INTERNATIONAL LITERATURE REVIEW ON ALTERNATIVE INITIAL TEACHER EDUCATION PATHWAYS

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ACRONYMS AND ABBREVIATIONS

AACTE	American Association of Colleges of Teacher Education
ADEA	The Association for the Development of Education in Africa
AEP	Advanced Education Practice
Ark TT	Ark Teaching Training
ATCs	Alternative teacher certification programmes
B.Ed	Bachelor of Education
BPE	Boston Plan for Excellence
BPS	Boston Public Schools
BTR	Boston Teacher Residency
CONFEMEN	Education Ministries of Francophone Africa
CPTD	Continuing Professional Teacher Development
CTR	Capital Teaching Residency
DBE	Department of Basic Education
DfE	Department for Education
DHET	Department of Higher Education and Training
ECD	Early childhood development
eCH	Enseña Chile (“Teach Chile”)
EITE	Embury Institute for Teacher Education (EITE)
ERA	Evaluation Research Agency
ESA	Eric Schollar and Associates
ESL	English as a second language
EYITT	Early Years Initial Teacher Training
FET	Further education and training
FP	Foundation Phase
HEis	Higher Education Institutions
ISASA	Independent Schools Association of Southern Africa
ITE	Initial Teacher Education
ITT	Initial Teacher Training
KIPP	Knowledge Is Power Program
M&E	Monitoring and Evaluation
MMTEP	Milwaukee’s Metropolitan Multicultural Teacher Education Program
MRTEQ	Minimum Requirements for Teacher Education Programmes
NC TEACH	North Carolina Teachers of Excellence for All Children

NCE	Nigeria Certificate of Education
NCEE	National Center on Education and The Economy
NCES	National Center for Education Statistics (NCES)
NCTAF	National Commission on Teaching and America's Future
NCTL	the National College for Teaching and Leadership
NCTL	National College for Teaching and Leadership
NELTA	the North East London Teaching Alliance
NQTs	Newly qualified teachers
NTE	National Teacher Examination
NWU	North-West University (NWU)
NZ	New Zealand
NZPPTA	New Zealand Post-Primary Teachers' Association
Ofsted	the Office for Standards in Education
PGCE	Postgraduate Certificate in Education
PGCE	Post Graduate Certificate in Education
PPP	Public–private partnership
QTS	Qualified Teacher Status
SACE	South African Council for Educators
SCITT	School-Centred Initial Teacher Training
TEI	Teacher Education Institute
TFA	Teach For America
UCAS	Universities and Colleges Admissions Service
UK	United Kingdom
UNISA	University of South Africa (UNISA)
US	United States
ZINTEC	Zimbabwe Integrated Teacher Education Course

INTRODUCTION

Initial Teacher Education (ITE) in South Africa currently experiences three major problems in delivering high quality teachers capable of effective teaching. First, an adequate supply of teachers for the schooling system: since the Department of Higher Education and Training (DHET) and Department of Basic Education (DBE) began to give concerted attention to the problem over the last five years, this challenge has decreased, but it now appears that since 2014, the number of new teachers graduating is not rising at the rate expected to ensure an adequate supply for the next 10 years, and the attrition rate of teachers is increasing (Centre for Development and Enterprise, 2015; Gustafsson, 2015; van Broekhuizen, 2015). Thus alternative forms of ITE hold the potential of boosting the numbers in significant ways, although in relatively smaller numbers than those produced by the mainstream public universities. Second, the greatest problem in the ITE sector is undoubtedly the poor quality of its programmes which, it is feared, results in the majority of newly qualified teachers (NQTs) being inadequate to the tasks facing them in schools across the country. The third issue is a component of the second: the generally poor quality of distance education and the large part it plays in the total provision of new teachers, some 40 per cent.

The traditional form of ITE in South Africa follows the international norm - a four-year university-based programme. In South Africa ITE is provided by 23 universities, either by face-to-face or distance education, and includes both the academic and professional courses, interspersed with short periods of supervised teaching practice in schools as preparation for student teachers' work in schools and as a basis for Continuing Professional Teacher Development (CPTD). Recently the government introduced the Minimum Requirements for Teacher Education Programmes (MRTEQ) that all ITE programmes have to meet in order to be accredited as a means of improving the quality of ITE.

There are two basic models: in the consecutive model, a teacher first obtains an undergraduate Bachelor's degree and then studies for a further year to obtain a teaching qualification, a Postgraduate Certificate in Education (PGCE). In the concurrent model, a student simultaneously studies both the academic and professional requirements for the four-year Bachelor of Education (B.Ed) degree. In terms of the law, any person who wishes to teach in a public or independent school must have one of these professional teaching qualifications which will enable the individual to be officially registered with the South African Council for Educators (SACE).

Internationally, however, increasing numbers of alternative teacher certification programmes (ATCs) have been developed, as countries try to solve their problems of producing enough well-prepared teachers who are able to support higher learner achievement. ATCs have been broadly defined as "anything other than a four or five year undergraduate program in a college or university." (Zeichner and Paige, 2007: 3). As explained by Glass (2008), alternative teacher certification is generally understood as a programme leading to a teaching certificate (or licence) designed for persons who have not followed a traditional path through pre-service teacher training programmes. Typically ATCs provide school-based teacher education while candidates carry teaching responsibilities.

Some key differences between alternative and university-based programmes are found in the primary site, focus and length of the training and the recruitment pool, as the literature review will make clear. ATCs tend to focus more on teaching methods and classroom management than subject matter because candidates are screened for subject matter competence before admission. ATCs usually require fewer hours of formal education coursework than university-based courses, but more hours of supervised field experience as a full-time teacher (Darling-Hammond, Hudson and Kirby, 1989).

Alternative ITE programmes have also developed in South Africa, and although the number of these are increasing, no comprehensive international literature review to identify best practice which can inform these (as well as traditional ITE) programmes has been undertaken in South Africa to date; yet there is much that can be learnt from international and local experience about what makes for effective models.

Thus the purpose of this literature review is to explore and derive lessons from alternative forms of ITE provision, internationally and in South Africa, and how these lessons may be leveraged to alleviate the three key problems currently inhibiting the production of high quality teachers in the numbers required by the schooling system.

The literature review consists of two parts: an international literature review of alternative routes to ITE qualifications in both developed and developing countries; and a limited local literature component.

