this context, two fundamental assumptions made by those proposing a fifth-year teacher certification program were investigated: (1) the assumption that undergraduates in Arts and Sciences bring more content area knowledge and expertise to teaching than undergraduate education majors; and (2) that one year of practical experience (such as an internship) will prepare students to become teachers as well as or better than four years of practical experience during the undergraduate years, which include one semester of student teaching. In this study the relative academic skills of these two groups at the university were compared in reading, writing, math, general knowledge, and professional knowledge. The knowledge and skills of a sample of undergraduate elementary preservice teachers in teaching reading comprehension were also investigated. Results did not indicate meaningful differences in knowledge or ability between undergraduates and fifth year students; MAT students, however scored significantly higher than undergraduate students in professional knowledge. Although background experiences, educational experience, and field experiences of interns and student teachers differed, there appeared to be no great difference between the teaching knowledge possessed and applied by the student teachers and that of the interns. (JD)

ACADEMIC AND PROFESSIONAL KNOWLEDGE AND SKILLS OF FOUR-YEAR UNDERGRADUATE AND FIFTH-YEAR TEACHER CERTIFICATION STUDENTS

By

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Introduction

Recent concerns about the quality of U.S. education have caused educators and legislators to rethink the preparation of teachers. A group of deans of schools of education, called the Holmes Group, has recommended that teachers be certified in five year programs with many students completing a bachelor's degree in liberal arts (Holmes Group, 1989). Many Schools of Education are de-emphasizing or phasing out their four-year undergraduate bachelor's degree.

The School of Education at the University of Pittsburgh developed a new Master of Arts in Teaching (MAT) program in 1986-87. The first students entered in the 1987-88 academic year. The program was developed as a one-year program for liberal arts graduates who wanted to become teachers. It combines teacher education experiences needed for certification, graduate coursework for a masters degree, and a year-long internship (September-June) in an elementary or secondary school.

As part of the broader school reform effort this fifth-year program facilitates the move into teaching of liberal arts majors (or others with the academic competencies to be effective teachers). The School of Education is discontinuing their undergraduate education program in 1990, and will prepare only post-baccalaureate students as teachers beginning in 1990-91.

In this context two fundamental assumptions made by those proposing a fifth year teacher certification can be investigated. There is an assumption that undergraduates in Arts and Science bring more content area knowledge and expertise to teaching than undergraduate education majors; and that one year of practical experience (such as an internship) will prepare students to become teachers as well as or better than four years of practical experiences during their undergraduate years, which includes one-semester of student teaching. In this study, the relative academic skills of these two groups at the University of Pittsburgh were compared in reading, writing, math, general knowledge and professional knowledge. The knowledge and skills of a sample of elementary preservice teachers in teaching reading compehension was also investigated.

Method

Differences in the academic abilities and professional knowledge between the undergraduate and fifth year (MAT) students were assessed on the Pennsylvania Teacher Competency Tests (PTCT) that must be passed for teacher certification. All students must pass reading, writing, math and general knowledge tests before their student teaching or internship experiences. Most MAT students take these tests in the summer before their internship, while most undergraduates take the tests at the end of their junior year or at the beginning of their senior year. The professional knowledge test of the PTCT is taken near the end of their final year - after undergraduates had completed their student teaching, or MAT students had completed their internships.

In both the 1987-88 and 1988-89 academic years achievement results were obtained for University of Pittsburgh students on the five state-mandated certification tests in reading, writing, math, general knowledge and professional knowledge. Results were obtained for a majority of students in each category, although data for some students were not available since scores are not released by the State without student permission. In 1987-88, scores for 29 of 32 MAT students and 116 of 150 undergraduates were available. In 1988-89, 28 of 36 MAT students and 73 of approximately 100 undergraduates' scores were available.

Practical teaching knowledge and skill also were assessed with a sample of elementary school student teachers and interns in April, 1989. Each student was asked during an interview to describe a reading comprehension lesson (s)he had recently taught. The taped responses were analyzed on the basis of types of activities used to teach reading comprehension. The specific methods used in this aspect of the study and the results obtained are discussed in a later section of this paper.

Achievement in Reading, Writing, Math and General Knowledge

The fifth-year and undergraduate students were similar in their 1987-88 reading and writing scores on the PTCT subtests (See Table 1). The 1987-88 undergraduates were slightly better in

Table 1

Mean Pennsylvania Teacher Competency Test Scores in Reading, Writing, Math and General Knowledge of University of Pittsburgh Undergraduate and MAT students

	Reading		Writing		Math		General Knowledge	
	87-88	88-89	87-88	88-89	87-88	88-89	87-88	88-89
MAT	230.7	232.8	235.6	237.2	224.8	228.1	364.9	368.7
(N)	(29)	(28)	(29)	(28)	(29)	(28)	(29)	(28)
Undergraduates	230.3	228.4	235.7	234.4	227.4	225.3	357.8	358.3
(N)	(116)	(73)	(116)	(73)	(116)	(73)	(116)	(75)
State Mean	228	228	234	234	223	223	356	356

Total number of students in MAT program: 1987-88 = 32; 1988-89 = 36

Total number of undergraduates in senior year: 1987-88 =150; 1988-89 = 100

math (227.4 vs 224.8), while the 1987-88 MAT students showed somewhat higher achievement in General Knowledge (364.9 vs 357.8). In 1988-89, the MAT students scored slightly higher in reading, writing, and math, and were ten points higher in General Knowledge. (368.7 vs 358.3).

