

Characteristics of outstanding student teachers

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This paper describes the characteristics of student teachers who were evaluated as outstanding during their teacher education studies. Outstanding students were selected after 2 years of field experiences based on their teaching abilities and academic achievements. Data were collected at three points of time: before they commenced their studies at the college, during the first 2 years of their studies and 4 years after completion of their studies. The study was conducted in two stages. The first compared three groups: (1) outstanding student teachers (22); (2) students with average achievements (55); (3) students who experienced difficulties (24). The comparison comprised the national psychometric test scores, high school matriculation examination grades, the written results of the acceptance interview and the evaluations of student teachers' supervisors kept in each student's personal file. In the second stage, 4 years later, telephone interviews were conducted with 19 of the 22 students in the outstanding group and with 25 students from the same graduating class, who were chosen from a random sample of 75 students. Data analysis included descriptive statistics of means and standard deviations and one-way ANOVAs, to identify differences between the groups, and content analysis of the telephone interviews. Significant differences were found between the groups in their matriculation grades and in three parameters from the entrance committees' reports: appearance, thinking and comments. Similarly, significant differences were found in the evaluations written by the supervisors in three categories: teaching ability, behaviour and social functioning. Four years later the prominent difference between the outstanding and the comparative groups was in the larger number of students from the outstanding group that continued with graduate studies towards a master's degree. All of the graduates in the outstanding group and most of the graduates in the comparative group performed additional tasks in school and had other employment outside school.

Introduction

A special programme for outstanding student teachers has been launched at a college of physical education and sport sciences in central Israel. The teacher education curriculum has been adapted in order to meet the guidelines suggested by the Ministry of Education (Ministry of Education Culture and Sport, 1997).

The underlying principle guiding the designers of the programme, as well as those still involved in it, has been the desire to enhance pre-service teacher education for students manifesting high level academic skills in a manner that will both improve

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their educational level and benefit the teaching profession. The initial aim of the programme is to identify outstanding candidates and then offer them a flexible, challenging programme of studies with more opportunities for greater self-fulfilment. The second aim, whose implementation is not necessarily dependent on the colleges, is to improve the chances of outstanding students finding their place in the teaching profession, so that they can contribute to the enrichment and empowerment of the education system.

Student teachers at the college experience teaching in the education system starting in their first year of study and throughout the programme. Gradually, candidates are introduced to pedagogical concepts and strategies in a sequential manner during their 3 year study programme. We view this ongoing interaction with public school students as one of the keys to producing first year teachers who are competent and confident when they assume their first job. The students who participated in this special programme of outstanding student teachers were selected at the end of their second year of studies on the basis of excellence in student teaching. Their third year schedules were arranged to include, among other components, one-on-one mentoring, research work, preparation of an individualized student teaching programme and one colloquium per month, all of which are part of the student preparation program.

Certainly, teacher preparation programmes want to enhance the possibilities for their future student teachers. Programmes are designed to provide each candidate with the best information, skills and strategies enabling them to enter the profession of physical education and remain in the field for many years. However, for many reasons new teachers leave the field within the first 3 years on the job. Researchers have examined specific attrition factors in order to ostensibly change the nature of pre-service programmes, as well as shift the design of in-service education (Kirby & Grissmer, 1993; Shen, 1997; Gersten *et al.*, 2001; Billingsley, 2004). This work is one way to examine what factors need to be addressed when determining the direct design of pre-service and in-service programmes.

Another way to examine how pre-service physical education teachers learn to teach and why in-service physical education teachers teach as they do is known as occupational socialization (Lawson, 1983a,b, 1986, 1991; Templin & Schempp, 1989; Schempp & Graber, 1992; Stroot & Williamson, 1993), as reported by Curtner-Smith (2001). This review offers research results relating to the application of occupational socialization to physical education. Occupational socialization is defined by Lawson (1986) as 'all kinds of socialization that initially influence persons to enter the field of physical education and later are responsible for their perceptions and actions as teacher educators and teachers' (p. 107). Lawson suggested that three types of socialization, acculturation, professional socialization and organizational socialization, seemed to mould the perspectives of physical education teachers with regards to their subject matter and pedagogical practices (Lawson, 1983a,b). We found this theoretical explanation useful as we examined the characteristics of outstanding student teachers.