The international literature review seeks to answer the following research questions:

- What types of alternative ITE pathways can be identified in developed and developing countries?
- What are the key characteristics of these programmes?
- How well do they prepare their students for teaching – in terms of their subject knowledge, pedagogical content knowledge, and classroom realities? What type of student do they enrol? How many new teachers do they produce annually? What are their throughput rates? What are the findings of evaluations of these programmes? What have been identified as the challenges and positive and negative features of these programmes?
- What is the comparative effectiveness (and cost, where possible) of alternative ITE programmes compared to traditional ones?

England and the United States (US) are the countries in which most alternative ITE programmes are found and have been evaluated, thus the literature review will include case studies of programmes in those countries. A case study on the Netherlands will also be included. In the case of England, a front-runner globally in the development of alternative ITE programmes, the literature is supplemented by information obtained in June 2016 through interviews with the key people in the Department for Education, the National College for Teaching and Leadership, two universities, the Ark organisation and a visit to a School Direct site.

There are a number of developing countries in which alternative forms of ITE have been introduced and the general research findings about these will be discussed as well.

In the South African component of the literature review, the two evaluations that exist of alternative ITE programmes, the Internship component of the Mathematics and English Programme of the Independent Schools Association of Southern Africa (ISASA) and TEACH South Africa (SA), will be examined.[1] The findings of these two studies will be synthesised in order to identify the overall lessons and insights they provide.

The findings of both the international and local literature reviews will be compared and contrasted. Implications and recommendations are presented at the end of the report to inform the future interventions of the Zenex Foundation in alternative ITE routes; departments of education, some of which are engaging with alternative ITE programme providers to provide high quality teachers; universities, particularly those involved in distance provision and which are striving to improve their programmes and throughput rates; and private sector initiatives in ITE. The results, therefore, have the potential to influence public policy and funding, universities' ITE programmes and practice, current and future alternative ITE programmes and private sector initiatives.

[1] There are other alternative ITE programmes leading to ITE qualifications in South Africa, including some very new ones, that offer different models from these two, but as these have not been researched and evaluated, they cannot be included in the literature review.

DEFINITIONAL, PHILOSOPHICAL AND IDEOLOGICAL ISSUES

The growth of alternative ITE programmes has not been uncontroversial. There is an on-going vigorous debate among teacher educators, governments and teacher associations about the 'pros' and 'cons' of such programmes, their definitions, underlying philosophies and ideologies and their relative effectiveness compared to traditional university-based ITE. This has stimulated continuing research on and evaluations of alternative ITE programmes (of more or less rigour) to better understand them and their rise, identify their distinguishing features and assess how well these programmes prepare student teachers for their work in schools, their impact on pupil learning and teacher retention and the implications for the wider ITE field.

Historically, in many countries (including South Africa) ITE began in schools, moved to one or two years of teacher training at 'normal' colleges, then to post-school dedicated colleges of education and finally to universities. This suggests that the alternative strand of ITE has come a full circle, back to its school roots. This movement from universities to schools as the primary ITE site is seen as a retrograde development by the critics of ATCs.

However, student teachers' professional experience in schools is increasingly seen as a crucial element of teacher preparation. Universities typically place students in schools for limited periods and find it difficult to provide sufficient relevant professional experience in their programmes. In alternative programmes the role of school-based experience is fundamental, and it is controlled by the school, not the university. The importance of school-based experience has thus provided an impetus for the development of ATCs.

The lack of student teachers' school experience has contributed to the decline in public confidence in many countries about the ability of universities to recruit and adequately prepare enough effective teachers. Critics argue that teacher education programmes have little substance and that their lack of rigour and low academic standards actually discourage talented individuals from entering the teaching profession (Roth, 1986; Sikula and Roth, 1984). From this perspective, university-based ITE programmes are viewed as barriers to raising professional standards in teaching, and as universities have been very slow to change and improve their programmes, they should be bypassed.

ATCs are designed to provide an alternative pathway into teaching for people who do not wish to take the college route and to offer school districts the freedom to recruit, hire and train teachers. In times of national teacher shortages, ATCs have also been initiated as a means of increasing teacher supply, particularly in areas of a country where there are schools that are difficult to staff, in urban, remote and disadvantaged communities (Isaacs et al., 2007).

The result is that the virtual monopoly of universities/colleges over teacher preparation has been broken and responsibility for the professional education of teachers is shifting to school districts and state education agencies. This has produced a negative reaction from teacher educators and academia and considerable criticism of alternative routes. However, as McConney, Price and Woods-McConney (2012) point out, the lack of agreement among traditional teacher education providers as to what constitutes effective teacher preparation and debates about teacher effectiveness and quality has not helped their case.

As McConney at al. (2012: v) indicate, during the last two and a half decades, the literature reflects significant shifts in thinking by teacher education leaders, teacher associations, school leaders and education policy makers around what is understood as effective teacher education. These shifts show a move away from "focussing on the inputs, structure or characteristics of teacher preparation programs as yardsticks of their quality or effectiveness, and strongly toward various outcomes of teacher preparation" - and pupil achievement, particularly.

Research on alternative teacher preparation has revealed a number of misconceptions and red-herrings that confuse the debate as Stoddart and Floden (1995) have identified.

- **Alternative and traditional routes are fundamentally different**. In reality, the lines between the two are becoming blurred: while traditional programmes are generally structured around coursework with a culminating student teaching experience, many university programmes are increasingly integrating coursework and student teaching (Humphrey, Wechsler and Hough, 2008).

  Indeed, in comparative evaluations of ATCs and traditional routes, evaluators have found that the differences across ATC programmes and across traditional university programmes are greater than the differences between the two types. The researchers have also found that in the same ATC programme there can be significant implementation differences between multiple sites (Humphrey et al., 2008; Lowery, Roberts and Roberts, 2012)

- **There is very little academic teacher education in alternative programmes**. Public debate about ATCs often suggests that they constitute one basic model which has no professional coursework, such as teaching methods, educational psychology, sociology or philosophy. This is wrong: ATCs exist for a variety of purposes and in many forms, but usually include some professional coursework or its equivalent (Stoddart, 1992; Stoddart and Floden, 1995). Thus a choice between a traditional or alternative programme is not a choice between some or no professional preparation; rather it is a decision about the timing and institutional context for teacher preparation and about the mix of professional knowledge and skills to be acquired.

