

Factors affecting the impact of teacher education programmes on teacher preparedness: implications for accreditation policy¹

Lawrence Ingvarson^{*}, Adrian Beavis and Elizabeth Kleinhenz
Australian Council for Educational Research

The purpose of this study was to provide guidance to policy-makers about the standards that might be appropriate for accrediting teacher education programmes. The study was commissioned by the Victorian Institute of Teaching (VIT), a statutory body established in 2001 by the Victorian state government with responsibility for the registration (licensing) of teachers and the accreditation of teacher education programmes.

The study investigated the characteristics of effective initial teacher education programmes, as reported by teachers who have just finished their first year of teaching. A survey instrument was distributed in 2004 to all registered teachers who had graduated from their teacher education programme in 2002, taught in 2003 and were now one month into their second year of teaching in 2004. In total, 1147 teachers returned completed questionnaires, from all universities in the state.

Teachers who reported that they were well prepared to meet the demands of their first year of teaching were more likely to have completed courses that gave them deep knowledge of the content they were expected to teach, and how students learned that content, as well as skill in: diagnosing students' existing levels of understanding of the content; planning activities that would promote further development of understanding; and assessing the extent to which development had taken place. The paper concludes with implications for accreditation policy.

On constate, à l'échelle internationale, un intérêt accru pour les procédures d'évaluation et d'accréditation des programmes de formation des maîtres. Le but de cette recherche est d'apporter des repères aux personnes chargées de la réglementation concernant les standards qui pourraient servir à l'accréditation de ces programmes de formation. Cette recherche est menée à la demande du Victorian Institute of Teaching (VIT), une organisation chargée de l'accréditation des enseignants et des programmes de formation dans l'état de Victoria (Australie).

Cette recherche porte sur les caractéristiques des programmes de formation initiale efficaces, tels que les perçoivent les enseignants qui viennent de terminer leur première année d'enseignement. En 2004, un questionnaire a été distribué à tous les enseignants accrédités, sortis diplômés de leur programme de formation en 2002, ayant enseigné en 2003 et qui en étaient

^{*}Corresponding author: Australian Council for Educational Research, 347 Camberwell Road, Camberwell, 3124 Australia. Email: ingvarson@acer.edu.au

au premier mois de leur deuxième année d'enseignement en 2004. En tout, 1147 enseignants diplômés de toutes les universités de l'état ont répondu au questionnaire.

L'analyse des réponses révèle des variations significatives concernant l'efficacité des programmes. Les programmes efficaces sont ceux qui donnent aux nouveaux enseignants une connaissance approfondie de ce qu'ils sont censés faire pour aider les élèves à apprendre ainsi que de la manière dont les élèves apprennent. Ces programmes donnent aux enseignants la capacité d'évaluer chez les élèves le niveau de leur compréhension du contenu enseigné. Ces programmes aident les enseignants à planifier des activités qui encouragent le développement des élèves et à mesurer l'amplitude de ce développement.

Les auteurs montrent dans cette présentation comment ces résultats peuvent guider le choix des standards utilisés lors de l'accréditation des programmes de formation des maîtres.

Ziel der Studie ist die Bereitstellung von Handlungsempfehlungen für politische Entscheidungsträger im Hinblick auf Standards, die zur Genehmigung von Lehramtsstudiengängen herangezogen werden können. Die Studie wurde vom Victorian Institut of Teaching (VIT) in Auftrag gegeben, welche im Jahr 2001 als eine Körperschaft des öffentlichen Rechts von der Regierung des Bundesstaats Victoria eingerichtet wurde und verantwortlich für die Zulassung (Lizenzierung) von Lehrern und die Genehmigung von Lehramtsstudiengängen ist.

Die Studie untersuchte die Eigenschaften einer effektiven (Erst-)Ausbildung, welche von Lehrern berichtet wurden, die gerade ihr erstes Jahr als Lehrer beendet hatten. Für die Erhebung im Jahr 2004 erhielten alle registrierten Lehrer einen Fragebogen, die ihre Ausbildung in 2002 abgeschlossen hatten, in 2003 unterrichtet hatten, und die zu dem Zeitpunkt der Erhebung den ersten Monat im zweiten Jahr als Lehrkraft absolviert hatten. Der Fragebogen wurde von 1147 Lehrern aller Universitäten im Bundesstaat ausgefüllt.

Lehrer, die berichteten, auf die Anforderungen im ersten Jahr als Lehrer gut vorbereitet zu sein, besuchten Kurse und Seminare, die ihnen ein vertieftes Wissen über die zu unterrichtenden Lehrinhalte und darüber, wie Schüler diese Inhalte lernen, vermittelten. Außerdem wurden in diesen Kursen und Seminaren Fähigkeiten erlernt zur Einschätzung von bereits bei Schülern vorhandenem Verständnis der Lehrinhalte, zur Planung von Aktivitäten für die weitere Entwicklung des Verständnisses und zur Bewertung des Ausmaßes dieser Entwicklung. Die Arbeit schließt mit Implikationen für die Zulassung von Lehramtsstudiengängen.

El propósito de este estudio consistió en proporcionar orientación a las instancias políticas acerca de los estándares que podrían ser apropiados para la acreditación de programas de formación de profesores. El estudio fue encargado por el Victorian Institute of Teaching (VIT), una institución creada en 2001 por el gobierno del estado de Victoria con la responsabilidad de llevar a cabo el registro (licencia para enseñar) de los profesores y la acreditación de los programas de formación de profesorado.

En el estudio investigamos las características de los programas eficaces de formación inicial docente, desde el punto de vista de los profesores que habían finalizado su primer año de enseñanza. En el año 2004 se distribuyó un cuestionario a todos los profesores acreditados que habían finalizado su graduación como profesores en el año 2002, y que habían enseñando en 2003 y que se encontraban en ese momento en el primer mes de su segundo año como docentes. El cuestionario lo respondieron 1147 profesores de todas las universidades del estado.

Los profesores que afirmaron estar preparados para dar respuesta a las demandas de su primer año de enseñanza habían realizado cursos que les proporcionaron un conocimiento más elaborado de lo que de ellos se esperaba para que pudieran ayudar a los alumnos a aprender, asimismo conocían cómo aprenden los alumnos, así como poseían habilidades para diagnosticar los niveles previos de comprensión del contenido por parte de los alumnos, planificaban actividades que podrían promover un desarrollo de los alumnos y evaluaban en qué medida ese desarrollo tenía lugar. El artículo concluye con implicaciones para la política de acreditación.

Introduction

There is increased interest internationally in procedures for the assessment and accreditation of teacher education programmes. The OECD recently completed a major project in 25 countries called, *Teachers matter: attracting, developing and retaining effective teachers*, which found that teacher education was high on the political agenda in many countries (OECD, 2005). This report pointed out that accreditation procedures are a means by which policy-makers can encourage the improvement of teacher education. It claimed that accreditation standards were more likely to lead to innovation and improvement if they focused on clarifying the expected outcomes of teacher education, rather than stipulations about inputs, such as curriculum content and processes.

Current procedures for assuring quality in teacher education were also the focus of a recent Eurydice study (2006). The report examined arrangements for evaluating and accrediting institutions and programmes for initial and in-service teacher education in 30 European countries. According to the Eurydice report, few countries have regulations and procedures that apply specifically to the assessment and accreditation teacher education programmes. In most countries, the only regulations that apply to the evaluation of teacher education are those that apply for the external evaluation of higher education generally.

One of the exceptions is Portugal, which has recently developed an independent accreditation system aimed at 'providing greater public assurance that initial teacher education programmes are more driven by social demand, namely by the changing school education needs' (Campos, 2004). Another is Switzerland, which has moved to a standards-guided teacher education system (EDK/CDIP, 2002). Scotland has a long-standing process for accreditation of teacher education operated by the General Teaching Council for Scotland. And in England, the Training and Development Agency has had a statutory role to monitor the quality of courses and graduate capabilities since the mid-1990s (Tabberer, 2003).

Teacher education is also high on the political agenda in Australia. Several parliamentary inquiries on the topic have been completed recently, at federal and state levels. A recent report from the House of Representatives Standing Committee on Education and Vocational Training (2007) called for more systematic methods for gathering data about the outcomes of teacher education courses. There are over 200 teacher education courses in Australia, but, there are few published studies of their relative effectiveness in preparing teachers for the demands their first few years of teaching place upon them. The report drew attention to the need for more comparable standards-based measures of the outcomes of teacher education courses.

A recent ACER study examined current procedures for the assessment and accreditation of teacher education courses in Australia (Ingvarson *et al.*, 2006). The findings indicated that these procedures are generally weak as quality assurance mechanisms. Where they exist, current accreditation standards for teacher education programmes in Australia are more likely to focus on inputs than outcomes. Few are based on objective data. None is based on common outcome measures of the quality of graduates or their competencies across courses.