The focus of this paper is upon the professional socialization resulting from participation in the college pre-service teacher programme. The aim of this paper is to identify characteristics of the outstanding student group so that they can be distinguished at as early a stage as possible. The second aim is to examine how these students were actually assimilated into the teaching profession after graduation.

Selection instruments in teachers colleges

The instruments employed for accepting candidates to higher studies in Israel focus on three widely used tools (Edi, 1996):

1. previous academic achievements in school, such as teacher evaluations, end of year grades and matriculation examination grades;
2. general academic ability tests, such as psychometric entrance examinations, and specific study ability tests, such as for medicine;
3. individual or group interviews to evaluate personality traits, attitudes towards current issues, values, etc.

Most teacher education programmes select students based on academic criteria, such as grade point average and standardized test scores (Haberman & Post, 1998). The selection processes for institutions of higher education and teacher education in Israel also place a premium on data about candidates' intellectual abilities.¹ The requirement that teachers hold an academic degree in order to teach and the emphasis in teacher education curricula on academic training have led to a selection and acceptance policy that is remarkably similar in terms of criteria to universities (Kfir *et al.*, 1996).

In the past matriculation grades were the main point of reference for evaluating teacher education candidates. Following the recommendations of the Ministry of Education and Culture (1981), a Threshold Test was introduced as a national entrance exam for teacher colleges. This test, too, focused on candidates' intellectual skill level, although the composer of the Threshold Test cited the importance, indeed the crucial role, of personality traits in determining who was best suited to become teachers. Nevertheless, up to now psychologists have still not developed effective tools to evaluate which human traits make people suitable for teaching and education. For this reason evaluators have resorted to the one component of humans that can be measured objectively, namely intellectual skills. Such a tool does not have the power to determine who is cut out for teaching, but what can be stated with relative certainty is that candidates who do not reach a certain intellectual level will be unable to absorb the theoretical material that constitutes the core of their studies and may thus be less than qualified to convey information to their charges and develop in their students the processes of comprehension and reasoning in which they themselves are deficient (Izaak *et al.*, 2000).

Most of the attention in evaluating selection tests has been directed towards their effectiveness in predicting success in academic studies, but when discussing teacher colleges, whose *raison d'être* is to prepare educational personnel, the academic criteria are generally poor predictors of who will be successful teachers (Shechtman & Godfried, 1993; Baskin *et al.*, 1996), it is equally as important to utilize tools that predict success in practical work, i.e. to determine whether candidates will be able to implement what they have learned once they become teachers. Mevarech (1986) found that intelligence measures are the best variables to predict student teachers' success in academic achievements, but not in practical work. Azulai *et al.* (2000) found that combined matriculation examination averages and Threshold Test scores explain only 10% of grade variance in academic coursework during the first year of college studies, and a mere 3% of grade variance in practical work. Gal-Or and Ben-Sira (1987) found low correlations between Threshold Test scores and success in various academic subjects and they recommended not using the Threshold Test exclusively for the acceptance of candidates to their college of physical education and sport. Aylon and Yugav (1994) proposed replacing the general psychometric test with specific entrance examinations for each specialization department. This proposal was acceptable to other researchers as well (Gal-Or & Ben-Sira, 1987; Kahan & Gamliel, 1994).

Teacher colleges also include personal or group interviews in their selection and acceptance process. Although several researchers have presented evidence that ratings on individual interviews can be good predictors of future teaching success (Malvern, 1991), these interviews require more time. Ben-Shachar and Beller (1993) reported that interviews do not provide standardized evaluations, are insufficiently reliable and have very low predictive validity. The lack of agreed upon criteria for accepting candidates places a heavy responsibility on interview committees which, based on their meetings with candidates, form a decision about student traits such as motivation, approach to children, flexibility in interpersonal relations, etc. As noted, these areas are extremely difficult to measure and evaluate and the widespread use of interviews does not substantiate their effectiveness or products (Kfir *et al.*, 1996).