In the United States (US) and England, those ATCs that are encouraged typically involve partnerships with higher education institutions (HEIs) to provide the professional academic course work for the teachers/interns employed in the schools. In the US, ATCs vary across the states, but many resemble traditional teacher education programmes in content, rigour and expected outcomes (Humphrey et al., 2008). Indeed, researchers have pointed out that although ATCs provide teacher candidates with a streamlined preparation programme that places them in the classroom as the teacher of record more quickly than traditional university-based programmes, some of the ATCs actually require a longer combination of course-work and internship than most university programmes (Humphrey et al., 2008; Stoddart and Floden, 1995). The ATCs depart from traditional preparation by focusing on a different source of trainees, emphasising somewhat different procedures and compressing the schedule for preservice training (Smith et al., 1985). In addition, ATCs tend to focus more on teaching methods and classroom management than subject matter because candidates are screened for subject matter competence before admission (Darling-Hammond, Hudson and Kirby, 1989; Stoddart, 1992).

The debate about traditional and alternative pathways into teaching reveals significant philosophical and ideological divides. Stoddart and Floden (1995) point to three main assumptions about what is involved in learning to teach on which the supporter and opponents of ATCs differ:

- While advocates of ATCs believe that individuals with subject matter expertise can learn to teach on-the-job provided they are given some in-service training and support, supporters of university-based ITE believe that becoming a teacher requires subject-matter knowledge, professional education over several years and supervised practical experience prior to assuming full-time teaching responsibility.

- Supporters of ATCs assume that individuals can develop a full range of professional practices by learning to teach within the specific context and using the curriculum of an individual school district. By contrast, supporters of traditional, university-based ITE believe that developing professional expertise requires exposure to a range of theory and research-based curriculum and instructional practices.

- Proponents of ATCs argue that different groups of people - including those who are more mature and have a wide range of life experiences - must be recruited into teaching, while proponents of traditional ITE programmes assume that sufficient numbers of high quality teachers can be recruited from the undergraduate college population.

In the US since formalised teacher education developed in the mid-nineteenth century, there have always been debates about the knowledge, skills and dispositions that teachers need to begin teaching in the public schools. Zeichner, a teacher educator at the University of Wisconsin-Madison, argues in a 2006 paper that this debate over the definition of teaching expertise will continue because the proponents of different reform agendas do not agree on the nature of the work of teachers, what constitutes teacher expertise and the purposes of teacher education programmes. In the US, he has identified three competing views of teaching expertise and teacher education - professionalisation, deregulation and social justice:

- **The professionalisation agenda for reform** emphasises the articulation of a knowledge base for teaching in the form of competencies or standards that address many different aspects of teaching. In this paradigm, professional content is seen as very important in a teacher preparation program.

- **The deregulation agenda** focuses on the importance of content knowledge and verbal ability in teaching and holds that most of the professional content about pedagogy, learning, classroom management, etc. is best learnt on the job through an apprenticeship rather than in university ITE programmes. Advocates for deregulation have pushed for eliminating state licensing of teachers and for the establishment of alternatives to university-based ITE.

- **The social justice agenda** emphasises the development of sociocultural consciousness and intercultural teaching competence among teachers to enable them to teach the increasingly diverse population of pupils in US public schools (Zeichner, 2006).

Zeichner (2006) argues that during different political and economic moments in US history, these competing agendas have emerged. In times of severe economic crisis or racial tension, the social justice agenda has

received more support (Liston and Zeichner, 1991). Under conservative federal governments, the deregulation camp has attracted much support. The professionalisation agenda has constantly pushed for longer ITE programmes and for higher standards required to enter and complete the programmes, such that, under the influence of this agenda, almost every preservice teacher education program in the US incorporates a performance-based assessment system based on students' demonstrating proficiency on a set of teaching standards.

Writing from a social justice perspective, Zeichner attacks the trends that he believes are injurious to teacher preparation:

> *…the commodification of the work of preparing teachers and making teacher preparation subject to market forces, excessively prescriptive accountability requirements from government bodies that seek to control the substance of the teacher education curriculum, consistent and painful cuts in the budgets of public institutions charged with the education of teachers, and attacks on efforts to educate teachers to teach in socially just ways* (2009:1*).*

He deplores the onerous accountability requirements placed on ITE programmes by state governments and national accrediting bodies. In most states, teacher education graduates must pass a series of standardised tests to enter and complete their programmes and to demonstrate mastery of subject matter and teaching standards. This means that to obtain approval for their ITE programmes from state or accrediting bodies, teacher educators have to spend excessive amounts of time preparing detailed assessment plans showing how each ITE course is aligned with state standards and providing the performance indicators showing what tasks student teachers are required to do to meet the standards (Zeichner, 2009).

Hinchey and Kaplan (2005), like Zeichner, believe that these trends are a result of the spread of neo-liberal ideas and policies that support markets and privatisation. In their review of the literature on ATCs, McConney et al. (2012) found that many traditional teacher education stakeholders have observed the apparent alignment of ATCs, especially Teach For America (TFA), with the rise of deregulation, choice and marketisation, key planks in a neoliberal/neoconservative educational reform agenda. Evidence for this is taken from the public values of some philanthropies and businesses that support TFA and their negative views of teacher unions.

Zeichner (2009) argues that, with the proliferation of ATCs run by states, individual school districts and private providers (some of which are for-profit), has come an emphasis by the federal government on the preparation of teachers who are 'good enough' to follow a scripted curriculum designed to raise standardised test scores. The huge emphasis on standardised testing of student achievement as the key measure of school and teacher effectiveness embodies a very limited view of teacher expertise.

While he concedes that encouraging alternatives to university hegemony over teacher preparation is not necessarily bad, he believes that the alternatives being promoted “are closely linked with a technicist view of the role of teachers and with efforts to erode whatever professional autonomy that teachers still have left” (2009:3).

Teacher associations have tended to echo his view. From policy documents and media statements, McConney et al (2012) found that professional teacher associations and/or teacher unions in the US, United Kingdom (UK) and Australia consider 'fast track' teacher preparation schemes like Teach For All (the international arm of TFA) to be a significant threat to the professional status and standards of teaching. While, on the whole, teacher associations offer measured support to ATCs, they view them as embodying "a minimalist and highly technicist approach to teacher education and the inherent assumptions that anyone who is bright and enthusiastic can teach … as insulting and wrong, and devaluing of teachers and traditional teacher education" (2012: vii).

ALTERNATIVE TEACHER CERTIFICATION PROGRAMMES IN DEVELOPED COUNTRIES

While there are a number of developing countries that have established alternative routes into teacher certification, there are very few developed countries that have done so. Among these are the US, England and the Netherlands.