The influence of accreditation arrangements on the quality of teacher education outcomes is one of the central research questions in a comparative study of teacher education involving 17 countries sponsored by the International Association for the Evaluation of Educational Achievement (IEA) and coordinated by Michigan State University and ACER.²

Purpose of this study

A central challenge facing accreditation agencies at the present time is how to gather evidence about the effectiveness of pre-service teacher education programmes in ways that are valid, reliable, and feasible, as well as useful in increasing our understanding of the essential features of effective teacher education programmes and improving these programmes.

The purpose of this study was to provide guidance to policy-makers about the standards that might be appropriate for assessing and accrediting teacher education programmes in the future to ensure their graduates were well prepared for the demands of teaching. The study focuses on the characteristics of effective initial teacher education programmes, as reported by teachers who have just finished their first year of teaching.

The study was commissioned by the Victorian Institute of Teaching (VIT), a statutory body established in 2001 by the Victorian state government with responsibility for the registration (licensing) of teachers and the assessment and accreditation of teacher education programmes. All teacher education programmes in Australia are based in universities. In 2003, the VIT initiated a Future Teachers Project to inform its plans for improving the quality of teacher education. The purpose of Phase 1 of the project was to look ahead to 2010 and beyond and to address questions such as:

- what will future teachers need to know and be able to do to be effective?
- what demands will governments, systems, employers and the community make on future teachers?
- what directions might schooling take in the future and what requirements might these changes place on teachers' knowledge and skill?
- what changes should be made to teacher education programmes to better prepare future teachers?

The VIT brief for the present study was to identify the effectiveness of various elements and sub-elements of pre-service teacher education programmes. The study focused on the following questions:

1. What perceptions do beginning teachers and principals have about the effectiveness of current teacher education models in Victoria?
2. What changes should be made to teacher education courses to better prepare future teachers?

This paper focuses mainly on the second question, which, in effect, asks, 'what are the characteristics of teacher education programmes whose graduates felt well

prepared for their first year of teaching?’ Findings relevant to the first questions can be found in ACER’s final report on the Future Teacher Project to the VIT.³

Methodology

A key feature of the method used in this study is that teachers were surveyed at the beginning of their second year of teaching. This meant that they had the experience of their first year of teaching on which to make a judgment about how well they believed their teacher education programme had prepared them for the demands of teaching. The survey instrument included a measure of preparedness developed by ACER called the Teacher Preparedness Inventory (TPI).

Conceptual framework

The conceptual framework for the study is shown in Figure 1. Figure 1 provides a graphical depiction of a model for predicting perceived outcomes of pre-service teacher education courses. The framework suggests three main factors associated with outcomes—teacher background, the pre-service course, and the characteristics of the school where graduates had their first teaching position.

Reading from left to right, Figure 1 indicates that the following assumptions were made concerning the likely influences on beginning teacher perceptions of their preparedness for their first year of teaching.

Background characteristics of beginning teachers such as gender and previous educational and work experiences will influence perceptions of pre-service teacher education courses and preparedness. (We would have liked to include some

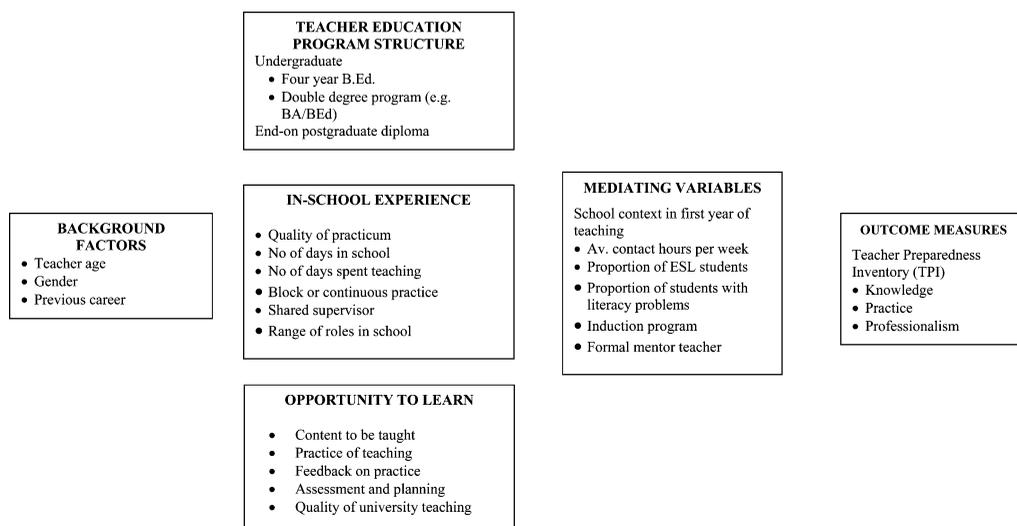


Figure 1. Conceptual framework: graphical depiction of the relations between the key concepts predicting perceived outcomes of pre-service teacher education courses

measures of academic ability and achievement, but it was not possible to gain access to this kind of data in this study).

The structure of the course—whether the course is an undergraduate degree in education, an undergraduate double degree (education degree concurrent with a degree in another faculty), or a postgraduate qualification (taken after a first degree in a discipline related to subjects to be taught in school), will shape perceptions of preparedness.

The nature and extent of in-school experience during the teacher education programme will affect the extent to which beginning teachers will feel well prepared.

Opportunity to learn about teaching through exposure to certain kinds of course content and through experience of certain modes of learning how to teach will influence the extent to which teachers believe they are well-prepared for their first year of teaching. Opportunity to learn, and therefore preparedness, will also be affected by the models of teaching provided in university courses.

School context in the first year of teaching will also shape perceptions of preparedness. School context here includes: the background of the students they taught, whether there was an induction programme at the school, whether there was a mentor programme in the school, and the workload of the teacher.

This study was designed to allow analysis of the extent to which the different components of teacher education programmes contributed to the variation in the ratings teachers gave about their preparedness. Figure 1 indicates that the study was also designed to control for the contribution that other factors might make to that variation, such as the background characteristics of the beginning teachers and the context of the school in which they spent their first year of teaching. The analyses reported upon investigated the extent to which these factors influence perceptions of pre-service courses. These factors, it was theorised, would account for most of the variance in the perceived outcomes of the courses.

There have been several recent syntheses of research on the characteristics of effective teacher education (e.g. Cochran-Smith & Zeichner, 2005). Wilson, Floden and Ferrini-Mundy (2001) and Wilson and Floden (2003) provide a comprehensive review guided by five questions of key interest to policy-makers:

- what kinds of subject matter preparation, and how much of it, do prospective teachers need?
- what kinds of pedagogical preparation, and how much of it, do prospective teachers need?
- what kinds, timing, and amount of clinical training ('student teaching') best equip prospective teachers for classroom practice?
- what policies have been used successfully to improve and sustain the quality of pre-service teacher education?
- what are the components and characteristics of high quality alternative certification programmes?

It is clear from their literature review that it is not easy to find definitive answers to these apparently straightforward questions. They admit that the research results are

often contradictory and confusing. Only 64 studies met their criteria for inclusion in terms of quality and rigor, which is surprising given the huge literature on teacher education and the scale of the teacher education enterprise. While the present study does not address each of these questions in depth, it does have the potential to address the questions as a set and compare the *relative* importance of the different components of teacher education to teacher preparedness.

Outcomes of teacher education

Figure 1 also indicates that three teacher education outcomes were conceived of for this study. These outcome measures were derived from an analysis of the registration (licensing) standards developed by the Victorian Institute of Teachers (VIT), the professional standards body for the state of Victoria. The VIT standards describe what the profession believes beginning teachers needed to know and be able to do in order to provide quality opportunities for students to learn, regardless of where or how they were trained. The standards fall into three main groupings: professional knowledge, professional practice and professional engagement.

The ACER Teacher Preparedness Inventory (TPI) asked beginning teachers how well they thought their teacher education programmes had prepared them to meet VIT standards in each of these groupings. Further details about the measures are provided below. Two additional outcome indicators were included in the questionnaire:

- whether teachers would enrol in their teacher education course again, and
- an overall rating by teachers of the effectiveness of their teacher education programme in preparing them to teach.

Measures used in the study

The following section provides more detail about the measures used for the various components in the conceptual framework and the rationale behind them.

Opportunity to learn scales.

Opportunity to learn refers to both the form and the substance of learning experiences in teacher education programmes. The scales used in this study were developed in our previous research on teacher education and professional development programmes (Ingvarson, Meiers & Beavis, 2004), which in turn owed much to a number of research studies reviewed for example by Kennedy (1998), Hawley and Valli (1999), Sykes (2002) and Wilson and Floden (2003).