In contrast to personal interviews, group assessment has been found to be more effective as part of the selection process for teacher education institutions (Amir, 1987; Gerlach & Millward, 1989; Shechtman, 1990; Sprinthall *et al.*, 1996; Byrnes & Shechtman, 2003). Amir (1987) found a correlation between student evaluations based on structured group interviews together with Threshold Test scores, and pedagogical advisers' evaluations of students' success in professional training (student teaching). Shechtman (1992) also found this tool especially useful as a predictor of success in teaching. Similarly, group interviews were also found to have a high correlation with success in academic studies in college and with personal evaluations pertaining to human relations and leadership. Shechtman's study also showed that it is difficult to estimate a person's ability to succeed in education on the basis of intellectual capabilities alone. Intellectual skill encompasses a broad range of varied components (Gardner, 1996) and written IQ tests may not evaluate the

specific elements of intelligence required to be a good teacher, such as social intelligence.

Another attempt to evaluate future teachers, by Talpiot Teachers' College, entailed use of an 'evaluation centre'. This method, which includes pencil and paper tests, situational tests and interviews, is utilized in industry, science, the military and management (Cascio & Silbey, 1979). Monitoring college classification through the evaluation centre was found to contribute to better predictive ability of success in both academic studies and practical work (teaching). Situational tests in particular were found to have a significant correspondence with success in practical work and with actual teaching (Raz *et al.*, 2000).

Evaluating teaching

Evaluating teaching is not a simple task and many ideas have been proposed as to the characteristics needed for good teaching and the criteria to use in its evaluation. Cohen (1987) distinguished among three main types of criteria for evaluating teaching: predictive criteria, product-based criteria and process-based criteria.

Predictive criteria include personality characteristics, such as knowledge, intelligence, communicative skills, etc. Research on teacher personality has tried to identify personality components that are predictive of teaching ability, among them intrinsic motivation, communicative personality, flexibility, ease and warmth, patience, love for people, responsibility level, personal charm and unity of the various dimensions (Felix *et al.*, 1997). Other personality components refer to a balanced, mature personality (Beishuizen *et al.*, 2001). At the same time, no specific trait was found to be important or salient in a study summarizing research from the 1950s to 1980 (Ryan & Phillips, 1981). After reviewing more than 1,000 studies dealing with ties between teacher traits and teacher effectiveness, Friedman (1992) found nothing to indicate a consistent connection between a given trait, including IQ, and teaching effectiveness.

Product-based criteria focus on student achievements. Connections between these criteria and teaching are neither unequivocal nor simple. Beyond teaching, achievements are affected by a whole array of processes, from environmental and organizational variables to school system characteristics. Direct measurement of long-range achievements is difficult and precludes isolation of individual teachers' contributions. There is also the risk of focusing on aims simply because they are easy to measure.

Process-based criteria refer to classroom interactions, where teacher behaviors and student behaviors that help to realize learning aims are identified. Identification is usually done through observation, a means of evaluation fraught with many problems of reliability and validity. Descriptions of good teachers' professional abilities usually include terms such as 'explains well', 'knows how to give many examples', 'is able to

improvise', 'adapts explanations to students' needs' and 'quickly understands the class' problems' (Beishuizen *et al.*, 2001).

Evaluating pre-service teachers' teaching

The difficulty in evaluating teaching is even greater where pre-service (student) teachers are involved. One insurmountable difficulty in evaluating student teaching is that student teachers in Israel face their 'classes' only intermittently (1 or 2 days a week during their first years of training), thus restricting their opportunities to plan lesson sequences based on learners' previous knowledge. Their own teaching is a small fraction of actual class hours, which have little influence on the course of learning (Ziv *et al.*, 1991).

Despite these difficulties, supervisors in teacher education institutions compose evaluation scales based on operative descriptions of qualitative characteristics revealed in teaching. Although these also cannot be quantified and calculated accurately and their deductive level is high, they do meet the need for simplicity and convenience in evaluation, which requires relatively less time than do more complex tools and processing (Cohen, 1987).

A study by Frankel (1989) found that the largest group of students with the highest grade in practical work (student teaching) was found among those having a 'leading' type of thinking process, i.e. those who are able to function at a high level even on tasks requiring global thinking and analytical reasoning. Identifying students in the 'leading' group when they register with the college may help to predict those with a high potential for success in practical work. Shechtman (1997) found that good future teachers were those with the most democratic conceptions.

