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PREDICTORS OF PERFORMANCE IN PRIMARY-SCHOOL TEACHING*

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Relationships between characteristics of candidates prior to their entry into the teaching profession, performance in teacher education courses, and subsequent effectiveness in full-time primary-school teaching are examined. Comparisons are made between the teaching effectiveness of graduates of concurrent and consecutive teacher preparation (regular) courses. Academic achievement at the end of secondary schooling and pre-entry interview ratings were found to be significantly related to level of degree awarded and to performance in teaching practice. Teaching practice grades and achievement levels in Professional Studies in Education emerged as the only significant predictors of effectiveness in full-time teaching. Statistically significant differences in teaching performance were not associated with type of teacher preparation programme (concurrent, consecutive) or category of student (regular BEd, mature BEd, postgraduate). Ratings of graduates' teaching of Irish, English, and Mathematics were not a function of whether individuals had or had not majored in those subject areas.

In a profession where there is so much emphasis on 'attracting better people', there is not a lot of research on the characteristics of candidates for teaching that predict future success in the classroom, despite calls for such research (Adams, 1987; Galluzo, 1982; NCATE, 1979; Pugach, 1984; Schalock,1979). In 1987, European Ministers for Education suggested that validation studies should become an ongoing and integral part of the selection procedure for teacher education (Council of Europe, 1987). However, several factors contribute to the complexity and difficulty of such research: lack of consensus on what constitutes good teaching (Reynolds, 1992); the evidence that candidates for teaching develop both as persons and as professionals during their period of training and thereafter (Glickman, 1987); the fact that some persons never reach

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their teaching potential because of insufficient interest in and commitment to the profession; and the situation-specific nature of teaching where success is a function of the interaction between what a teacher brings to an instructional setting and the setting itself (Schalock, 1979; Shulman, 1987a, 1987b).

Although the research base is not very extensive, it does point to a number of conclusions about the antecedents of teaching effectiveness. On the negative side, it indicates that measures of intelligence and academic achievement are not strong predictors of success in teaching (Ferguson & Womack, 1993; Medley, 1979; Pugach, 1984; Salzman, 1991; Schalock, 1979; Shechtman, 1989), perhaps because teachers tend to be fairly homogeneous with regard to these characteristics. A number of more positive findings also emerge. First, research evidence suggests that the most competent teachers are those who have a good mastery of the content knowledge to be taught and have also studied education (Ashton & Crocker, 1987; Darling-Hammond, 1998; Erekson & Barr, 1985; Evertson, Hawley & Zlotnik, 1985; Greenberg, 1983; National Commission on Teaching and America's Future, 1996). Second, teachers with more training in teaching methodology are more effective than those with less (Guyton & Farokhi, 1987; Kennedy, 1991). Third, teachers who have spent more time studying teaching are better teachers, especially when it comes to fostering higher-order thinking skills and catering for individual needs (Darling-Hammond, 1998; National Commission on Teaching and America's Future, 1996). Fourth, research findings cannot be used to justify increasing requirements in academic subject areas at the expense of reducing coursework in professional areas (Ashton & Crocker, 1987; Kennedy, 1991).

Performance on practice teaching has consistently proved to be a reasonably good predictor of success in the classroom (Crocker, 1974; Menges, 1975; Schalock, 1979; Shechtman, 1989; Werimont & Campbell, 1968). In fact, Schalock (1979) concluded, on the basis of his review, that performance on well-assessed practice teaching is the best predictor of future success in the classroom. This is hardly surprising given that teaching is being assessed in both cases, albeit under somewhat different conditions.

The interview has traditionally been seen as a means of establishing the presence of intellectual and personal qualities which are regarded as prerequisites for and/or good predictors of success in both teacher education and teaching. While empirical evidence does not support this assumption (Coleman, 1987; Pugach, 1984; Schalock, 1979; Scriven, 1990), it should be borne in mind that individuals excluded through interview are not included in subsequent determinations of predictive validity (Crocker, 1974; Marso & Pigge, 1991; Schalock, 1979; Vernon, 1965).

Debate continues on the merits of concurrent and consecutive and of college-based and school-based approaches to teacher education (Goodson, 1995). Some favour traditional college-based approaches (Ashton & Crocker, 1987; Evertson et al, 1985; Greenberg, 1983; Kennedy, 1991; Olsen, 1985; Roth, 1989; Smith et al, 1985; Wise, 1991; Zumwalt, 1991). Others stress the advantages of alternative models (Guyton, Fox & Sisk, 1991; Lutz & Hutton, 1989). Ryan (1987) and Goodlad (1988) are very critical of the unsubstantiated support by the Holmes Group (1986) for the consecutive model of teacher education with its initial concentration on academic subjects. Beliefs about the merits of this approach, Goodlad says, 'have now become part of conventional wisdom neither requiring supportive evidence beyond personal anecdotes nor brooking counter-arguments'(p.107).