Respondents were asked to indicate the extent to which (*not at all, to a minor extent, to a moderate extent, to a major extent*) their pre-service teacher education programme had given them the opportunity to learn, using the following four scales, which had been confirmed by factor analysis⁴.

Opportunity to learn content knowledge and how it is taught. Respondents were asked, 'To what extent did your pre-service teacher education programme give you the opportunity to:

- a) gain a deep understanding of the content knowledge you were expected to teach;
- b) make clear links between content or subject matter units and units about how to teach the content;
- c) make clear links between theoretical and practical aspects of teaching;
- d) develop a sound understanding of how students learn the specific content that you were expected to teach;
- e) learn how to probe students' prior understandings of content you were about to teach;
- f) learn how to present content in ways that build on students' existing understanding;
- g) learn methods of teaching specific to the content you were expected to teach.'

This scale had good reliability as indexed by Cronbach's alpha (0.88).

Opportunity to learn the practice of teaching. Respondents were asked, 'To what extent did your pre-service teacher education programme give you the opportunity to:

- h) see models of expert teachers in action;
- i) observe models illustrating new teaching practices;
- j) learn methods for reflecting on your teaching;
- k) practise analysing and reflecting on examples of your practice;
- l) use teaching standards to identify specific areas of your practice that you needed to develop;
- m) develop and test new teaching practices;
- n) analyse your teaching practice in relation to standards for good teaching practice;

This scale had good reliability (Cronbach's alpha=0.88).

Opportunity to learn via feedback from university staff. Respondents were asked, 'To what extent did your pre-service teacher education programme give you the opportunity to:

- o) practise new teaching skills, with feedback from your tutor/lecturer;
- p) receive useful feedback about your teaching from your university tutor/lecturer;

This scale has adequate reliability (Cronbach's alpha=0.78).

Opportunity to learn assessment and planning. Respondents were asked, 'To what extent did your pre-service teacher education programme give you the opportunity to:

- q) examine student work in relation to standards for student learning;
- r) learn how to diagnose students' achievement in relation to expected learning outcomes;
- s) plan and prepare units of work collaboratively;
- t) assess and monitor collaboratively, students' progress against standards for student learning;
- u) plan and assess in accordance with the CSF/VCE.

This scale had good reliability (Cronbach's $\alpha=0.88$).

School context variables

School context included characteristics of the school where the respondent was teaching most frequently during 2003 that might have mediated the extent to which beginning teachers felt able to cope with the job:

- *average contact hours per week*—theorised to be important on the assumption that the higher the workload experienced, the less likely teachers would feel able to cope with the demands of teaching.
- *proportion of English as a Second Language (ESL) students*—theorised to influence perceptions of pre-service course quality on the assumption that these students present particular challenges and difficulties that will shape the experience of teaching and hence reflections on the adequacy of the pre-service course.
- *proportion of students with English literacy problems*—theorised to be relevant on the same basis as the proportion of ESL students.
- *induction provided by the school*—was theorised to be important because where the school supports the transition to the world of work, the less likely the experience will be difficult for the new teacher. This may, in turn, influence the perceptions of the adequacy of the pre-service course.
- *formally allocated a mentor*—was theorised to be important for the same reason as for whether there was a formal induction into the school.

Nature and quality of school experience

A number of measures were used to gather data about the practicum component of the teacher education programmes that respondents had experienced. These included:

- the total number of days spent in schools during the programme;
- the number of days spent teaching in schools during the programme;
- whether the practicum was organised in blocks of time (e.g. 3–4 weeks in schools), or on a continuous basis (e.g. 2–3 days per week);
- whether they shared their supervising teacher with another student or not.

We were also interested in the range of activities students participated in when in schools, i.e. the width of their practicum experience. Respondents were asked about the extent to which they had a wider range of experiences and roles other than the traditional practice teaching with a supervising teacher. These included opportunities to:

- observe other teachers (apart from their supervising teachers) in their classrooms;
- join in regular meetings of teachers (e.g. planning, reviewing student work, etc);
- visit families or local community agencies and organizations;
- interview principals and teachers;
- conduct small research projects in the school as part of their pre-service teacher education programme;
- assist with wider school activities without teaching (e.g. helping on excursions, camps, with sport, providing individual tutoring);
- plan lessons jointly with other student teachers.

These items together were used as an index to measure the *width* of the school experience.

We were also interested in the *quality* of their practicum experiences, especially the *congruence* between the school experience and university expectations. To gather data about the quality of the practicum experience respondents were asked about the extent to which they agreed or disagreed with the following statements about their practicum experiences in the last year of their teacher education programme:

- my supervising teacher(s) had a clear idea of what my university required me to do as part of my practicum;
- I had a clear understanding of what was expected of me as a teacher in order to pass the practicum;
- I used teaching standards as a guide to evaluating and reflecting on my teaching;
- my supervising teacher(s) used clear and explicit standards when reviewing my lessons with me;
- overall, the feedback I received from my supervising teacher(s) helped me to improve my teaching;
- the methods used to assess my ability to teach were valid;
- my university lecturer(s) and my school-based supervising teachers had similar views on good teaching methods;
- my supervising teacher(s) generally valued the ideas and approaches I brought from my university teacher education programme;
- overall, my practicum experience was a valuable part of my preparation to become a teacher;
- my supervising teacher(s) used criteria/standards provided by my university for evaluating my teaching.

A factor analysis suggested that there was one dimension underlying these items. This scale had good reliability (Cronbach's alpha 0.87).

Quality of university teaching during teacher education course scale

To gather data about the quality of university teaching that respondents received during their teacher education course, respondents were asked, 'How often did your university lecturers and tutors in your pre-service teacher education programme:

- model good teaching practices in their teaching;
- draw on and use research relevant to the content of their courses;
- model evaluation and reflection on their own teaching;
- have recent experience in primary or secondary schools;
- value the learning and experiences you had prior to starting the programme;
- link their university units to the school experience component of the programme;
- value the learning and experiences you had in your practicum.

A factor analysis suggested that there was one dimension underlying these items. (Response choices were: never, rarely, sometimes, and often). This dimension was interpreted as the quality of university teaching. This scale also had good reliability (Cronbach's alpha 0.83).

Outcome measures

As mentioned above, a feature of this study was to use the ACER Teacher Preparedness Inventory (TPI) as an outcome measure. The TPI is based on teaching standards expected of beginning teachers, such as the VIT standards for registration (licensing). The standards provided a framework for describing what beginning teachers are expected to know and be able to do. The full TPI contains 46 items, which fall into three main areas: professional knowledge, professional practice and professional engagement and seven sub-scales as indicated below.

Professional knowledge scales

In these two scales on the TPI, respondents are asked to describe the extent to which their pre-service teacher education course had provided them with a good understanding of a number of aspects of professional knowledge. A factor analysis (see the technical report) indicated that there were two clear dimensions underlying these data:

Professional knowledge about content and how to teach it. The following items tapped this dimension:

- the content areas you were qualified to teach;
- how to analyse students' existing understanding of topics you are about to teach;
- how to build on students' existing knowledge and experience;
- current developments in your field of teaching;
- resources to support your students' learning in the areas you are qualified to teach;
- the Victorian Curriculum Standards Framework (CSF) and/or Victorian Certificate of Education (VCE—the state end of high school examination) in the areas you are qualified to teach.

This scale also had good reliability as indicated by a Cronbach alpha of 0.84.

Professional knowledge about students and how they learn. The following items tapped this dimension:

- individual differences in student approaches to learning;
- the effects of the social, cultural, religious and ethnic backgrounds of students on their learning;
- how individual students learn and develop;
- how to use findings from research to improve your knowledge and practice;
- how cultural and gender differences can affect communication in the classroom;
- ethical standards and codes of conduct expected of teachers.

This scale had good reliability (Cronbach's $\alpha=0.87$).

Professional practice scales

In these three scales on the TPI, respondents were asked to describe the extent to which their pre-service teacher education course prepared them in a range of areas of professional practice. A factor analysis confirmed that there were three dimensions underlying these data:

Professional practice to do with the curriculum. The following items tapped this dimension:

- design teaching and learning units/ programmes relevant to your students;
- communicate ideas and information clearly to your students;
- use effectively the principles of curriculum documents (e.g. CSF);
- develop questions to challenge students and promote higher order thinking;
- locate suitable curriculum materials and teaching resources.

This scale had good reliability (Cronbach's $\alpha 0.84$).

Professional practice to do with classroom management. The following items tapped this dimension:

- enhance student confidence and self-esteem;
- use motivational strategies effectively;
- encourage appropriate student behaviour;
- provide flexible learning pathways;
- incorporate effective classroom management strategies into your teaching;
- make your teaching relevant to your students' experience.

This scale had good reliability (Cronbach's $\alpha=0.90$).

Professional practice to do with assessment. The following items tapped this dimension:

- assess and monitor the progress of your students;
- use assessment to give effective feedback to your students;
- keep useful records of your students' progress.