Monitoring college graduates

The integration and extended employment of teacher college graduates in real teaching constitute important criteria for evaluating teacher training effectiveness. For this reason most teacher education institutions conduct surveys to examine these criteria. At the same time, the ratio of graduates actually teaching obviously does not depend solely on training effectiveness. It is also influenced by the work market and graduates' personal needs (family, studies and place of residence).

The results of studies (Central Bureau of Statistics, 1990; Ben-Sira & Arnon, 1997; Ministry of Education, Culture and Sport, 1997) monitoring the integration of teacher college graduates into teaching indicates a certain lack of correspondence between the high college-reported percentages of graduate employment (60–80%) and the much lower figures (40%) presented by national institutions such as the Central Bureau of Statistics (1990). Differences are also discernible between teachers colleges with a high ratio of employed graduates (about 80%) and the Zinman College of Physical Education and Sport Sciences, which has a lower rate of graduate employment (60–70%). One explanation for this difference may be the

many more options graduates of the physical education college have to apply their academic and professional expertise in formal and informal education settings and in the private sector (Ben-Sira & Arnon, 1997).

The follow-up on graduates of the college showed a significant rise in the number of graduates continuing their academic studies (15%). The chosen areas of study varied widely, but many continued their studies in Israel's larger universities (Ben-Sira & Arnon, 1997).

This survey demonstrated the difficulties in evaluating teaching in general and especially pre-service teaching. These difficulties have many ramifications for the selection tools colleges use to identify and accept candidates for the outstanding student teacher programme. Identifying the characteristics of such students may contribute to an understanding of these issues. Therefore, the main aim of this study was to identify and describe characteristics of outstanding student teachers at three points in time: before commencement of college studies, during the first 2 years of study and about 4 years after completion of their studies.

The following research questions derive from the study aims.

1. Is it possible to characterize outstanding student teachers according to the preliminary data (matriculation average and psychometric grade) with which they enter the college?
2. Is it possible to characterize outstanding student teachers according to the various parameters commented upon by acceptance committees (appearance, thinking, attitude to the profession, general knowledge and comments)?
3. Is it possible to characterize outstanding student teachers according to the written appraisals of supervisors during the first 2 years of studies?
4. Is it possible to pinpoint characteristics that set outstanding student teachers apart from other students 4 years after completion of their college studies?

Research method

Population

The research population included 101 third year students from two consecutive graduating classes, 1997 and 1998. For research purposes three groups of students were constructed: outstanding student teachers, average student teachers and weak student teachers.

The outstanding group included 22 students (11 from each graduating class) who met the following criteria:

1. A grade of 90 or higher in student teaching and methodology in the first and second years. In order to determine the final grade in student teaching for each year of study the supervisors used a quantitative form evaluating the various aspects of teaching. Each component contributes its relative weight to the final grade. The form was developed by the supervisors who conduct periodical reliability checks on its implementation.

2. Confirmation of their suitability for the outstanding student teachers' programme by their first and second year supervisor and their second year cooperating teachers.
3. An overall grade average of 80 or higher.
4. Social contribution to their study groups as reported by the pedagogical advisers and as noted in their personal files.
5. Authorization by the dean of students and the academic council (a 'clean' personal file, meaning that there were no reports of academic violations).
6. Students' consent to participate in the special programme.

The comparative groups included the following.

1. Twenty-four students who were having difficulties with student teaching (12 from each graduating class). The criterion for their inclusion in this group was a grade of 74 or less in student teaching.
2. Fifty-five students with average student teaching abilities (24 students from the 1997 class and 31 students from the 1998 class). The criteria for inclusion of students in this group were a grade of 75–85 in student teaching and methods and an overall academic grade average of 70–80.

About four years after the group of outstanding student teachers completed their studies, a follow-up survey interview was conducted and members of the program were compared to a random sample of 25 students from the same years.

Research instruments

The research instruments included the following.