The US and England were early initiators of ATCs and most of the international research focuses on the ATCS in these countries. For that reason, a range of alternative ITE programmes in the US and England are presented below to illustrate the many different types that exist. As the US body of research on ATCs and the English body of research on alternative routes are totally separate, the findings will also be presented separately at the end of the respective sections on the ATCs in each country. Similarly, the ATCs in the Netherlands and the limited research findings on those will be presented separately.

United States

Traditionally, the authority to educate and recommend teachers for credentialing has been vested in colleges of education and universities, which have to certify to state credentialing agencies that candidates have successfully completed an approved programme of teacher education and met state licensing requirements. However, in the 1980s states began to create ATCs that did not involve enrolment in a college-based programme as a response to projected teacher shortages. These programmes were typically developed and administered by state departments of education or school districts and provided a short period of preservice training and then continuing training and support during a teacher's first year on the job. At the end of the training period the state or district recommended the candidate for credentialing.

In the US, ATCs have grown to such an extent that by 2005, according to Feistritzer (2005), they were found in nearly every state and many colleges and universities. More recently, school districts have initiated their own teacher-preparation programmes, often in partnership with local universities. Consequently, by the mid-2000s, in some parts of the country, nearly as many teachers entered the profession through alternative routes as traditional ones (Humphrey and Wechsler, 2006). In 2008, Glass noted that there were more than 140 alternative routes to certification or provisional certification (Glass, 2008).

To illustrate the range of different types of ATCs, the section below provides an overview of a sample of nine ATCs that have been researched in the US. In most cases this information is taken from the organisations' websites. The main research findings about the characteristics and effectiveness of these ATCs are also presented.

A Sample of ATCs

The first three ATCS described below are some of the oldest and best known.

Teach For America (http://www.teachforamerica.org/)

The mission of Teach For America (TFA) is to build the movement to eliminate educational inequity by developing leaders. The organisation believes that it takes committed leaders in classrooms today who will continue to fight for students tomorrow. TFA recruits committed recent college graduates from competitive universities and professionals of all backgrounds to teach for two years in hard-to-staff urban and rural public schools. The programme's overall goals are to close the achievement gap by providing teachers to under-resourced schools and producing future leaders who are committed to closing the achievement gap. Beyond minimal requirements for applications (i.e., a 2.5 cumulative grade point average and a Bachelor's degree), TFA accepts corps members who have records of achievement, are committed to the TFA mission, accept responsibility for outcomes, demonstrate organisational ability, show respect for others and possess critical thinking skills.

TFA corps members attend a five-week summer training session and a one- to two-week orientation in their placement region. Before the session and orientation take place, corps members are expected to complete assigned readings, conduct structured observations of teachers focusing on specific topics covered in those readings and hold follow-up conversations with the teachers they observe. After completing the summer training, TFA corps members become the teacher of record in another classroom starting in the fall. During the school year, they receive ongoing support from the TFA regional office in the form of: observations with feedback; content- or grade-specific learning teams that focus on key teaching issues; other workshops on specific instructional issues; discussion groups; and "all corps" meetings. TFA participants are also expected to attend a certification programme offered by a local university or some other credentialing programme.

In 2015, 11,000 corps members (of whom 48 per cent were in district public schools and another 42 per cent in public charter schools) reached more than 750,000 students. Of the more than 42,000 alumni, 65 per cent were working full-time in education as leaders and advocates. Of the incoming 4,100 corps members in that year, 65 per cent were people of colour or from low-income backgrounds and 35 per cent were the first in their families to go to college.

Over the past 18 years, TFA has periodically commissioned external studies of principals' views on corps members. In the 2013 iteration of the National Principal Survey, principals overwhelmingly reported satisfaction with corps members. Eighty-four per cent of principals said they would hire another corps member given the opportunity and 91 per cent reported it somewhat (14 per cent), moderately (29 per cent) or extremely (49 per cent) likely that they would recommend hiring corps members to their colleagues.

In addition to continuing to support and develop corps members so that they become transformational teachers for their students, TFA's future plans are to foster and accelerate alumni leadership at the teacher, school principal and district levels in policy, advocacy and elected office and in the development of scalable innovations. It will also focus on building a strong, sustainable and fiscally responsible organisation that operates in accordance with its core values—transformational change, leadership, diversity, team, respect and humility.

Boston Plan for Excellence (http://www.bpe.org/)

The Boston Plan for Excellence (BPE), which began in 1984, believes that every child should have the right to a quality public education and that Boston can be the first city to fulfil this basic promise of the American democracy.

BPE's mission is to drive exceptional outcomes for all students by developing great teachers and great schools. The organisation prepares and supports a diverse group of talented teachers for Boston's schools and partners to create strong schools in which teachers can do their best work and children learn at their highest potential.

BPE's priorities are to:

- Prepare and support diverse, highly effective teachers for Boston's schools thorough a best-in-class teacher preparation and development programme;
- Ensure broad student success in partner schools by cultivating ambitious instruction in every classroom with a coherent, data-driven approach to school improvement;
- Create break-the-mould new schools that ensure all students are prepared to succeed in college and career.

By placing teacher preparation in schools, BPE seeks to foster communities in which adults are continually learning and working to achieve student success. School partnerships help schools to implement coherent systems and practices through which teachers and students can best learn and grow. With this strategy, the BPE believes it can reach 10 per cent of Boston Public Schools (BPS) students and help to accelerate progress. BPE is working at creating new, replicable models for developing great teachers and great schools.

BPE's approach has evolved with its increasingly sophisticated understanding of what makes a difference for teachers' and students' learning and with what it has learned about the challenges of bringing promising ideas to scale. Guided by data and by an entrepreneurial mind-set, BPE will continue to evolve until its ambitious goal is reached.

In 2003, BPE helped found one of the first residency-based teacher education programmes, the Boston Teacher Residency (BTR). A partnership between BPE and the Boston Public Schools, BTR's mission is to prepare excellent teachers. Since its inception in 2003, BTR has followed three main goals with the ultimate aim of increasing student achievement levels throughout the district:

- To ready aspiring teachers for BPS's hard-to-fill content areas - mathematics, science, special education, and English as a second language (ESL);
- To increase the number of BPS teachers who are African-American or Latino/a; and
- To ensure that graduates teach in BPS for at least three years.