Some evidence from Ireland relating to this topic is to be found in a study in which the teaching practice grades of three-year BEd students following a concurrent programme were compared with those of one-year postgraduate trainees in a consecutive programme over a seven-year (1977-1983) period (Burke, 1992). The same raters evaluated both groups and there is no evidence to suggest that different criteria were applied. The proportion of concurrent programme students in receipt of A and B grades in their final Teaching Practice (43.3%) was almost double that of the consecutive programme students. Further, the percentage of the latter in the lowest passing grade (D) was 25.5%, compared with 12.5% of concurrent programme students. The one-year consecutive programme was discontinued in 1983, but recommenced in 1995 when it was extended to one-and-a-half years. Students in this revived programme seem to have closed the gap in assessed teaching competence between them and students in the concurrent programme. The distribution of grades for the two groups differs, however, with higher proportions of consecutive students in the high- and low-grade categories (Máirtín, 1999).

The primary purpose of the study described in this paper was to follow a cohort of students entering a concurrent three-year Bachelor of Education programme in an Irish college and to examine the relationship between, on the one hand, their characteristics on entry to the college and their choice of major academic subject and, on the other, their performance in teaching practice during training and their effectiveness in full-time teaching after graduation. Data were available for students on the following: achievement in the Leaving Certificate Examination (expressed in points) and performance on a pre-entry interview (expressed in interview ratings), both of which had been used for selection to the college; the major academic subject taken in addition to Education in their degree programme; college supervisors' ratings of teaching practice

performance; the class of BEd degree awarded; and post-graduation ratings by school inspectors of performance in full-time teaching.

The majority of students on the concurrent BEd programme had entered college directly from secondary school. There was also provision for the recruitment of mature students. These are included in the present study but information on all the variables for which data were obtained for direct-entry students was not available for them (LCE points and pre-entry interview ratings). At the time the study was carried out, the college also offered a one-year consecutive programme for university graduates. Again, LCE points information and pre-entry interview ratings were not available for this group. However, data on the teaching performance of both the postgraduate group and the mature BEd students are included in some analyses since they allow comparisons between students who had taken the concurrent and consecutive programmes, and between regular and mature students in the concurrent programme.

METHOD

Participants

Regular BEd students pursued a three-year concurrent programme. In the present study, most (88%) were 18 years of age or younger at the commencement of the programme. While specified minimum Leaving Certificate Examination (LCE) grades in Irish, English, and Mathematics were required, admission was very competitive. At the time of the study, there were 2.4 qualified applicants for each available place. In academic achievement terms, the average entrant nationally to this course is in the top quartile of all students proceeding to colleges of higher education in Ireland (Greaney, Burke & McCann, 1987). Candidates were selected on the basis of a weighted combination of the following: performance on the LCE (weighting 76%), a general interview (weighting 15%), a fluency test in Irish (weighting 6%), and a music test (weighting 3%). Applicants who failed the Irish test were eliminated from the competition.

Mature BEd students were required to be at least 22 years of age. At the time of the study there were roughly two qualified applicants for every place. While the minimum academic qualifications for these students were the same as those for regular BEd students, their average LCE achievement levels have traditionally been lower. Mature candidates were selected on the basis of a weighted combination of the following: performance in an interview (weighting 62.5%), an oral examination in Irish (weighting 25%), and a music test (weighting 12.5%).

Post-graduate students were required to have completed a degree before entry to a one-year teacher education programme. The minimum LCE academic qualifications for other categories of students with regard to Irish, English, and Mathematics also applied. However, the average LCE achievement levels of postgraduate entrants fall short of those for regular BEd candidates. If postgraduate candidates met the minimum qualifications requirements, they were selected on a weighted combination of the following: marks awarded in an interview (weighting 71%) and performance in an oral Irish test (weighting 29%). There were over six qualified applicants for every available place.

Type of Teacher Education Programme

BEd Programme. Regular and mature BEd students pursued studies in education and academic subjects concurrently. The Education component included Philosophy, Psychology, Sociology, and History of Education; assessment and evaluation; curriculum development; and methodology courses in each of the curriculum areas taught in Irish primary schools. Each student took one major academic subject (English, Irish, French, Mathematics, History, Geography, or Music) to degree level and a 'minor' academic subject in their first year of study. Course contact hours in first year were divided equally between Education and the academic subjects. For the subsequent two years, Education was allotted about 60% of contact time. Students devoted 16 weeks to teaching practice during the three-year programme.