This scale had good reliability (Cronbach's $\alpha=0.89$).

Professional engagement scale

In these two scales on the TPI, respondents were asked to describe the extent their pre-service teacher education course had prepared them to reflect on their practice and work with parents. A factor analysis confirmed that there were two dimensions underlying these data:

Reflection on teaching. The following items tapped this dimension:

- reflect upon the effectiveness of your teaching;
- reflect upon your professional knowledge;
- identify your learning needs.

This scale had good reliability (Cronbach's α 0.89).

Work with parents and others. The following items tapped this dimension:

- work with parents or guardians;
- use assessment to give effective feedback to parents or guardians.

This scale had good reliability (Cronbach's $\alpha=0.81$).

Data collection

The survey instrument was distributed in March 2004 to all teachers (2667) who had graduated from their teacher education programme in 2002. Responses were sought only from those teachers who had taught throughout 2003 and were now one month into their second year of teaching in 2004. There were 1147 teachers who returned completed questionnaires, a response rate of just over 44% from the total number of teachers who had graduated in 2002.

All Victorian universities providing pre-service teacher education courses were represented in the data. Over 99% of respondents had completed their teacher education in Victorian universities and 94% had taught in a school in 2003. Forty-three percent taught in primary schools, 40 % taught in secondary schools and the rest in P-10 or P-12 schools. About 67% taught in Government schools, 18% in Catholic schools, and 14% in Independent schools. The analysis reported here is based only on those teachers who had completed their first year of teaching.

The population surveyed consisted of 26.7% who were male and 62.3% who were aged 25 years and over. Of those responding, 21.1% were males and 54.5% were aged over 25 years. Thus, there was a slight over-representation of females in the

achieved sample, and a somewhat greater under-representation of over 25. Forty-five per cent had a career prior to commencing their pre-service teacher education course and 60% of males reported a prior career, compared with around 40% of females. Thus, just over 5% did not teach in their first year after graduation.

About 25% of teachers reported teaching, at least part of their teaching time, in a subject area for which they were not qualified. Respondents averaged about 20 hours of class contact hours per week in their first year of teaching.

Some 64% of respondents indicated that their school provided an induction programme for them. Of these, just under 60% indicated that it had supported them to a moderate or major extent in the development of their teaching practice. Nearly 80% of respondents indicated that their colleagues had supported them in the development of their teaching practice to a moderate or major extent.

Respondents were also asked about mentoring in their school. Just over 60% indicated that they had been formally allocated a mentor in their school. Of these, 40% met with their mentor once a week and 20% met twice a week. Around 25% met three or more times per week. A little over 60% of respondents indicated that these meetings were either helpful or very helpful.

The language background and the literacy levels of the students in the school where the respondent worked were also investigated. A wide range of cultural backgrounds, or low levels of literacy achievement, or a combination of both factors, could impose significant demands upon a new teacher, and also test the adequacy of their pre-service education. Around 20% had nearly all their students with English as a second language. Just over half reported that they had hardly any students with English as a second language.

Around 20% of teachers reported that half or more of their students' had literacy problems. Just on 80% had 25% or fewer of their students with literacy problems. There was an even distribution of teachers across year-levels taught except for Year 12 where fewer reported teaching. Most teachers reported that they had few students with literacy problems or students from a non-English speaking background.

The data provided a good coverage of pre-service teacher education courses and providers, across a wide cross section of the new teacher population for 2003.

Results

The study was designed to address two major questions:

1. What are the perceptions of beginning teachers about the effectiveness of current teacher education models in Victoria?
2. What changes should be made to teacher education programmes to better prepare future teachers?

Descriptive findings

A full report of the descriptive findings can be found in the full report to the VIT on the VIT website (http://www.vit.vic.edu.au/pdfs/FTP_final_report.pdf). Only a

summary of those descriptive results will be reported here as the focus of this report is mainly on the second question above, which is about identifying factors that characterise effective teacher education programmes.

Respondents on average said their teacher education programme had prepared them to a moderate extent on the core elements of the VIT standards, as measured by the TPI. However, while the distribution of ratings indicates many teachers believed their courses prepared them well for the first year, it also indicates that a worrying proportion felt their preparation was less than adequate.

School experience was rated higher than other elements of teacher education programmes, but teachers from most courses made frequent mention of unsatisfactory arrangements, including the selection and preparation of teachers supervising the practicum experience in schools.

Teachers rated their courses in terms of opportunities to learn how to teach along four key dimensions that included content knowledge, teaching skills, feedback from lecturers and assessment of student learning. A summary of these results can be found in the first four tables in the appendix, showing significant variation between teacher education courses in different universities.

On the same four-point scale (1=not at all, 2=to a minor extent, 3=to a moderate extent and 4=to a major extent), average ratings were about 2.75, except for feedback where the average was about 2.5. This is not a strong endorsement of the methods currently used to help people to learn how to teach, given the central importance of feedback for learning, especially in acquiring new skills.

Teachers who completed a four-year undergraduate course generally reported more favourably on the effectiveness of their courses across the TPI outcome measures (knowledge, teaching practice, professional engagement) than teachers who completed a post-graduate degree. The most highly rated courses were undergraduate courses that prepared secondary specialist teachers, such as physical education teachers.

Overall, teachers viewed pre-service teacher education positively, although they still saw room for improvement, especially in preparing for work with parents, and in the quality of teaching at universities. Twenty-five per cent of teachers rated their course as very effective and about 50% rated it as effective. Nearly 80% said they would recommend their course to others.

Analysis of factors associated with teacher views of preparedness

This section of the paper reports on analyses of the strength of association between preparedness, as measured by the TPI, and the range of factors in the conceptual framework (Figure 1) theorised to affect perceptions of pre-service courses by teachers who had recently completed their first year of teaching. Results for primary and secondary teachers were combined as the findings were similar.

The results reported in this section were obtained by using multiple regression analyses to estimate the strength of the linear relationship between measures of preparedness and the set of independent variables in the conceptual framework. The

order in which these variables were entered into the analyses was determined by the theory underlying the conceptual model described in Figure 1. The purpose of these analyses was to identify the relative strength of association between aspects of pre-service courses and preparedness, while controlling for the effect of a range of extraneous factors that may affect perceptions, but have little to do with the nature and quality of these courses.

Results of the analyses

Significant variation was found across the universities in the reported effectiveness of courses on each of the outcome measures listed above. Some idea of the extent of this variation can be found in Table 5 in the appendix. This table shows the means and confidence intervals for each of the university courses in terms of effectiveness in preparing teachers for their first year of teaching. Similar tables could have been included for each of the outcome variables. Table 5 indicates that there were significant differences between the teacher education programmes in terms of reported effectiveness.

This study was designed to allow analysis of the extent to which a range of features of teacher education courses accounted for this variation. It was also designed to control for the contribution that other factors might make to the variation, such as the background characteristics of the beginning teachers (e.g. age, sex, previous career) and the context of the school in which they spent their first year of teaching (e.g. workload, presence of induction or mentoring programmes).

The results for the regression analysis are summarised in tables below. Each table shows the standardised regression coefficients and significance levels for each of the predictors in the conceptual model. The use of standardised coefficients permits easy comparison of the strength of associations within the model. Statistically significant results—those where it is 95% likely that the coefficient is different from zero—are marked in bold in the tables. Statistical significance is shown in the columns headed ‘Sig.’.

Knowledge about the content to be taught and students

Table 1 shows the most important factors associated with having a good understanding of professional knowledge related to the content, as defined above. Shading is used to show the clusters of factors in Figure 1, the conceptual framework.

Unsurprisingly, the extent to which the pre-service teacher education programme gave the opportunity to learn this content had the strongest effect (0.45) among the variables in the framework. Also important was the opportunity to learn about assessment and planning, which had a moderately strong effect (0.30). An opportunity to learn via feedback from *university staff* during the pre-service course and the *quality of the teaching* conducted within this course both had weaker, though statistically significant, effects.