1. National psychometric test.
2. National matriculation examinations.
3. The interview committee conclusion, based on a personal interview, including the following parameters: personal appearance, thinking and expression, attitude to teaching, general knowledge and general comments. The last parameter included remarks pertaining to a general evaluation and impressions that could not be entered in the other sections. The interview staff that formulated the evaluation were each composed of two teachers from the college. The Israeli Ministry of Education mandates that teacher colleges employ an interview in the selection process of pre-service teacher candidates. The purpose of the interview is to allow each candidate to demonstrate his or her ability to articulate educational positions as well as demonstrate how they perform verbally and non-verbally in the presence of an audience.

Three evaluators were instructed in the analysis and coding of written opinions. None of the evaluators knew the students' names or to which group they belonged. Each evaluator assessed each of the parameters in the opinion and rated them on a scale of 1–10. The mean of the three evaluators was taken as the

score for each of the parameters. Correlation coefficients for inter-judge testing reliability were high (0.83–0.93).

4. Written evaluations by the supervisors entered in each student's personal file. One of the criteria for selecting outstanding students was their grade in student teaching and methods classes and the overall evaluation of the supervisors. The teaching grade included components each of which was weighted for the overall evaluation. It seemed important to us to identify, within this broad and inclusive compilation, exactly what characterizes outstanding students. Therefore, the supervisors' evaluations were subjected to analysis, to serve as an additional and more detailed instrument for defining students' skills and traits. The supervisors evaluated each student twice a year: at the end of the first semester and of the second semester. It is important to note that our students teach 1 day every week in the public schools during their entire study at the college. The data collected during this time was also used by the supervisors as they evaluated the student teachers. Content analysis of these written evaluations for the first 2 years of the students' studies, as analysed by the researchers, revealed four main categories: teaching ability, social functioning, behaviour, critical thinking ability. Examples of statements in the 'teaching ability' category included: 'able to plan a lesson independently', 'takes learners' abilities into consideration', 'implements original ideas'. Examples of statements in the 'social functioning' category: 'contributes to others', 'manifests social involvement in student society', 'demonstrates the ability to work cooperatively'. Examples of statements in the 'behaviour' category: 'responsible', 'dedicated', 'polite'. Examples of statements from the 'abstract thinking ability' category: 'has a developed sense of self-criticism', 'has self-reflection ability', 'gives peers useful feedback'.

A count was made of the number of positive statements made about each student in each of the categories during their first 2 years of study.

5. Structured telephone interview. About 4 years after the students graduated a structured telephone interview was conducted that included 13 short informative questions to determine what the graduates were doing in terms of employment at that stage of their lives and whether they were engaged in teaching in school. There were also a number of closed questions pertaining to their attitude to teaching. The students were asked to respond to the closed questions on a 5 point Likert-type scale, where 1 represented very much, 2 much, 3 average, 4 little and 5 not at all. Examples of such questions were: 'To what extent do you have contact with your pupils?'; 'To what extent do you derive satisfaction from teaching? As noted, the other questions were informative, dealing with issues such as: 'Do you hold any other positions in the school? If you do, which?'; 'Do you have any vocation other than teaching in school? If so, what?'

Research procedure

The preliminary data and those pertaining to the students' period of college studies were culled from the students' personal files. About 4 years after graduation 19 of the

22 students in the outstanding student group were located and interviewed by telephone. At the same time a random sample of 75 students was selected from the same graduating classes of which 25 were also interviewed.

Statistical analysis

The statistical analysis included descriptive statistics of the means and standard deviations and one-way ANOVA for inter-group differences.

Findings

The findings will be presented in three stages according to the three points in time for which data were collected: (a) before commencement of college studies—the weighted matriculation examination, psychometric test and scores for each of the parameters in the interview committee evaluation; (b) the first 2 years of study in the college—the categories in the pedagogical advisers' written opinions; (c) about 4 years after completion of studies in the college—employment and attitudes towards teaching.

Comparison between groups: pre-study variables

The preliminary variables include a weighted score based on the matriculation examination, the psychometric test score and the various parameters in the interview committee's written evaluation. Table 1 presents the preliminary data for the groups.