Postgraduate Programme. During the one-year (actually nine-month) programme, postgraduate students were taught separately from undergraduates. Their courses included all the professional education elements of the BEd programme. Unlike the undergraduates, they did not study academic subjects. They were required to devote 12 weeks to teaching practice.

Variables

Academic Achievement was determined on the basis of grades in three compulsory LCE subjects (English, Irish, and Mathematics) along with the highest grades obtained in three additional subjects. In the selection process grade letters were converted into points. Grade A on optional Ordinary-level papers merited 48 points, B 40 points, C 32 points, and D 24 points. For optional Higher or Common-level papers, the corresponding grade points were A:72, B:60, C:48, and D:36. Grades for English carried a 25% premium, while grades for Irish and Mathematics carried a 50% premium. The maximum possible points for six subjects was 522.

Interview Ratings. Two-person boards, each comprising a Department of Education schools inspector and a College of Education member of staff, interviewed candidates for the regular BEd and agreed a final interview grade. These grades were converted into points. The maximum number of points for interview was 100.

Level of BEd Degree. The BEd degree was awarded at four levels: 1st class honours (coded 1 for analyses in the present study); 2nd class honours, Grade 1 (coded 2); 2nd class honours, Grade 2 (coded 3), pass (coded 4), and pass in repeat examination (coded 5). The overall level was based on final-year assessment results in the following areas: major academic subject taken to degree level (40% of marks); studies in Education taken in the final year (i.e., Psychology of Education, Curriculum Theory and Development, Classroom Management, Early Childhood Education, and methodology courses in Reading and Irish language teaching) (45% of marks); and Teaching Practice (15% of marks).

Preservice Teaching Performance Ratings. A 4-week period of final teaching practice took place for all students about two months prior to the termination of their courses. During this period, three-person teams of college supervisors rated the teaching performance of students. Each student was assigned a mark out of 300.

Rating of Teaching Performance for Certification. A government Department of Education inspector assessed each new teacher for certification purposes during an initial probationary period following appointment to a full-time teaching post. For the present study, the inspectors were asked to rate each participant relative to other certification candidates and to transfer these ratings into an index of overall performance using a 5-point scale from 'top 20%' (coded 1) to 'bottom 20%' (coded 5). Overall, 87% of study participants had completed certification within two-and-a-half years of graduation and were included in analyses.

Post-Certification Rating of Teaching Performance. School inspectors provided additional ratings of the teaching performance of participants some three to six years after the completion of preservice training. The inspectors were asked to assess participants' teaching performance relative to other teachers. The same 5-point rating scale used at the certification stage was applied. Data on 56% of study participants were obtained.[1]

[1]A number of factors could account for the fall in overall participation rates, especially at the post-certification stage. Some participants could not be traced. Others were no longer teaching. In some cases, the certification and post-certification ratings took place at or close to the same time and, for this reason, were excluded from analyses. The decrease in mature BEd participants at the certification (64%) and post-certification (29%) stages is noteworthy. Since a high percentage (85%) of those were female, and a good proportion were likely to be married with young children, it may be that they took some time out either after graduation or following certification.

Performance in Professional Studies. The index of students' performance in Professional Studies was their aggregate mark (out of 900) on the subjects in the field of Education which they had studied in their final year.

RESULTS

The numbers of students/teachers that took part in the study are provided in Table 1. The sample for BEd students (N: 232) includes a number (N: 33) who failed (or did not sit) the final examination at the first attempt but passed it at a later date. Due to drop-out and lack of certification and post-certification ratings, the sample sizes for teaching performance ratings after graduation (cols 5 &6) were reduced. Table 2 provides descriptive statistics on key variables. The inter-correlation matrix for all variables for which data were obtained for regular BEd students are presented in Table 3. Table 4 provides comparative data on the teaching performance of students who had and had not majored in Irish, English, and Mathematics.

TABLE 1

NUMBERS OF STUDENTS IN PRESERVICE COURSES AND FOR WHOM RATING INFORMATION WAS OBTAINED

Course	Commenced Course	Completed Course	Rated in Teaching Practice	Rated at Certification Stage[1]	Rated at Post-Certification Stage[2]
BEd Regular	246	234	232[3] 99%[4]	211 90%	138 59%
BEd Mature	28	28	28 100%	18 64%	8 29%
Postgraduate	49	48	48 100%	41 85%	27 56%
Total	323	310	308 99%	270 87%	173 56%

[1] Within 2.5 years of graduation.
[2] Within 3-6 years of graduation.
[3] The grades for two students were not available for inclusion in the analysis.
[4] Percentages are calculated on the basis of the number of students who completed their course.