Table 1. Factors associated with preparedness in knowledge of content and students

	Knowledge of content		Knowledge of students	
	Stand. Coeff	Sig	Stand. Coeff	Sig
Sex (F=0 M=1)	0.04	0.16	-0.04	0.21
Age (<=25=0, >25=1)	0.02	0.62	0.03	0.49
Previous career (Yes=1 No=0)	-0.04	0.30	0.00	0.94
Average contact hours per week	0.04	0.18	0.02	0.56
Proportion of ESL students	-0.01	0.74	-0.07	0.04
Proportion of students with English literacy problems	0.03	0.29	0.05	0.15
School induction (Yes=1 No=0)	-0.05	0.12	-0.09	0.02
Formal mentor at school (Yes=1 No=0)	0.04	0.15	0.10	0.01
OTL – Content knowledge & how taught	0.45	0.00	0.16	0.00
OTL – Practice of teaching	0.03	0.53	0.27	0.00
OTL via feedback from uni staff	0.08	0.01	0.13	0.00
OTL – Assessment & planning	0.30	0.00	0.19	0.00
Quality of university teaching in ed course	0.11	0.00	0.12	0.00
Degree type (PG=1 else=0)	-0.02	0.69	-0.05	0.24
No. of days spent in schools	-0.03	0.50	-0.01	0.83
No. of days spent teaching	0.04	0.23	0.00	0.97
Practicum only done as a block (Yes=1 No=0)	0.08	0.01	0.07	0.04
Student partner for practicum (Yes=1 No=0)	-0.05	0.08	-0.05	0.10
Width of role in school practicum	-0.01	0.73	0.00	0.95
Quality of the practicum	-0.02	0.45	-0.01	0.75

Doing *the practicum only as a block* also had a weak positive effect. No other aspects of the practicum had statistically significant effects on professional knowledge to do with content. This model explained 65% (adjusted R-squared) of the variance in the dependent variable—having a good understanding of professional knowledge to do with the content taught.

Table 1 also shows the most important factors associated with having a good understanding of professional knowledge concerning students. The strongest effect was the extent to which the pre-service teacher education programme provided an opportunity to learn the practice teaching as defined above (0.27). This is a moderately strong effect. All other opportunity to learn variables had weak though statistically significant effects. Also having weak though statistically significant effects were the quality of university teaching in the pre-service course (0.12), and whether the school had formally allocated a mentor to the respondent when starting at their school (0.10).

Whether the school offered an induction programme had a weak negative effect. The proportion of students in the school with English as a second language also had a weak effect (-0.07) such that the higher the proportion of such students, the less

likely the respondent was to report that their pre-service course gave them a good understanding of students.

Doing the *practicum* only as a block had a weak though statistically significant effect. No other aspects of the practicum had statistically significant effects on professional knowledge to do with content or students. This model explained 46% of the variance in the dependent variable—having a good understanding of professional knowledge concerning students.

Professional practice

Professional practice as defined above had three components. Table 2 shows the most important factors associated with the extent to which respondents reported that their pre-service course had prepared them for each of these components: (1) the curriculum, (2) classroom management and (3) professional practice.

Table 2. Factors associated with preparedness in professional practice: curriculum, classroom management and assessment

	Curriculum		Classroom Management		Assessment	
	Stand. Coeff	Sig	Stand. Coeff	Sig	Stand. Coeff	Sig
Sex (F=0 M=1)	-0.01	0.65	0.01	0.68	0.06	0.05
Age (<=25=0, >25=1)	-0.03	0.50	0.00	0.94	0.02	0.70
Previous career (Yes=1 No=0)	0.02	0.57	-0.02	0.57	0.00	0.99
Average contact hours per week	0.01	0.74	-0.02	0.54	-0.08	0.02
Proportion of ESL students	0.00	0.89	-0.05	0.11	0.00	0.95
Proportion of students with English literacy problems	0.07	0.03	0.09	0.00	-0.01	0.85
School induction (Yes=1 No=0)	-0.06	0.06	-0.09	0.02	-0.03	0.37
Formal mentor at school (Yes=1 No=0)	0.03	0.46	0.06	0.08	0.00	0.94
OTL – Content knowledge & how taught	0.29	0.00	0.24	0.00	0.09	0.07
OTL – Practice of teaching	0.02	0.69	0.09	0.07	0.10	0.06
OTL – Feedback from uni staff	0.10	0.01	0.19	0.00	0.11	0.01
OTL – Assessment & planning	0.34	0.00	0.20	0.00	0.46	0.00
Quality of university teaching in education course	0.16	0.00	0.14	0.00	0.04	0.33
Degree type (PG=1 other=0)	-0.04	0.35	-0.01	0.81	-0.03	0.44
No. of days spent in schools	-0.02	0.59	0.00	0.98	-0.07	0.13
No. of days spent teaching in schools	-0.02	0.61	0.01	0.86	0.00	0.96
Practicum only done as a block (Yes=1 No=0)	0.03	0.30	0.04	0.28	0.03	0.40
Student partner for practicum (Yes=1 No=0)	0.00	0.88	0.02	0.63	0.01	0.77
Width of role in school practicum	0.01	0.64	0.02	0.49	0.02	0.56
Quality of the practicum	0.02	0.49	0.01	0.74	0.03	0.46

Table 2 shows the most important factors associated with the experience of preparedness for professional practice relating to the *curriculum*. Having the opportunity to learn about both content (0.29), and *assessment and planning* (0.34) had moderately strong effects. The opportunity to receive *feedback* from university staff had a weaker, though statistically significant, effect (0.10), as did teaching quality within this course (0.16). While having a high proportion of students with *literacy problems* had a weak effect, it is clear from Table 2 that the most important factors affecting preparedness for professional practice relating to the curriculum were the opportunity to learn variables during the pre-service course. This model explained 56% of the variance in preparedness for professional practice relating to the curriculum.

Table 2 also shows the most important factors associated with preparedness relating to *classroom management*. Having had the opportunity to learn about content (0.24), and *assessment and planning* (0.20) had moderate effects. *Feedback* from university staff, the quality of the teaching conducted within this course and having a high *proportion of students with literacy problems* had weak though statistically significant effects. Having an *induction* programme at the school had a weak negative effect. Again, the most important factors affecting preparedness for professional practice—this time relating to classroom management—were those related to the opportunity to learn variables during the pre-service course. This model explained 48% of the variance in relating to classroom management.

Table 2 shows the most important factors associated with preparedness for professional practice relating to *assessment*. Having had the *opportunity to learn about assessment* (0.46) had a strong effect. One other opportunity to learn variable also had a weak though statistically significant effect—*feedback* from university staff. The *number of contact teaching hours* was also negatively related to the level of preparedness for the professional practice of assessment that respondents reported. Gender also had a weak effect—males were slightly more likely to report higher levels of preparedness. Once again, the most important factors affecting preparedness for professional practice were those related to opportunities to learn during the pre-service course. This model explained 49% of the variance in preparedness for professional practice relating to assessment.

Overall, Table 2 indicates that the most important factors affecting preparedness for professional practice were: opportunity to learn the content to be taught and methods of planning and assessment; opportunities to receive feedback about their teaching from university staff; and the quality of teaching they received in their university course.

Professionalism

Table 3 shows the most important factors associated perceptions of preparedness in working with parents and reflection on practice.

It is noteworthy that having the opportunity to learn about *assessment and planning* (0.29) had the strongest effect on preparedness for working with parents. Having the

Table 3. Factors associated with preparedness: parents and reflection on practice

	Parents		Reflection	
	Stand. Coeff	Sig	Stand. Coeff	Sig
Sex (F=0 M=1)	0.05	0.14	-0.03	0.43
Age (<=25=0, >25=1)	-0.07	0.17	-0.13	0.00
Previous career (Yes=1 No=0)	-0.02	0.71	-0.01	0.89
Average contact hours per week	0.00	0.97	0.03	0.43
Proportion of ESL students	-0.08	0.02	-0.01	0.80
Proportion of students with English literacy problems	0.08	0.02	0.02	0.53
School induction (Yes=1 No=0)	-0.02	0.58	0.00	0.93
Formal mentor at school (Yes=1 No=0)	0.04	0.37	0.00	0.95
OTL – Content knowledge & how taught	0.11	0.04	0.13	0.01
OTL – Practice of teaching	0.10	0.06	0.34	0.00
OTL via feedback from uni staff	0.09	0.05	0.01	0.79
OTL – Assessment & planning	0.29	0.00	0.14	0.00
Quality of university teaching in ed course	0.16	0.00	0.22	0.00
Degree type (PG=1 else=0)	-0.04	0.47	-0.06	0.20
No. of days spent in schools	-0.10	0.06	0.06	0.20
No. of days spent teaching	0.02	0.72	-0.01	0.85
Practicum only done as a block (Yes=1 No=0)	0.00	0.95	0.01	0.73
Student partner for practicum (Yes=1 No=0)	0.03	0.38	-0.01	0.75
Width of role in school practicum	0.02	0.67	0.05	0.18
Quality of the practicum	-0.02	0.57	-0.06	0.10

opportunity to learn about *content knowledge*, to receive *feedback from university staff* and the *quality of the university teaching* also had statistically significant, though weak, effects. Once again, the most important factors associated with this aspect of preparedness were the opportunity to learn components of the pre-service course.

This model explains 38% of the variance in preparedness for professional practice relating to parents. This suggests that key variables may be missing and that this account is therefore somewhat incomplete.