BTR undertakes a rigorous selection process to admit a talented, diverse cohort of candidates with top-notch academic credentials. The teacher residents are placed in carefully selected BPS host schools in which they learn to teach with effective mentors. The residents receive a three-year induction programme of coaching

and professional development; the BPS curriculum is closely aligned to BTR Master's coursework to link theory and practice. BTR mentors receive a stipend and ongoing training.

Since graduating its first class in 2004, BTR and its network of graduates have helped spearhead a new movement in education reform — developing teachers in the areas of highest need, reversing trends in teacher retention and receiving positive feedback from administrators across the city.

By 2009/2010, Boston Teacher Residency (BTR) had prepared 236 teachers in Boston's schools:

- 48% of the graduates identified as teachers of colour;
- 36% of all graduates taught special education or ESL;
- 27% taught secondary mathematics or science (10% of all BPS mathematics and science teachers were BTR graduates);
- 65% had more than one certification;
- 85% of BTR graduates had remained teaching in BPS beyond their three-year commitment (before BTR, only 47% of new BPS teachers remained in BPS more than three years);
- 97% of principals would recommend hiring a BTR graduate to a colleague;
- 85% of graduates were rated by their principals as similarly or more effective than their peers with the same years of experience;
- 64% of all graduates teaching in BPS lived in Boston; and
- 60% of all graduates were clustered in schools with four or more BTR graduates.

As a co-founder of Urban Teacher Residency United, BTR serves as a model for other teacher residency programmes and is leading the way nationally in improving how teachers are educated.

Knowledge Is Power Program (http://www.kipp.org/)

The Knowledge Is Power Program (KIPP) was established in 1994 with the vision of creating a classroom that helps children develop the knowledge, skills, character and habits necessary to succeed in college and build a better tomorrow for their communities. Founders Mike Feinberg and Dave Levin began by redefining what was possible for a classroom of public school students in Houston.

In 2016 there are 183 KIPP schools across the US serving 70,000 students, with more than 86 per cent being from low-income families and eligible for the federal free or reduced-price meals programme; 95 per cent are African-American or Latino. Nationally, more than 90 per cent of KIPP middle school students have graduated high school and more than 80 per cent of the alumni have gone on to college.

Most of the schools in KIPP's network operate within regions. Schools in regions are supported by a central office which provides services such as operations and alumni services across multiple schools. The schools are governed by a common local board and led by a local executive director. These schools share instructional practices and materials to accelerate innovation in the classroom. Each year KIPP publishes an annual Report Card to share how KIPP schools are performing - individually, at a regional level and across the KIPP network as a whole.

In addition to the teaching of rigorous academic skills, KIPP explicitly creates opportunities for students to develop character as a necessary component of success in college. The programme is now focused on how to integrate a more structured and measurable approach to character development.

In partnership with David Maxfield from Vital Smarts, a team of leaders across KIPP conducted an extensive research project to identify four behaviours that are vital to increasing school leader success and sustainability. Known as the "KIPP Vital Behaviours for Success and Sustainability," the four behaviours are:

- **Teach and insist:** Teach more people to do the work that needs to be done… and insist that they do it. Great school leaders build and empower a leadership team to make decisions and implement them, give real responsibilities to emerging leaders, hold people accountable for agreed-upon outcomes and embrace mistakes as an opportunity to teach and build capacity.

- **Prioritise and execute:** Plan and execute (like a lesson). Effective school leaders clearly identify short- and long-term goals for all team members and the school as a whole. They clearly identify the most important priorities to realise long-term goals, and prioritize both strategic and tactical tasks.

- **Engage your lifelines:** Use a lifeline. Be a lifeline. Great school leaders reach out to peers that can honour, encourage, and push them and, in turn, do the same for others.

- **Renew to get stronger:** Build in time for physical recovery and mental and emotional renewal. The job of a school leader is hard and demanding. It is vital to create a school culture that integrates and celebrates deliberate and ongoing recovery and renewal for the entire school community.

In Washington DC, KIPP DC is a network of high-performing, public, college-preparatory charter schools that serves the city's under-privileged communities. (http://www.kippdc.org/careers/capital-teaching-residency/)

In 2001, KIPP DC's first school, KEY Academy Middle School was established in a church basement in Anacostia with 80 fifth graders. KEY Academy is now one of the highest-performing public middle schools in the District.

KIPP DC works closely with the Capital Teaching Residency (CTR) in the District of Columbia. CTR is a nationally recognised, highly selective teacher training programme that provides a pathway for aspiring teachers to develop into outstanding educators to serve in high-need schools in DC. Its aim is to close the achievement gap by: creating a talent pipeline of highly effective teachers in DC; retaining highly effective teachers in public and charter schools; and shaping high-quality teacher preparation programmes nationally. The programme selects residents that have a record of high achievement and a history of perseverance. They do not need to have a background in education or instructional experience.

CTR residents make a commitment to teach for a minimum of three years in DC. They spend their first residency year training in a classroom with a highly effective mentor teacher and are given the opportunity to obtain their certification and train in early childhood, elementary and secondary mathematics, science, or English language arts classrooms. After the completion of their residency year, KIPP DC residents may be given the opportunity to pursue an additional certification in special education. Throughout this residency,

CTR supports the residents through extensive coaching, consistent work with their mentor teacher, focused professional development coursework and daily practice perfecting their skills in a classroom. CTR also provides post-residency support which provides placement support and one-on-one alumni coaching.

Throughout the year, residents gradually move from observing their mentors to conducting small-group lessons until they are finally ready to take on a larger teaching responsibility role. The residents take on extra responsibilities in conjunction with the content they are mastering in professional development coursework.

Students are initially placed for their residency at KIPP DC or E L Haynes, two high-performing DC public charter schools and for their two additional years of teaching they continue to teach at E L Haynes, KIPP DC, or partner public charter schools across DC.

Figures from CTR show:

- An 8% acceptance rate in 2013;
- Over 400 teachers trained by 2015;
- Close to 24,000 students taught by CTR graduates by 2015;
- 100% of school leaders believe that the programme is effective in training teachers who have a significant impact on student achievement;

Additional examples of ATCs are outlined below. Humphrey et al. (2008) researched seven ATCs to determine the characteristics of effective alternative programmes. The ATCs researched included:

- Teach For America (described above);
- Teacher Education Institute in the Elk Grove, California, Unified School District;
- New Jersey's Provisional Teacher Program;
- Milwaukee's Metropolitan Multicultural Teacher Education Program (MMTEP);
- New York City Teaching Fellows Program;
- North Carolina's NC TEACH (North Carolina Teachers of Excellence for All Children); and
- Texas Region XIII Education Service Center's Educator Certification Program.