TABLE 2

MEANS (AND STANDARD DEVIATIONS) ON VARIABLES FOR THREE CATEGORIES OF STUDENTS IN TWO TEACHER EDUCATION PROGRAMMES

Variable	BEd Regular		BEd Mature		Postgraduate	
	M	SD	M	SD	M	SD
LCE Points	349.15 N:232	25.22	NA[1]		NA	
Interview Rating	78.23 N:232	12.51	NA[2]		NA	
BEd Degree Level	3.77[3] N:232	0.76	NA[4]		NA[5]	
Preservice Teaching Performance	167.57 N:232	22.32	166.18 N:28	19.94	162.56 N:48	21.99
Certification Teaching Performance	2.40 N:226	1.02	2.50 N:18	0.99	2.20 N:41	0.93
Post-Certification Teaching Performance	2.16 N:153	0.95	2.13 N:8	0.83	2.22 N:27	0.85

[1] Minimum LCE standards required for admission but overall LCE points not available for either the Mature BEd or postgraduate students.
[2] Interview procedures differed for each category of student. Interview data collected for Regular BEd students only.
[3] 1st class honours = 1 (N:0); 2nd class honours, grade 1 = 2 (N:14); 2nd class honours, grade 2 = 3 (N:58); Pass = 4 (N:127); Pass in repeat examination = 5 (N:33).
[4] Data not gathered for the Mature students.
[5] Not applicable.

Correlations between measures tend to be low (Table 3). Performance on the LCE does not correlate significantly with teaching performance during teacher preparation or at two separate points after graduation. It does, however, correlate significantly with two related academic measures: mark obtained for studies in Education (r=.27) and the level of degree obtained (r=.32). The correlation between performance on the pre-entry interview used to select candidates and teaching practice is low, though statistically significant (r=.18). Pre-entry interview performance does not correlate significantly with measures of teaching performance at the certification or post-certification stages, or with academic performance in college.

TABLE 3

INTERCORRELATION MATRIX FOR STUDY VARIABLES

Variable	Interview N:232	Teaching Practice N:232	Professional Studies/ Education N:232	Level of Degree N:232	Teaching: Certification Stage N:211	Teaching: Post-Certification Stage N:138
Secondary School Achievement (LCE)	-.12	.07	.27***	.32***	.05	.03
Interview		.18**	-.02	.06	.02	.03
Preservice Teaching Practice			.42***	.42***	.22**	.22**
Professional Studies				.61***	.18**	.19*
Level of Degree					-.06	.14
Teaching Certification Stage						.67***

* = <.05; ** = <.01; *** = <.001

Teaching practice performance correlates significantly with students' marks for Education (r=.42) and slightly but significantly with both post-graduation measures of teaching performance (r=.22 in both cases). Education marks also correlate slightly, but significantly, with both post-graduation measures of teaching performance (r=.18 and .19). The correlation between the measure of teaching performance for certification following graduation and a similar measure taken some three to six years after graduation is relatively high (r=.67). Correlations between teaching practice rating and level of degree (r=.42) and between Education marks and level of degree are also high (r=.61). However, it should be borne in mind that both contributed to the overall mark used to determine the level of degree awarded.

School inspectors did not perceive any significant differences in the teaching of Irish, English, or Mathematics, at either the certification or post-certification stages, between those who had and had not majored in those subjects (Table 4). However, this finding should be interpreted in light of the small number of participants at certification and post-certification stages who had taken English (N:30 & 16) and Mathematics (N: 17 & 11) as their academic subject.

In a series of analyses of variance, no significant differences were found between the teaching performance ratings of the three student categories (regular BEd, mature BEd, and one-year postgraduate) at the teaching practice, certification, or post-certification stage.