Table 3 shows the most important factors associated with reporting that the pre-service course prepared respondents for *reflection on practice* as defined above. Having had the *opportunity to learn about the practice of teaching* had a strong effect (0.34). Having had an opportunity to learn about *content* and about *assessment and planning* had weaker, though statistically significant, effects. The *quality of the university teaching* had a moderate effect (0.22). *The age of the respondent* also had a weak effect—younger respondents tended to feel somewhat better prepared to reflect upon their practice. Again, the most important factors affecting preparedness for professional practice were opportunities to learn during the pre-service course. This model explains 47% of the variance in preparedness for professional practice relating to reflection on their own teaching.

Table 4. Factors associated with reports of the overall effectiveness of pre-service teacher education programme in preparing to be a teacher

	Overall effectiveness of teacher education	
	Stand. Coeff	Sig
Sex (F=0 M=1)	-0.07	0.04
Age (<=25=0, >25=1)	-0.05	0.27
Previous career (Yes=1 No=0)	-0.06	0.24
Average contact hours per week	-0.04	0.32
Proportion of ESL students	0.04	0.27
Proportion of students with English literacy problems	0.01	0.73
School induction (Yes=1 No=0)	-0.04	0.34
Formal mentor at school (Yes=1 No=0)	0.04	0.30
OTL – Content knowledge & how taught	0.38	0.00
OTL – Practice of teaching	0.01	0.84
OTL via feedback from uni staff	0.15	0.00
OTL – Assessment & planning	-0.01	0.90
Quality of university teaching in ed course	0.15	0.00
Degree type (PG=1 else=0)	-0.13	0.01
No. of days spent in schools	-0.01	0.82
No. of days spent teaching	0.03	0.52
Practicum only done as a block (Yes=1 No=0)	0.06	0.08
Student partner for practicum (Yes=1 No=0)	-0.05	0.13
Width of role in school practicum	0.08	0.03
Quality of the practicum	0.07	0.09

Overall ratings of programme effectiveness

Table 4 shows the most important factors associated with teachers’ ratings of overall effectiveness of programmes in preparing them to teach. Having the opportunity to learn about content knowledge and how to teach it had the strongest effect (0.38). Having an opportunity to learn via feedback from university staff had a weaker, though statistically significant effect. The *quality of the university teaching* had a weak effect (0.15).

Opportunity for reflection on practice was not associated with preparedness. The type of degree had a weak effect—teachers with four-year undergraduate degrees were more likely to report their courses as effective overall than teachers who had post-graduate teaching qualifications. Gender had a weak effect such that females tended to report their course as more effective than males. This model explains 39% of the variance in the reported overall effectiveness of the pre-service course.

Discussion of findings: characteristics of effective teacher education programmes

The variables related to *opportunity to learn during the pre-service course*, as defined above, had the strongest and most consistent effects on the extent to which teachers

felt adequately prepared to carry out their duties in their first year of teaching. These features of teacher education had consistently stronger effects than the structural features of teacher education courses (e.g. undergraduate or postgraduate), or the nature of school experience during the teacher education programme. Some components of OTL, such as the focus on content, had more pervasive effects than others, but each had a significant bearing on at least some of the outcome measures. The quality of university teaching during the pre-service teacher education course, as a model of good teaching practises, also had consistently significant effects on preparedness.

The effects of these ‘opportunity to learn’ variables were independent of the background characteristics of the new teacher, their in-school experiences during their pre-service course and in the school in which they worked as a teacher in their first year of teaching.

The feature of teacher education programmes that had the strongest and most consistent effect on reported outcomes on the Teacher Preparedness Inventory was the extent to which the course had a strong focus on the ‘content to be taught’. Courses with a strong content focus, as defined in this study, enabled future teachers to:

- a) gain a deep understanding of the content knowledge they were expected to teach;
- b) make clear links between content or subject matter units and units about how to teach the content;
- c) make clear links between theoretical and practical aspects of teaching;
- d) develop a sound understanding of how students learn the specific content that they were expected to teach;
- e) learn how to probe students’ prior understandings of content they were about to teach;
- f) ‘learn how to present content in ways that built on students’ existing understanding;
- g) learn methods of teaching specific to the content they were expected to teach.

Teachers who reported that they were well prepared for the demands of teaching were those whose courses had a strong focus on these features. It should be clear from that, that these features include much more than mere factual knowledge of subject matter. Students from highly rated courses frequently referred to the most helpful features of these courses in these terms:

Developing and implementing units of work for various Key Learning Areas.

Providing fantastic support and encouragement /providing in-depth theory as well as relating it in a practical sense.

Knowledge of Early Years Literacy

Planning units of work as a team.

The assignments that I can use in my teaching now, e.g. designing units of work and planning a maths unit for a term.

These findings about the importance of focusing on the content to be taught and research on how students learn that content are consistent with research on the characteristics of effective professional development programmes for practising teachers (e.g. Kennedy, 1998; Hawley & Valli, 1999; Wilson & Berne, 1999; Cohen & Hill, 2000; Sykes, 2002). Hawley and Valli (1999), for example, identify nine research-based characteristics of effective professional development, the first of which is:

The content of professional development (PD) focuses on what students are to learn and how to address the different problems students may have in learning the material.

Judging by the present study, this is also true for initial teacher education. As should be clear, a focus on ‘content,’ means much more than mere factual knowledge of subject matter. Content knowledge, as used here, includes the pedagogical content knowledge that teachers need to help students learn the subject matter with understanding. Our own research at ACER on professional development for experienced teachers confirms these findings (Ingvarson, Beavis & Meiers, 2005). In the course of conducting this research, we have often heard experienced teachers say that this is the kind of professional knowledge they wished they had had a chance to learn in their initial training.

This study also found that opportunity to learn *how to assess student learning and plan curriculum unit* was strongly associated with preparedness in the areas of professional knowledge and knowledge of students in the first year of teaching. It was also very strongly related to teachers reporting that they were able to deal with core professional tasks in their first year, such as designing challenging curriculum units, managing classrooms, assessing student progress, cross curriculum teaching, and, interestingly, working effectively with parents. However, less than 20% of teachers said their courses had prepared them, to a major extent, to establish appropriate learning goals for their students, give useful and timely feedback to students about their learning and keep useful records of their students’ progress.

Once again, these findings are consistent with the research on effective modes of professional learning for experienced teachers, especially if that learning is to link to improved student learning outcomes. In perhaps one of the most thorough studies about the kind of professional development that improves student learning outcomes in mathematics, Franke *et al.* (1998) identified the importance of improving teachers’ skills in diagnosing students’ level of development of key understandings. The second of the nine characteristics of effective professional development identified by Hawley and Valli is:

Professional development that is based on analyses of the differences between (a) actual student performance and (b) goals and standards for student learning.

Hawley and Valli provide a substantial literature review to back this claim. This study indicates that proficiency in many ways of diagnosing student level of understanding, monitoring student progress and assessing student development is core professional knowledge for effective beginning teachers. However, it is a matter of some concern that less than 29% of teachers in this sample felt well prepared in this area.

Opportunity to *receive feedback* was also significantly related to the reported effectiveness of courses. Students in the most highly rated courses were much more likely to mention the opportunities they had had for gaining timely and useful feedback from lecturers and practicing teachers as helpful features.

Our pre-service rounds were the best opportunity to practice methods and strategies in the environment we will be working in and gain instant feedback.

Observation of leading teachers and the opportunity to gain instant feedback.

Doing it and reflecting and doing it again.

However, in talking about how a low rated course could be improved, a teacher mentioned,

Further analysis by lecturers/tutors from the uni, (I was) only observed once in 4 years and 100 days of teaching.

Feedback on practice has long been recognised as a vital requirement for professional development programmes that aim to help teachers develop new skills and integrate them into their practice (Joyce & Showers, 1995). An important finding from this study is that teachers in most programmes reported receiving little feedback from university staff as they were learning to teach, as shown in Table 4 in the appendix. Table 4 also shows how significant the variation was from course to course across the universities in opportunities for feedback.

It is understood that current levels of funding for teacher education do not make it easy for university staff to provide feedback to students about their developing practice. However, the low level of feedback about practice may point to a significant weakness in current approaches to teacher education, as has been found in research on continuing professional learning for teachers, where it is now more widely understood that opportunities for feedback about practice need to be funded and built into programmes from the start.

Given the context of initial teacher education, which is preparation for professional practice, it is surprising that feedback is not at a much higher level. One of the key elements in linking theory to practice is feedback. New understandings, skills and attitudes are rarely acquired without timely, relevant and informative feedback about our actions and their effects. It is hard to understand how teacher education courses can link theory to practice effectively if lecturers are rarely in a position to provide feedback to students as they attempt to put the theory into practice. Encouraging students to reflect on their practice may go some way toward helping the situation, but this study suggests that an emphasis on reflective practice alone is not an adequate substitute for the kind of feedback and insights that an expert teacher can provide.