Table 1 reveals significant differences between the groups in their mean matriculation grades ($F[2,91] = 4.86, P = 0.01$). The mean matriculation grade was higher for the outstanding group than for the other two groups. On the other

Table 1. Initial data about the groups (means \pm SD): psychometric, matriculation and acceptance committee interview

	Weak	Average	Outstanding
Psychometric	490.3 \pm 39.2	501.9 \pm 60.3	516.9 \pm 53.8
Weighted matriculation ^a	83.40 \pm 7.2	81.21 \pm 6.6	86.18 \pm 6.5
Acceptance committee			
Appearance ^b	7.4 \pm 1.7	8.2 \pm 0.8	8.6 \pm 0.8
Thinking ^c	6.9 \pm 1.8	7.6 \pm 1.3	8.1 \pm 1.1
Attitude to profession	7.8 \pm 1.6	7.9 \pm 1.6	8.3 \pm 0.8
General knowledge	6.1 \pm 2.6	7.1 \pm 1.6	7.3 \pm 1.2
Comments ^b	6.9 \pm 1.9	8.0 \pm 1.3	8.8 \pm 0.5

^a $P < 0.01$.

^b $P < 0.001$.

^c $P < 0.05$.

hand, the mean matriculation grade for the weak group was greater than for the average group. Significant differences between the groups were also found for three parameters in the interview committee evaluations: appearance, thinking and comments. The scores for the outstanding group in appearance and comments were higher than for the other two groups and the scores for the average group were higher than for the weak group ($F[2,98] = 7.66, P < 0.001$) and ($F[2,92] = 11.1, P < 0.001$), respectively. In thinking, the outstanding group score was significantly higher than for the weak group ($F[2,99] = 4.6, P < 0.05$), but not for the intermediate group.

No difference was found between the groups in the psychometric scores and the interview committee evaluations of attitude towards the teaching profession and general knowledge.

Comparison between groups: variables for the first two years of studies

Content analysis of the written evaluations of the pedagogical advisers revealed reference to four categories: teaching ability, behaviour, social functioning and critical thinking. For each student a count was made of the positive statements made in each of the categories. Table 2 presents the means and standard deviations for each of the groups in the four categories of written assessments.

From Table 2 it appears that significant differences exist in teaching ability between the groups ($F[2,82] = 13.6, P < 0.001$), with the outstanding group receiving the largest number of positive statements while the weak group received the smallest number of positive statements. In behaviour, significant differences were found between the outstanding group, which received the highest number of positive statements, and the other two groups ($F[2,85] = 15.6, P < 0.001$). In social functioning, significant differences were found between the weak group, which received the smallest number of positive statements, and the other two groups ($F[2,74] = 4.8, P < 0.05$). In critical thinking no differences were found between the groups.

In examining the number of statements made by the pedagogical advisers in each of the categories it was found that most of the statements referred to behaviour

Table 2. Written opinion of pedagogical advisers in the various categories

Variable	Weak ($n = 15$)	Average ($n = 46$)	Outstanding ($n = 24$)
Teaching ability ^a	2.1 ± 1.1	4.6 ± 2.8	7.6 ± 4.6
Social functioning ^b	1.2 ± 0.4	2.7 ± 2.1	3 ± 1.3
Behavior ^a	3.2 ± 2.1	5.2 ± 3.7	11.7 ± 8.4
Critical thinking	1.6 ± 1.6	1.8 ± 1.8	2 ± 2.0

^a $P < 0.001$.

^b $P < 0.05$.

and only secondly to teaching ability. Very few comments referred to social functioning or to critical thinking.

Four years after completion of college studies: employment and attitude towards teaching

About 4 years after graduation telephone interviews were conducted with graduates from the outstanding group and with a random group of students from the same graduating class. Seven of the 19 graduates from the outstanding group (37%) had engaged in formal teaching in schools during the current year, four in elementary school and three in junior and senior high school. A similar percentage (40%) was found in the comparative group, of whom four were in elementary school and six in junior and senior high school. In both groups 4 years after graduation most of the graduates were employed in teaching.

All of the graduates in the outstanding group who were working in formal education had an additional function in their school, such as security coordinator, behaviour analyst, student council coordinator, road safety coordinator, computer manager, homeroom teacher or school aesthetics coordinator. In the comparative group eight of the ten graduates held additional posts in their school, such as school team coach, computer manager, electronics teacher, dance troupe coordinator or social coordinator.