The snapshots of the other six programmes are taken from those provided by Humphrey et al (2008).

Teacher Education Institute (TEI) in the Elk Grove, California, Unified School District

TEI is operated as a partnership between the Elk Grove Unified School District in northern California and San Francisco State University. It aims to meet the district's growing need for credentialed teachers and to increase teacher quality by training teachers specifically in the district's curriculum and instructional practices. TEI serves about 100 participants annually and offers certification for all grade levels, K-12, and in all subject areas. Entry requirements into TEI include a Bachelor's degree and a minimum grade point average of 2.5.

The programme is based on an apprenticeship model and includes a combination of coursework, observations and student teaching. After attending 80 hours of coursework during the summer, the

carefully selected recruits spend the fall semester taking courses three days per week and participating in a student teaching internship for 16 hours per week. Each intern has a "master teacher coach" who guides the intern's development. After an 80-hour inter-session course, participants spend the spring in a second internship for four days per week. Both the fall and spring internships include two weeks in which the participant is a sole classroom teacher. Coursework continues in the spring, at a reduced rate of five hours per week.

Milwaukee's Metropolitan Multicultural Teacher Education Program (MMTEP)

A partnership between the University of Wisconsin-Milwaukee's School of Education, the Milwaukee Public Schools, the Milwaukee Teachers' Education Association and the University of Wisconsin-Extension, MMTEP is a teacher preparation programme designed specifically for those who have been paraprofessionals or teachers' aides in Milwaukee for at least one year. The small programme serves around 20 participants per year and offers licensure for teaching grades 1–8. MMTEP aims to provide urban children living in poverty with effective teachers, recruit and train African-American and other minorities for the teaching profession and prepare teachers who will remain in the Milwaukee system.

In addition to having been a paraprofessional or teacher aide in Milwaukee for at least 1 year, applicants must have a Bachelor's degree, pass interviews and background checks by both the Milwaukee Public Schools and the University of Wisconsin-Milwaukee and be admissible as post-baccalaureate students to the university's School of Education.

During a six-week summer session, participants take university classes and teach in Milwaukee's summer schools. Their continuation in the programme depends on a positive evaluation of their ability to relate to children and on their preparedness for assuming full-time teaching responsibilities.

During the following school year, participants serve as the teacher of record, supported by a trained mentor who visits the class-room at least weekly throughout the year. Participants also continue to meet weekly for their university courses during this time.

New Jersey's Provisional Teacher Program

The New Jersey Provisional Teacher Program, established in 1984, was the first state-wide alternative certification program in the country. It was designed to allow career changers and other talented people streamlined access to the teaching profession and to eliminate the need to hire emergency teachers. To enrol in the program, participants first obtain a certificate of eligibility authorising them to seek a teaching position. Requirements include a Bachelor's degree with a minimum grade point average of 2.75; a major in the discipline which the secondary school candidates teach; and a passing score on the Praxis II subject assessment test or National Teacher Examination (NTE) specialty area test. Once the person has obtained the certificate of eligibility and accepts an offer with a school, the hiring district registers the employment with the state's Office of Professional Development, the New Jersey Department of Education issues a provisional licence and the individual is recognised as an alternative-route teacher.

While working under the provisional licence, the teacher attends a formal programme offered by one of 32 regional training centres. Located across the state, most training centres are operated by universities, although three are run by district consortia. The employing district or school also provides mentoring, supervision and three evaluations - two formative and one summative. In 2003, the alternative route teachers paid a mentor $450 for full-time support during their initial 20 days of teaching and an additional $550 for continued support over a 30-week period.

The New Jersey programme offers certification in all grades and subject areas and more than 40 per cent of New Jersey's teachers attain certification through this programme. In 2002–03, 2,700 individuals were part of the programme.

New York City Teaching Fellows Program

The New York City Teaching Fellows Program was created to fill vacancies in some of New York City's lowest-performing schools. Having prepared about 2,600 teachers in 2003, the Teaching Fellows Programme is one of the largest ATCs in the country.

The Teaching Fellows follow a two-year programme in which they simultaneously work toward certification and a Master's degree. Fellows participate in a two-month preservice training during the summer that includes Master's degree coursework; field placement work, during which they observe and assist in classrooms; and fellow advisory meetings at which they meet with an advisor to share experiences and to learn practical classroom skills and management techniques. In the following two academic years, Fellows serve as teachers of record and ongoing programme components include continued Master's degree coursework, school-based mentors, university-based mentors and meetings with other fellows. Master's degree coursework is provided by a dozen local public and private colleges and universities.

The New Teacher Project works with the Fellows Programme in recruiting and selecting candidates for the programme. In addition to meeting the minimal requirements of a Bachelor's degree with a minimum grade point average of 3.0, candidates must participate in an interview event during which they teach a sample lesson, discuss education-related articles, respond to specific classroom issues and engage in a one-on-one interview.

The Teaching Fellows Programme offers certification in all grades and content areas, but is especially dedicated to recruiting applicants eligible for and interested in teaching in a high-need subject area: bilingual education, English, Mathematics, Science, Spanish, or special education. Fellows receive a stipend during the preservice training session to help defray living costs. However, they are responsible for $4,000 of tuition costs for their subsidised Master's degree programme.

North Carolina's Teachers of Excellence for All Children (NC TEACH)

Established in 2000, NC TEACH was designed to support mid-career professionals who wanted to switch to a career in education. Administered by the University of North Carolina Office of the President in collaboration with the North Carolina Department of Public Instruction, NC TEACH serves more than 350 participants annually and offers certification in middle grade (mathematics, science, social studies and language arts),

high school (mathematics, science, social studies and English) and K-12 (Spanish, French, ESL add-on and special populations) teaching.

NC TEACH participants attend an orientation followed by a five-week intensive summer institute of full-time coursework. Courses are offered at each of 13 University of North Carolina host campuses. After successfully completing the summer institute, participants teach full-time in a North Carolina public school while continuing to attend NC TEACH licensure classes and seminars. While serving as the teacher of record, each participant is assigned a mentor by the local education agency.

Requirements for admission to NC TEACH include a Bachelor's degree; a 2.5 cumulative grade point average or higher for all post-secondary work; a degree with a major in or relevant to the desired licensure area; and at least three years of full-time work experience since graduation from college. NC TEACH participants pay regular tuition rates to their host universities' graduate schools.