In comparing these mean scores with the state means for all teacher applicants who took the tests, the undergraduate and MAT mean scores were slightly above those of all applicants in all areas. Scores of MAT students on the General Knowledge test were the highest in a relative sense.

In 1987-88, three undergraduate students failed one or more of the four subtests, while one MAT elementary student failed all four subtests, and one MAT secondary science student failed the reading subtest.

These results do not indicate that there is a meaningful difference in academic knowledge between the four-year undergraduates and fifth-year MAT students. The only consistent meaningful difference in knowledge or achievement was in the General Knowledge area. Both groups of students are very heterogeneous with some very knowledgeable undergraduate and MAT students, and a few in each group who did not meet the minimum passing score in one or more areas of the PTCT.

ACHIEVEMENT IN PROFESSIONAL KNOWLEDGE

The fifth subtest of the PTCT addressed Professional Knowledge, and was taken by the students after they had completed their student teaching or internship experiences. In both years the MAT students scored significantly higher than the undergraduate students. In 1987-88 the

Table 2

Mean PTCT Scores in Professional Knowledge for University of Pittsburgh Undergraduate and MAT Students

	MAT Students		Undergraduate Students	
	1987-88	1988-89	1987-88	1988-89
Professional Knowledge	372.4	369.0	362.3	360.5
(N)	(29)	(22)	(116)	(78)
State Mean	360	360	360	360
Total N in Program	32	36	150	100

mean scores were 372.4 and 362.3, while in 1988-89 the mean scores were 369.0 and 360.5 for MAT and undergraduate students, respectively. In both years the undergraduates scored just above the state average, and the MAT students scored well above the state average.

These results indicate that the year long internship that starts with the beginning of the school year and ends at the completion of the elementary or secondary school year had some positive effects on the interns. An entire year in the classroom under the tutelage of a practicing teacher resulted in higher scores on the Professional Knowledge test, even though the MAT students did not score meaningfully higher on the reading, writing, or math achievement tests, which were given prior to the program.

To further expore the practical knowledge and skills gained by undergraduate and fifth-year students from their respective student teaching and internship experiences, eight elementary student teachers and eight MAT interns were interviewed about a reading comprehension lesson each had recently taught. The remainder of this paper describes that aspect of the larger study.

Understanding and Use of Knowledge in Teaching Reading Comprehension. Near the end of the 1988-89 academic year eight student teachers and eight interns from elementary school settings participated in a taped interview that took 45-60 minutes in which they discussed a reading comprehension lesson that they had recently taught. They were asked to bring their lesson plans and other materials relevant to the lesson. Three graduate students who were experienced interviewers and knowledgeable about teaching reading conducted the interviews. The taped interviews were analyzed by one of the interviewers and by one of the authors, who coordinates the reading specialist program in the School of Education.

Activities that these MAT and student teachers used were analyzed to determine whether these preservice teachers were integrating current research ideas into their teaching practices. The researchers had determined what practices would exemplify "effective" activities that were congruent with research and then determined whether the participants were implementing those practices (Anderson, et al., 1985).

Interviews revealed that most participants, interns and student teachers, incorporated some prereading activities either related to prior knowledge or vocabulary development, into their lessons (See Table 3); however, the extent to which planned, well-organized activities were used, varied. Activities were coded as high, medium, or none based on the following definitions. Activities received a high ranking if they could be labeled (advanced organizer, story map) and described in a coherent fashion. They received a medium rating if preservice teachers initiated some attempt to use such ... activity, but could not label it or describe it completely. "None" was used when the participant did not indicate that any particular activity was attempted.

Seven of the eight student teachers received a high ranking given the types of activities mentioned relevant to building prior knowledge: (e.g. advanced organizers, visuals such as story maps, webs and weaves, and systematic prereading discussions.) The one remaining student teacher did conduct a discussion, but it was brief and general in comparison to those ranked as high.

Interns did not utilize prior knowledge and background building activities as much as the student teachers. Three of the interns indicated that they did nothing relative to prior knowledge. Three of the four high ranking interns used prediction as an activity during prereading while none of the student teachers did.