All of the graduates in the outstanding group had additional employment, over and above their work in school, including weight room instructor, municipal personal commitment coordinator, coach, private course instructor and therapeutic swimming instructor. In the comparative group seven of the ten engaged in additional employment, in such posts as sports hall director, aerobics instructor, soccer coach, computer technician and afternoon class instructor.

Of the seven graduates in the outstanding group engaged in teaching, five reported that they would certainly continue to teach. The other two were not sure. In the comparative group the picture was almost the same; of those engaged in teaching, five were sure to continue, three would carry on teaching for the next few years and two were still not certain.

Three of the graduates from the outstanding group and five from the comparative group that were not teaching cited not finding work in formal education as the reason. Other reasons given by those in the outstanding group were continuation of studies, lack of interest, baby at home and work in the private sector. In the comparative group additional reasons that arose were: low salary compared with the private sector, preference for working with adults, no particular interest in the physical education profession, the difficulty of teaching and studies.

A significant difference between the outstanding and the comparative groups was found in those who continued their master's degree studies. Fifty-three per cent of the outstanding group continued second degree studies, as compared with 36% in the comparative group.

No substantial differences were found in the graduates' reported level of integration into school, ties with pupils and satisfaction from teaching. Most of the graduates in both groups rated these issues very much or much (1 or 2 on the Lickert scale). The factors cited as contributing to satisfaction in teaching were: the fabulous world of the child, love of children and interacting with them, love of teaching, love of the physical education profession and a good school atmosphere. Factors contributing to dissatisfaction were: the education system and the school system, salary and lack of suitable conditions in which to teach physical education.

To summarize, a number of significant differences were found between the outstanding group and the average or weak group or the latter two combined. These differences were in matriculation grades and in three of the parameters in the interview committee opinions: appearance, thinking and comments. Similarly, significant differences were found in the pedagogical advisers' written evaluations in three categories: teaching ability, behaviour and social functioning. About 4 years later the salient difference between the outstanding group and the comparative group was the larger number of students from the outstanding group that continued their studies for a master's degree. All of the graduates in the outstanding group and most of the graduates in the comparative group performed additional tasks in school and had other employment outside school.

Discussion and conclusions

The main aim of this study was to identify and describe the characteristics of outstanding college student teachers at three points in time: before entering college, during their studies and a few years after completing their studies.

Student data before their college studies

Pre-college student data included psychometric test results, matriculation examination grades and interview committee recommendations. According to the results psychometric test results are not at all predictive of student success in teaching. As for matriculation examination grades, while they did succeed in predicting outstanding student teachers, the weakest student teachers had higher matriculation examination grades than the average students. Thus, the two instruments used most widely to select candidates for teachers' colleges are not effective predictors of success in teaching. Similar results have emerged in other studies conducted in Israel (Edi, 1996).

The committee recommendations based on personal interviews were found to be a better predictor in distinguishing between students in terms of their student teaching later on. The parameters appearance, thinking and general comments were the best predictors. Ben-Shachar and Beller (1993) obtained similar findings in their study of personal interviews as a selection tool in teachers' colleges. In their opinion, despite the shortcomings of personal interviews (lack of standardized evaluations,

insufficient reliability and very low predictive validity) they were more successful than matriculation and psychometric grades in forecasting excellence in teaching.

Other studies (Amir, 1987; Shechtman, 1990) examined the ability of group interviews to predict students' success in practical work, as reflected in the pedagogical advisers' group evaluations. These studies found that group interviews had a high correlation with success in college studies and with personal evaluations pertaining to human relations and leadership. Using 'evaluation centre' classifications was also found to contribute to predicting success in both theoretical studies and practical work (Raz *et al.*, 2000). Thus it would appear to be difficult to use intellectual abilities alone to assess pre-service teachers' success when they get out into the field (Mevarech, 1986). Furthermore, the recent emphasis on multiple intelligences devalues the use of standard IQ tests, which are limited to a very specific type of intelligence (Gardner, 1996).