The study found that courses for the preparation of physical education teachers, in particular, appear to be organised in ways that facilitate strong links between the presentation of theory and modelling by university staff, and opportunities for student teachers to practice the theory and receive feedback and coaching. In contrast, teachers in less effective courses were rarely in situations where it was

possible to try new practices and receive feedback. The feedback that supervising teachers gave on teaching rounds was valued, but the relationship between this type of feedback and the theory being taught in the university courses is uncertain.

As a group, the effects of the four 'opportunity to learn' features of teacher education programmes on the outcome measures were much stronger than the effects of a number of features of the practicum. These features included: the number of days in schools; number of days teaching; whether done as a block of time (e.g. three weeks) or extended over time (e.g. 2–3 days per week); whether they worked with a fellow student; the width of their role in the school; and the perceived quality of the practicum.

These features of the practicum were not related to the reported effectiveness of teacher education programmes. This is not to say that the practicum is not important. It is more likely that, for this study, the practicum experience was probably much the same for students from highly rated courses and poorly rated courses. Arranging quality practicum experiences for student teachers is a difficulty facing most teacher education institutions in Australia according to a recent national parliamentary review (House of Representatives Standing Committee on Education and Vocational Training, 2007).

One of the most consistent themes that comes through in the beginning teacher comments about the practicum is the general difficulty they have in integrating the work that they are expected to undertake on the practicum with what they are learning about teaching in the university component of the course. This makes the conditions for linking theory and practice less than optimal. It is difficult for universities to provide supervising teachers with opportunities to understand how they can reinforce what students are learning in their courses. And it is rare for supervising teachers to receive extensive training in effective mentoring or supervision practices from universities.

This study found that differences in the character of schools where teachers spent their first year of teaching made little difference to their reported preparedness, except where beginners were allocated a trained mentor teacher, as was the case with the VIT's Standards and Professional Learning Project during 2003. This finding appears to be worthy of further investigation. Well-trained supervising teachers and mentors might help to rectify the theory-practice problem and the low level of accurate and timely feedback reported above.

The quality of teaching in the teacher education programme had significant though weak effects on several of the outcome measures, specifically reflection, curriculum planning and classroom management. Recency of teaching experience among lecturers was not related to ratings of course effectiveness, but modelling of good teaching practice and linking of their units to school and the school experience component of the programme were. Recency of lecturer experience, however, was a frequent theme in the open-ended comments. In listing helpful features of programmes, teachers from highly rated courses were more likely than teachers who had completed other courses to make statements such as:

Having lecturers who had recently been in schools was most beneficial.

Subjects about teaching and learning . . . with recently practising teachers as tutors—inspirational and very helpful.

When talking about how courses could be improved, teachers from poorly rated courses were more likely to refer to the need for:

Engaged professional lecturers who teach relevant material.

The university (people) were out of touch and didn't provide enough practical skill development which is essential in the field. On the job learning was the only development I had.

In summary, structural features of teacher education courses did not relate closely to the variation in perceived preparedness. Consistent with the findings of the 2005 OECD Report, *Teachers matter*, this study indicates that tinkering with course structures will not be the solution to more effective teacher education. The key features of effective courses lie in the quality of the opportunities and processes for learning how to teach something to someone. School experiences that provide quality opportunities for feedback as new teaching strategies are practiced are also essential.

Implications for accreditation standards and procedures

The purpose of this study was to provide advice to the Victorian Institute of Teaching, the agency responsible for teacher registration in the state of Victoria, about the development of new guidelines and standards for the accreditation of teacher education programmes. This final section of the paper moves into broader considerations, not only about standards for the accreditation of teacher education programmes, but the methods by which such programmes might demonstrate that they meet the standards. To act on the results of this study, it will not be enough to use its findings to change the course content requirements for course approval and accreditation. The methods used for assessment and accreditation of programmes themselves will need to change to a focus on outcomes as well as processes.

This study indicates that accreditation agencies should give high priority to ensuring that teacher education programmes provide courses that give future teachers, including primary school teachers, deep knowledge of the content or subject matter they are expected to help students learn, and how students learn that content. It also indicates the importance of ensuring that courses provide quality opportunities for future teachers to develop skill in diagnosing students' existing levels of understanding of the content to be taught, in planning activities that would promote further development and in assessing the extent to which development had taken place. Teachers who had completed courses with these characteristics were more likely to report that they were well prepared to meet the demands they faced in their first year of teaching, as defined in the VIT registration standards.

These professional capabilities appear to remain the necessary, though not sufficient, foundations in preparing teachers to meet the wider demands of the job, from establishing a productive learning environment to working effectively with parents. These results are consistent with recent research on the characteristics of

effective programmes for teachers' continuing professional learning. These researchers (e.g. (Kennedy, 1998) have also found that the substance of what teachers learn matters more than the form.

There have been calls for teacher education in Australia to become school-based mainly. This study does not provide support for those who think that making teacher education 'practical' and 'school-based' is the answer, absent substantive content related professional knowledge. While school experience is undoubtedly necessary and rated highly by student teachers, this study also does not support an emphasis on developing skills in reflective practice and pedagogy over an emphasis at the cost of developing substantive professional knowledge as identified above.

This study suggests that the broad concept of content knowledge and pedagogical content knowledge identified in this study has pervasive and generative effects on teachers' capacity to manage the complex demands that teaching presents, as other researchers have demonstrated (Franke *et al.*, 1998). In other words, it is foundational; in the sense that areas such as pedagogical skill, classroom management, reflective practice and the capacity to provide a challenging and supportive learning environment depend fundamentally on possession of this kind of professional knowledge (Ball & Cohen, 1999). The reverse does not apply. Teacher education programmes that might be highly 'practical', in the sense of giving heavy emphasis to skills in classroom management for example, will not make up for a deficiency in the aspects of content knowledge identified in this study.

How should accreditation agencies act on these findings? How might they assure themselves that university teacher education programmes are meeting standards based on such findings, and those of other studies. The traditional method is for accreditation agencies to read descriptions of courses in the programme and to visit universities and interview staff and read course documentation. However, this kind of evidence provides little certainty that graduates from the programme actually have the knowledge and can apply it in real working contexts. The validity of traditional methods of programme accreditation is often unknown. It is unlikely that the findings of studies such as this will be implemented effectively if providers of teacher education programmes are only required to show that they have modified the content of their courses accordingly.

To address this uncertainty, many professional accreditation agencies, like the Victorian Institute of Teaching in Australia and the National Council for Accreditation of Teacher Education in the USA, have been moving from a focus on programme 'inputs' to a focus on programme outcomes. Accreditation is now seen as formal endorsement that a programme can produce graduates who possess the competencies required to progress toward full registration and entry to the profession. This calls for standards-based assessments of beginning teacher performance. That is, they are moving from a focus on analysing the content of courses, to a focus on course outcomes based on evidence that graduates from teacher education courses can provide quality opportunities for student learning in authentic school settings.

However, this is more easily said than done. How might course outcomes be measured? There are two broad ways in which accreditation bodies can gather

evidence to satisfy themselves that graduates of professional preparation courses are capable of meeting standards expected of entrants to a profession. They can ask the providers of courses to show how they go about assessing whether graduates have met registration standards. This has been the trend in the accreditation of programmes in other professions in Australia, such as the Architects Accreditation Council of Australia.

Alternatively, accreditation bodies can develop their own common standards-based assessment instruments and administer them to representative samples of students from different teacher education courses. This has been rare in the past, but as outlined above, there are signs that many accreditation authorities are moving in this direction, such as the Training and Development Agency in England and the Ontario College of Teachers described below.

The best way to proceed here might be to find a suitable and manageable balance between these two approaches. Possible measures of teacher education outcomes fall into the following groups:

- A. Measures of professional knowledge; for example:
 - knowledge of subject matter/content to be taught
 - pedagogical content knowledge
- B. Classroom observation with pre- and post-observation interviews
- C. Structured portfolio tasks
- D. Surveys of new teachers in the early years of their teaching career

While the first three methods are undoubtedly high on validity, they are also high on development and administrative costs. This study indicates the potential value of carefully developed, standards-based survey instruments such as the TPI.

One of the purposes of this study was to develop and trial measures that might be used subsequently as benchmarks for monitoring the outcomes of the teacher education system. It was found that the TPI measure developed for this study was high on internal consistency. It was also able to discriminate between teacher education courses. The internal reliability of the TPI means that it could be used as a benchmark to track changes over time, or the effects of programmes or policies designed to influence the quality of teacher education.

The results of this study indicate that the scales developed for the survey instrument would be suitable as a basis for creating benchmarks that might be used as part of system for monitoring and accrediting teacher education programmes. The scales also provide room for detecting changes in perceptions of teacher education courses on each of the outcome measures. However, used alone, these measures would not provide a sufficiently reliable basis for accreditation decisions. The latter would require a wide range of independent measures about course quality.