TABLE 3

Frequency and Percentage of Prior Knowledge & Vocabulary Prereading Activities of Student Teachers and MAT Interns

	STUDENT TEACHERS			INTERNS		
Prereading	N	Med.	Hi	N	Med.	Hi
Prior Knowledge	0	1	7	3	1	4
	(0%)	(12.5%)	(87.5%)	(37.5%)	(12.5)	(50%)
Vocabulary	5	2	1	4	0	4
	(62.5%)	(25%)	(12.5%)	(50%)	(0%)	(50%)

There was not as much emphasis on vocabulary as on developing prior knowledge in the prereading stage. Nine of the preservice teachers either never discussed vocabulary words or merely mentioned the vocabulary words. Four of the interns, however, emphasized vocabulary either through writing activities or using context clues. The lack of focus on vocabulary may not be a negative one, however. Preservice teachers made comments such as the following : "My kids already know the words." "The words are so simple that I don't spend a lot of time on them." "I just give them 4 or 5 words so I don't overwhelm them."

Analysis of after-reading activities was divided into two aspects : oral discussion, and levels of questioning used. Fifteen of the sixteen preservice teachers interviewed indicated that they held an oral discussion following the reading lesson described. All respondents indicated that they asked students to participate in some type of question-answer discussion. When asked to discuss the type of questioning used in the post-reading discussion, 4 (50%) of the student teachers indicated that they used questions at all levels (literal, inferential, and evaluative); three (37.5%) of the interns indicated use of questions at the three levels. When the preservice teachers were asked the source of their questions, four of the student teachers said that they used the basal, two developed their own questions, and the other two indicated that they used a combination. Five interns indicated that they developed their own questions, two relied solely on the basal, and one used a combination. The pre-service teachers were also asked to indicate how and whether they asked students to respond in a personal way to the selection. Two (25%) of the student teachers had students respond personally, while four (50%) of the interns indicated that they used personal response as part of their follow-up discussion.

In order to determine the degree to which the preservice teachers relied on the basal, we analyzed the descriptions of the lessons, as articulated by the preservice teachers, to determine the degree to which the lesson adhered to the plan presented in the basal. A lesson description received a high rank if the intern used the basal as indicated, with the possible addition of several of their own questions; the description received a medium ranking if the novice added questions or incorporated creative activities at various stages (visual organizers, prediction activities not listed in the basal, etc.); and the lesson received a low ranking if the novice did not use a basal or if the activities were completely teacher generated. Student teachers were ranked either as high

adherence (3) or as medium (5). Interns either received a high rating (5) or a low rating (3). It was expected that these preservice teachers would use the activities and tasks suggested in the basal rather than developing lessons on their own. Few of the teachers indicated that they modified the lesson because of story difficulty or student ability.

From the analysis of these lessons, it appears that all of the preservice teachers used activities based on current research findings in their lessons to some degree. Evidence of this lies in the extensive use of prereading activities, the use of personal responses to reading, and in their ability to discuss why they used specific activities. It should be noted that all of the preservice teachers spoke highly of their mentor/cooperating teacher and the school district as a powerful source of knowledge (Hollingsworth, 1989). Although there was no provision in the interview schedule for a direct question about the source of knowledge, twelve respondents (six from each group) spoke frequently about the valuable help and guidance offered by their experienced cooperating teachers. Comments included the following: "My district has an excellent language arts program." "My coop does story maps, so I decided to try it." "The school does a lot with webs. They are a good means of organizing instruction." "My coop introduced me to the importance of background building."

Although the background experiences, educational experience, and field experiences of interns and student teachers differed, there appeared to be no great difference between the teaching knowledge possessed and applied by the student teachers and that of the intern. Points of distinction can be made in the following areas, however: student teachers used prior knowledge more than the interns; interns tended to use more systematic vocabulary development approaches; interns incorporated more teacher generated questions than student teachers. Overall, there were excellent preservice teachers in both groups. The most knowledgeable and skilled respondent was a student teacher, who attributed her expertise to her extensive teaching, leadership, and counseling experiences in non-classroom settings.

SUMMARY AND CONCLUSIONS

Results of the PTCT subtests in reading, writing, and math did not indicate meaningful differences in knowledge or ability between undergraduates and fifth year students. The fifth year students did score consistently higher on the general knowledge and professional knowledge subtests of the PTCT. The higher scores on these subtests may be indicative of greater academic knowledge or ability, despite similar reading, writing and math scores. The higher professional knowledge scores may be due to the year-long internship with a cooperating teacher in a classroom, rather than the 15-week student teaching experiences of undergraduates. These differences between the two groups will be addressed in greater detail in the coming year. Others should investigate the knowledge and abilities of undergraduates in contrast to fifth year teacher certification students to indicate whether fifth-year students are fundamentally more knowledgeable in ways that relate to successful teaching (Richardson-Koehler, 1987).

The preliminary comparison of the eight undergraduates and eight interns indicate some differences between the two groups that warrant more careful study. The results did not indicate that the interns were at a disadvantage as teachers as a result of only one year of education courses and experiences. The teaching activities implemented and students' understanding of them varied within each group. Neither group was uniformly superior to the other. The most knowledgeable preservice teacher was an undergraduate, but she might have been an unusual case.

More study of the effects of a one-year post baccalaureate certification program is needed. Knowledge of the relative strengths and weaknesses of fifth-year versus four-year preparation programs is needed. It is unlikely that one type of program will be best for all types of educators in all types of settings (Holmes Group, 1986)

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