Student data during their college studies

Student data attesting to teaching quality and success during the college period were obtained from written assessments completed by supervisors during the students' first 2 years of studies. The use of process-based teaching evaluations is an accepted means of evaluating teaching (Cohen, 1987). The data used in this study were provided by different supervisors at different points of time during the academic year. Therefore, it can be assumed that these evaluations represent the students' teaching level and are not limited to random experiences.

Analysis of the supervisors' written evaluations reveals that the average number of statements in the category teaching ability was highest for the outstanding group and lowest for the weak group. Such documentation, indicating that good teaching ability is reflected in the early stages of student teaching, during the first 2 years of future teachers' education, may be of use in teacher training by signalling the need to give early assistance to those having difficulty and by providing special promotion to outstanding students. In exceptional cases it is possible to consider cessation of studies for students who consistently manifest difficulties in teaching.

In the behaviour and social functioning categories the average number of statements for the outstanding and average groups was significantly higher than for the weak group, indicating that these domains are characteristic of outstanding students. On the other hand, students who experienced difficulty in teaching were also salient in their low evaluations for social functioning. It is reasonable to assume that those who have social problems will have difficulties with teaching, which by its nature demands good interpersonal relations.

It is interesting to note that most of the supervisors' statements referred to behaviour and teaching ability. This reinforces findings in recent literature indicating two main categories in the analysis of characteristics of good teachers: their personality and their professional ability (Beishuizen *et al.*, 2001).

Monitoring the graduates

Follow-ups on the graduates in the two groups found similar numbers of graduates engaged in formal education 4 years after completion of their studies. This figure (about 40%) is similar to the percentage of graduates reported to be employed in teaching in previous surveys conducted by the college (Ben-Sira & Arnon, 1997). Some of the graduates noted the reason for not entering school work as lack of employment opportunities. This is not a new situation and it has two consequences: some graduates simply drop out of the teaching market and, second, schools do not renew their ranks by taking in fresh new faces. It is important to note that graduates of a physical education college have many options in which to utilize their academic and professional specialization, in formal education, informal education and in the private sector, so that it is reasonable to assume that unlike other teachers' colleges, a smaller percentage of graduates will turn to formal education.

The graduates employed in teaching reported good integration into their school, both with the teaching staff and management and with the pupils. It is reasonable to assume that as a result they also reported greater satisfaction from teaching and a readiness to continue to work in teaching for at least the next few years. Perhaps the professional socialization of the reported programme has influenced teacher behaviour and has also dampened the effect of the on-site organizational socialization behaviour. This is purely speculative on the part of the researchers, but it does seem to be plausible.

Another characteristic that emerged from the comparison was the tendency among the outstanding group to continue their academic studies. More than half of the graduates in the outstanding group had continued or were continuing their studies for a master's degree, as compared with only one-third of the graduates in the comparative group. These data indicate an impressive increase in the percentage of those continuing their academic studies among all graduates over the previous survey (Ben-Sira & Arnon, 1997), when only 15% of the graduates reported continued studies. One of the explanations for this change is evidently the option of master's degree study at the college. At the same time, the reasons for the difference between the outstanding group and comparative group may be attributed to their *a priori* higher theoretical skills and/or to the 'push' they received as a result of the outstanding student teacher project, which both improved their theoretical skills and confirmed (by virtue of their selection) their higher theoretical and practical capability levels.

These data also indicate a potentially problematic situation in terms of teaching quality in schools. If outstanding teachers are also those with academic ability that inclines them towards higher studies, they may forsake teaching in favour of other posts, which in and of themselves are just as important socially. The result may be a situation in which graduates with average and weak teaching abilities remain in the profession while outstanding teachers leave.

Finally, it was found that all of the graduates in the outstanding group and most of the graduates in the comparative group performed additional tasks in school and had

other employment outside school. These data indicate, on the one hand, the important place these graduates hold in their school and, on the other, their ability and their skills to work outside as well inside school. While these data may confirm that their selection for the outstanding student programme was justified, it may also indicate the contribution of the programme to the students and to the education system and good professional and organizational socialization in their occupation (Lawson, 1986, 1989, 1991).

Acknowledgements

Thanks are due to Dr Don Morris for his contribution in reviewing this paper.

Note

1. In Israel one can study to become a physical education teacher only in the Education College system. Universities do not offer study programmes in physical education.

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