TABLE 4

MEAN RATINGS (AND STANDARD DEVIATIONS) OF TEACHING PERFORMANCE OF STUDENTS WHO HAD AND HAD NOT TAKEN ENGLISH, IRISH, OR MATHEMATICS AS THEIR MAJOR ACADEMIC SUBJECT

Subject Major	Certification Teaching Performance		Post-Certification Teaching Performance	
	M	SD	M	SD
English	2.70 N: 30	0.79	2.87 N:16	0.72
Not English	2.85 N:175	0.80	2.91 N:107	0.91
Irish	2.78 N:79	0.96	2.83 N:46	0.88
Not Irish	2.59 N:126	0.86	2.58 N:77	0.92
Mathematics	2.70 N:17	0.80	2.82 N:11	0.87
Not Mathematics	2.73 N:188	0.78	2.73 N:112	0.88

DISCUSSION

In earlier studies, performance in college-based teaching practice emerged, as it did in this study, as the best predictor of subsequent teaching performance. While achievement levels in studies in Education have not been identified as good predictors in earlier work, they came close to teaching practice grades in predictive power in the present study. Pre-entry academic achievement levels (LCE points), interview ratings, or level of degree awards were not found to be significantly related to performance in full-time teaching. Leaving Certificate Examination points did, however, correlate significantly, though weakly, with college academic achievement levels. Likewise, interview ratings related weakly, though significantly, to in-college teaching practice performance but not to teaching performance at the certification or post-certification stages. In light of these findings and of the limitations imposed by restricted variance, the

abolition of the pre-entry interview for primary-teaching candidates in Ireland, and the consequent total reliance on LCE scores as the sole criteria for selection, might merit reconsideration, if for no other reason than that in cases where there are no strong or clear predictors of subsequent success in professional training or practice, the use of multiple selection measures is advisable (Menges, 1975; Scriven, 1990; Shechtman, 1989).

It is perhaps surprising that teachers who had taken Irish, English, or Mathematics as their major academic subject in their BEd degree were not perceived to be better at teaching those subjects in primary schools than teachers who had not majored in the subjects. The finding raises questions about the belief that studying a subject at third level enhances teaching of the subject at first level (see Carnegie Forum on Education and the Economy, 1986; Holmes Group, 1986). Evertson et al, (1985), having reviewed the relevant research, concluded that there is little empirical evidence to support the belief that increasing teachers' knowledge of their subjects, beyond that typically required for certification, significantly increases teaching performance (see also Kennedy, 1991).

The current constitution of BEd programmes in Ireland and elsewhere may merit reconsideration in the light of such findings. In the 1960s and 1970s, academic subjects were included in degree programmes for primary teachers to satisfy university demands, to enhance the status of primary teachers, and in the belief that the study of academic subjects to a high level in teacher training would benefit primary education (Goodson, 1995). On the other hand, the inclusion of academic subjects has contributed to serious over-crowding of teacher preparation programmes (Buckberger & Beernaert, 1995; Buckberger & Byrne, 1995; Burke, 2000).

It has been argued that academic subjects relevant to the primary school curriculum should be taught in primary teacher education in a manner and to a level that will enhance the subsequent teaching of those subjects in first-level schools and that the handling of such subjects should differ for BEd and BA programmes (Goodlad, 1990; Hallett, 1987; Soder & Sirotnik, 1990; Travers & Sacks, 1989). On the basis of their review of research on the impact of subject matter and education coursework on teaching performance, Ferguson and Womack (1993) suggest that it would be counterproductive to increase academic course content in teacher education at the expense of pedagogical studies. It might also be foolhardy to hope that teaching would improve by simply raising the academic requirements for entry to teacher education. The latter could, in time, give rise to legal problems if it is found that teacher education admission requirements bear little or no predictive relationship to

subsequent teaching performance (Demetrulias, Chiodo & Diekman, 1990; Riggs & Riggs, 1991).

Performances in teaching of the three categories of student (regular BEd, mature BEd, and one-year postgraduate) investigated in this study were not found at any stage to differ significantly from one other. These findings could have important implications for future policy on the preparation of primary teachers (see *Education for a Changing World*, 1992). They should, however, be interpreted in light of the fact that the comparison was confined to one year's output of students. While the validity and reliability of the ratings might also be questioned, it should be recognized that the vast majority of school inspectors involved in the study were experienced in the assessment of teaching. Furthermore, all followed a set pattern and approach, and preserved detailed records of their classroom and school observations.

Our findings are consistent with those of other investigators in failing to produce conclusive evidence regarding the superiority or inferiority of the concurrent or consecutive models of teacher preparation. Ryan (1987) and Goodlad (1990) have noted that one will search in vain for empirical research evidence or working examples which demonstrate that consecutive models produce better teachers than concurrent approaches. In the absence of such evidence, it would seem that the jury is still out on the issue. In the meanwhile, keeping both channels to teacher education open would seem to be the wisest approach, if for no other reason than that it contributes to a wide and varied range of experience and expertise within the profession.

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