Texas Region XIII Education Service Center's Educator Certification Program

The Texas Region XIII Education Service Center's Educator Certification Program aims to recruit mid-career professionals and recent college graduates in high-need subject areas. The programme offers certification in elementary education, elementary/bilingual education, special education, middle education in specific content areas, secondary education in specific content areas, and career and technology.

Before becoming teachers of record, programme participants take courses offered online and at the Region XIII training centres in the spring. They also participate in a two-week field experience while continuing their coursework. Participants must find employment as an intern in a school by 1 October to continue in the programme. The vast majority who find teaching jobs become teachers of record. During this intern year, they are supported by school-based mentors who are trained by Region XIII and by programme-based field supporters. Coursework also continues during the intern year.

Programme applicants must hold a Bachelor's degree with an overall grade point average of 2.5 in all courses, or 2.75 in the last 60 semester hours completed; provide evidence of competency in reading, writing and mathematics through test records, college coursework, or a Master's degree; have the required coursework and semester hours for the desired certificate area; participate in an online structured interview; provide professional references; and have daily access to a computer. In 2003, more than 300 participated in the programme. Participants must pay tuition, as well as testing and licensure fees, which total nearly $5,000.

Research Findings on ATCs in the US

Because ATCs have been so controversial since their inception, there has been considerable research devoted to them, exploring many aspects of the programmes and comparing their key characteristics and their impact with traditional, university-based ITE programmes. Much of this research has not been rigorous, but in recent years it has become more so and some of the early findings have been overturned. For that reason this literature review focuses on the findings of the most recent rigorous research.

Teacher quality

At base, all the research seeks to address the key issue of the quality of teachers who obtained certification through ATCs versus those who completed traditional programmes. To this end, researchers have explored different aspects of what might influence quality. The profile of the entrants into the two types of programmes is a critical contributing factor.

Findings from initial research that compares the outcomes of traditional and alternate routes to teacher certification reveal some clear trends in recruitment patterns, but a more confused picture in respect to the development of professional expertise.

Early studies of ATCs in California, New Jersey and Texas found that the population recruited into these programmes differed from the traditional teacher education population on several demographic dimensions (Houston, Marshall and McDavid, 1993; Natriello and Zumwalt, 1993; Stoddart, 1992). The ATCs' entrants were older and more likely to be minority males who had transferred from other occupations. The alternate route teachers had more experience living and working in urban environments and were more interested in working in the inner cities (Stoddart and Floden, 1995).

More recent research has confirmed that ATC entrants are older in general, although there is a large age range, and more often they are males (Humphrey et al., 2008). In the seven ATCs the authors researched (discussed above), they found that the profile of the entrants tended to match local teacher demography. Not that many of the entrants were career changers, but more than half had previous teaching experience. The authors concluded that: "Within most of the programs, participants' education, experience, and commitment vary greatly. And, as a result of the variation, participants have very different developmental needs" (Humphrey et al., 2008: 8).

In line with the findings above about the profile of ATCs' entrants are the findings of Johnson, Birkeland and Peske (2005). After researching 13 ATCs in four states (California, Connecticut, Louisiana, Massachusetts) in 2002 for the Project on the Next Generation of Teachers, the authors found that the programmes succeeded in attracting candidates who otherwise might not have entered teaching (men, minorities, experienced professionals from other fields and prospective teachers in mathematics, science and special education). Overall, however, there were fewer candidates in shortage fields than in non-shortage fields.

Interestingly, it has been found that most ATC teachers have qualifications similar to those of traditional teachers (Darling-Hammond, Berry and Thoreson, 2000). A key reason for this, as Walsh and Jacobs (2007) found, is that many ATC programmes are requiring teacher trainees to take more classes and spend more time than before in education coursework while they are teaching, as opposed to the traditional method of undertaking the coursework before entering into the classroom.

Hanushek and Rivkin (2006) have pointed to a significant factor that confounds research seeking to establish the link between the entrants into ATCs and the quality of their teaching. The nature of entrants differs hugely between ATCs. There are those programmes that have been developed by districts or states which have found it very difficult to attract sufficient numbers of fully certified teachers in areas with heavily disadvantaged populations and thus resort to hiring non-certified teachers. By contrast, there are ATCs that

have specialised recruitment programmes that are designed to bring high-quality entrants into the teaching profession for short periods of time. For instance, TFA actively recruits top graduates of some of the best undergraduate schools to teach in difficult urban schools for a two-year period (Decker, Mayer and Glazerman, 2004; Raymond and Fletcher, 2002; Raymond, Fletcher and Luque, 2001).

This raises the question as to how those who enter the profession through highly selective alternative pathways can be compared with the bulk of alternatively certified teachers who enter the profession through far less selective pathways. Hanushek and Rivkin (2006) indicate that in the research on ATCs the nature of the entrants is seldom explicitly described, although it clearly complicates the interpretation of the estimated effects.

A key finding of recent research is the greater influence of teachers' paths into the profession than of the certification programmes they completed. The research of Johnson et al. (2005) showed that the ATC programme was only one element that determined how teachers fared in the classroom: the skills and experiences they brought into their ATC and the support they received in their schools also mattered.

In researching the characteristics of effective ATCs, Humphrey and Wechsler (2006) concluded that while there may be a variety of personal characteristics that make for an effective teacher, most ATCs look for education background (best universities), work experience (other career experience), previous classroom experience (teacher aides) or some combination of the three. They found that effective programmes select well-educated individuals, or work to strengthen subject-matter knowledge, and recognize that previous classroom experience is an asset.

Humphrey et al. (2008) concluded that teacher-candidates' preparation and teaching ability are shaped by the interaction of three forces: their personal background (academic record and previous classroom experience), their formal training (the coursework they experience) and the context of their school placement (principal and mentor support, professional community and availability of materials). The combination of personal background, preparation and school context define the candidates' paths into the teaching profession.

Another significant attribute of entrants has also been identified. In line with the findings of Boyd et al. (2006) and Sass (2008), Lowery et al. (2012) conclude that it is the intrinsic desire and motivation of both alternate route and traditional route teachers that will ultimately determine their success in the classroom.

Teacher certification effect

This issue lies at the heart of the debate and research on ATCs. For decades researchers have being trying to prove or disprove that traditional university-based ITE produces more effective teachers because they have obtained degrees after completing an academic programme. However, numerous studies have produced very mixed results about the comparative effectiveness of the two routes.