A similar instrument used by the Training and Development Agency in England has also proved useful in monitoring the effects of TDA policies and procedures over time. They also have the advantage of providing feedback to tertiary institutions about their pre-service teacher education programmes without prescribing particular

approaches to training. While setting clear expectations about the standards that beginning teachers should meet, they still encourage innovation, diversity and experimentation in teacher education.

Conclusion

In conclusion, the results of this study, though perhaps unsurprising, do say that teacher education matters. In a field where some have questioned the impact of, or need for, professional preparation programmes, this is a significant finding. While this study has found wide variation in the reported quality of teacher education programmes, it has not found that teacher education is unnecessary; quite the opposite.

Notes

1. This study was commissioned by the Victorian Institute of Teaching (VIT) in 2003 as part of its Future Teachers Project. The authors wish to acknowledge the support given to the project by officers at the VIT, especially Ms Ruth Newton, Manager Accreditation and Ms Kathy Liley, Manager Special Projects.
2. Details of this study can be found at <http://teds.educ.msu.edu/>
3. Copies of the full report from the ACER study can be found at http://www.vit.vic.edu.au/pdfs/FTP_final_report.pdf.
4. Technical details about the psychometric quality of scales used in this study and analyses of data can be found in the Technical Report at www.acer.edu.au/publications

Notes on contributors

Dr Lawrence Ingvarson is Research Director of Teaching and Learning at Australian Council for Educational Research.

Dr Adrian Beavis is the Research Director of the Policy Research and Program Evaluation programme at the Australian Council for Educational Research.

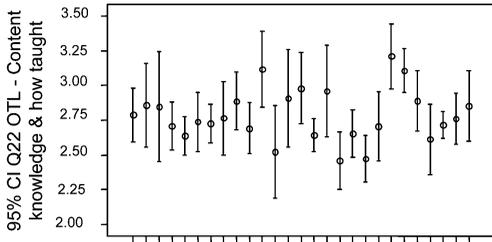
Dr Elizabeth Kleinhenz is a Senior Research Fellow at the Australian Council for Educational Research in the Teaching and Leadership research programme.

References

- Ball, D. L. & Cohen, D. K. (1999) Developing practice, developing practitioners: toward a practice-based theory of professional education, in: L. Darling-Hammond & G. Sykes (Eds) *Teaching as the Learning Profession: Handbook of Policy and Practice* (San Francisco, Jossey-Bass), 3–32.
- Campos, B. (2004) The balance between higher education autonomy and public quality assurance: development of the Portuguese system for teacher education accreditation, *Education Policy Analysis Archives*, 12(73). Available online at: <http://epaa.asu.edu/v12n73/>.
- Cochran-Smith, M. & Zeichner, K. M. (Eds) (2005) *Studying teacher education: the report of the AERA Panel on Research and Teacher Education* (London, Lawrence Erlbaum Associates).
- Cohen, D. K. & Hill, H. C. (2000) Instructional policy and classroom performance: the mathematics reform in California, *Teachers College Record*, 102(2) (February 2000).

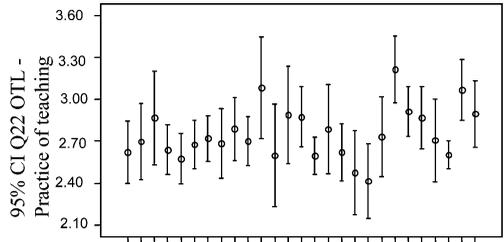
- EDK/CDIP (2002) *Rapport Annuel 2001, Sekretariat/Secretariat* (Schweiserische Konferenz der kantonalen Erziehungsdirektoren, Berne).
- Eurydice (2006) *Quality assurance in teacher education in Europe* (Eurydice European Unit, 2006). Available online at: <http://www.eurydice.org>.
- Franke, M. L., Carpenter, T., Fennema, E., Ansell, E. & Behrend, J. (1998) Understanding teachers' self-sustaining, generative change in the context of professional development, *Teaching and Teacher Education*, 14(1), 67–80.
- Hawley, W. & Valli, L. (1999) The essentials of effective professional development: a new consensus, in: L. Darling-Hammond & G. Sykes (Eds) *Teaching as the learning profession. Handbook of Policy and Practice* (San Francisco, Jossey-Bass Publishers).
- House of Representatives Standing Committee on Education and Vocational Training (2007) *Top of the class* (Canberra, Australian Government).
- Ingvarson, L., Meiers, M. & Beavis, A. (29 January 2005) Factors affecting the impact of professional development programmes on teachers' knowledge, practice, student outcomes & efficacy, *Education Policy Analysis Archives*, 13(10). Available online at: <http://epaa.asu.edu/epaa/v13n10/>.
- Ingvarson, L., Beavis, A., Danielson, C., Ellis, L. & Elliott, A. (2005) *An evaluation of the bachelor of learning management at Central Queensland University* (Canberra, Australian Government Department of Education, Science and Technology). Available online at: http://www.acer.edu.au/research/documents/BLM_280905.pdf.
- Ingvarson, L., Elliott, A., Kleinhenz, E. & McKenzie, P. (2006) *Accreditation of teacher education: a review of national and international trends and practices in other professions*. Report prepared for Teaching Australia: Australian Institute for Teaching and School Leadership. Available online at: <http://www.teachingaustralia.edu.au/ta/go/home/projects/teacheraccreditation>.
- Ingvarson, L. (2007) *Options for benchmarking teacher education programmes*. A report prepared for the Victorian Institute of Teachers (Melbourne, Australian Council for Educational Research).
- Joyce, B. & Showers, B. (1995) *Student Achievement Through Staff Development. Fundamentals of School Renewal* (2nd ed.) (White Plains, NY, Longman).
- Kennedy, M. (1999) Form and substance in mathematics and science professional development, *NISE Brief 3(2)* (Madison, WI, National Institute for Science Education, University of Wisconsin).
- OECD (2005) *Teachers matter: attracting, developing and retaining effective teachers* (Paris, OECD).
- Parliament of Victoria Education and Training Committee (2005) *Step up, step in, step out: report on the Inquiry into the Suitability of Pre-Service Teacher Training in Victoria* (Melbourne, Victorian Government Printer).
- Sykes, G. (2002) *Professional development for teachers: principles, practices and contexts*. Paper prepared for the Learning First Alliance.
- Tabberer, R. (2003) Promoting teacher quality in England: the role of the teacher training agency, in: M. Meiers (Ed.) *Building teacher quality: what does the research tell us?* Proceedings of the Australian Council for Educational Research Annual Conference, Melbourne (2003), 2–6. Available online at: <http://www.acer.edu.au/workshops/documents/Conferenceproceedings2003.pdf>.
- Wilson, S. & Berne, J. (1999) Teacher learning and the acquisition of professional knowledge: an examination of research on contemporary professional development, in: *Review of Research in Education* 24, I. Nejad and PD Pearson (Eds) American Educational Research Association, (Washington DC), 173–200.
- Wilson, S. M., Floden, R. E. & Ferrini-Mundy (2001) *Teacher preparation research: current knowledge, gaps and recommendations* (Seattle, Center for the Study of Teaching and Policy). Available online at: www.ctpweb.org.
- Wilson, S. M. & Floden, R. E. (2003) *Creating effective teachers: concise answers for key questions*, ERIC Clearinghouse on Teaching and Teacher Education (Washington, DC, American Association of Colleges for Teacher Education).

Appendix



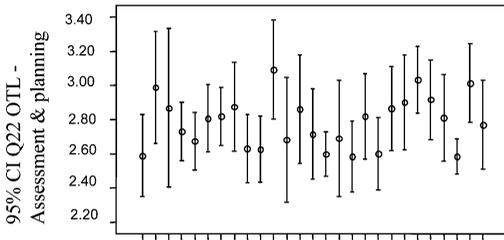
University and course completed

Table 1



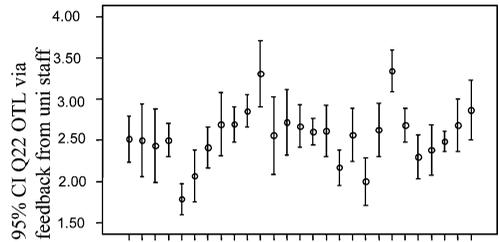
University and course completed

Table 2



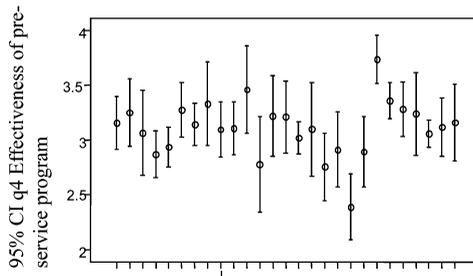
University and course completed

Table 3



University and course completed

Table 4



University and course completed

Table 5

Copyright of European Journal of Teacher Education is the property of Routledge and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.