Hanushek and Rivkin (2006) have identified significant factors that confound comparative research seeking to establish whether the ATCs or traditional programmes produce better quality teachers. First, as discussed earlier, they point out that the different selection criteria of ATCs vary so widely that the success of the

entrants cannot be easily compared. Second, the requirements for teacher certification vary so hugely across different states that it means very different things, depending on the state (Darling-Hammond, 2009). In addition, in a number of states that have adopted alternative entry systems, different criteria for the award of teacher certificates are used for teachers entering teaching through non–traditional as opposed to traditional training institutions. Therefore, even within a state, a teaching certificate may not indicate the completion of a common set of requirements.

Reviewing the literature on teacher certification, Hanushek and Rivkin (2006) point to other problems and cite the work of Wayne and Youngs (2003), who have documented the limitations of most studies on certification while reviewing some of the components thereof. Wayne and Youngs outline the history of the debate on the effectiveness of teacher certification and cite research from the National Commission on Teaching and America's Future (1996), the Abell Foundation (2001), Walsh (2002), Goldhaber and Brewer (2000, 2001), Darling-Hammond, Berry and Thoreson (2001) to show how controversial the research evidence about teacher effectiveness has been.

For example, Goldhaber and Brewer (2000) found that teachers with subject-matter certification in mathematics perform better than other teachers, while teachers with emergency certification perform no worse than teachers with standard certification, although Darling-Hammond, Berry and Thoreson (2001) disputed the interpretation. Jepsen and Rivkin (2002) found small certification effects on teacher value added to mathematics and reading achievement once the nonlinearities in the return to experience are adequately controlled.

Lowery et al (2012) also show the extent of the controversy. Feistritzer (2005) maintains that teachers who complete ATC programmes have a high level of competence when they enter into the classroom; and Garner (2010), who is the Executive Director of the Mississippi Community College Foundation, avers that participants in his state's ATC programme compare favourably with those who go through university training. By contrast, there are those who criticise ATCs because they feel that these programmes "shortchange both teacher candidates and the students they teach because their preparation, particularly in pedagogy, is inadequate" (Allen, 2003: 6).

Darling-Hammond (2010) has weighed in on the effectiveness of teachers in raising student learning achievement. She cites the study by Clotfelter, Ladd and Vigdor (2007) that estimated the effects of several kinds of teacher qualifications on the learning gains of high school students in North Carolina. They found that teachers were more effective if they were certified in the specific field they taught, had higher scores on the teacher licensing test, were fully prepared when they entered, had taught for more than two years, had graduated from a competitive college and had become National Board Certified by completing a performance assessment documenting their teaching.

Clotfelter et al. (2007:27) also examined the effect of teacher licensure alone, using a teacher with a regular license as the base case. The clearest finding was the negative effects on achievement for those with "other" types of provisional or emergency licenses. They found that in one of their research models (model 4) teachers operating under a 'lateral entry license' exhibited a statistically significant negative average effect

on student achievement, but it was not clear whether that negative effects persists after the lateral entrant receives a regular license.

These results for lateral entrants appear to be consistent with the more detailed investigation of pathways into teaching in New York State by Boyd et al. (2006). That study found that teachers with reduced coursework prior to entry often exhibited smaller initial gains than other teachers, but that the differentials were small and disappeared as the cohort matured.

The Boyd et al. (2007) study is also cited by Darling-Hammond (2010) whose research found that a teacher's certification status, pathway into teaching, teaching experience, graduation from a competitive college and mathematics SAT scores were significant predictors of teacher effectiveness in elementary and middle grades mathematics. Students' achievement was most enhanced by having a fully certified teacher who had graduated from a university preservice programme, who had a strong academic background and who had more than two years of experience. Students' achievement was hurt most by having an inexperienced teacher on a temporary license, a teaching profile most common in high-minority, low-income schools. In combination, improvements in these qualifications reduced the gap in achievement between the schools in deciles serving the poorest and most affluent student bodies by 25 per cent.

Teacher retention

A pressing issue for teacher supply is the extent of teacher attrition and it appears from the research that the attrition rate of ATCATC teachers is higher than others in the field (Darling-Hammond, 2009; Nagy and Wang, 2006; Sass, 2008). While the quality of university-based programmes varies widely, Darling-Hammond (2010) argues that on average, in terms of teachers' preparedness, effectiveness and retention, research findings are significantly more positive among preservice programmes than programmes that offer less preparation prior to entry (Boyd et al., 2006, 2008; Darling-Hammond et al., 2002; Darling-Hammond et al., 2005).

Darling-Hammond (2010) states that about 30 per cent of new public school teachers leave the profession over their first five years of teaching, but the attrition rates are much lower for teachers with greater initial preparation. A nationwide study by the National Center for Education Statistics (NCES) found, for example, that among recent college graduates who entered teaching, 49 per cent of uncertified entrants left the profession within five years, more than triple the 14 per cent of certified entrants who left in this period of time (Henke et al., 2000). An analysis of the Schools and Staffing Surveys showed that new teachers who lacked student teaching and teacher education coursework left teaching in their first year at rates double of those who had had experienced student teaching and coursework (NCTAF, 2003).

The quality of the research on ATCs

Approaching the question of the effectiveness of teacher policy goals, Vegas and Ganimian (2013), as economists of education, have reviewed recent, more rigorous impact evaluations of teacher policies. They chose studies that assessed the impact of teacher policies on student learning, as measured by standardised national and international assessments; they employed methods that allowed them to distinguish the effects

of interventions from other factors that may have confounded those effects; and while they assessed the impact of specific reforms, they also explored how these reforms interacted with one another.

Vegas and Ganimian (2013) reviewed the economic theory and empirical evidence relating to the eight main policy issues that education systems face in managing teachers effectively: (1) setting clear expectations for teachers; (2) attracting the best into teaching; (3) preparing teachers with useful training and experience; (4) matching teachers' skills with students' needs; (5) leading teachers with strong principals; (6) monitoring teaching and learning; (7) supporting teachers to improve instruction; and (8) motivating teachers to perform.

They investigated the research into whether students taught by certified teachers performed, on average, better than those taught by uncertified teachers and concluded that the evidence suggests that the predictive effect of certification is usually small, as evidenced in a number of studies.

Vegas and Ganimian point out that the research of Clotfelter and his collaborators (2007), using permutations of student, school, subject and year fixed effects, was not an RCT and that the results thus must be regarded as more tentative. The results are "consistent with the hypothesis that certification might play a more important role in teacher effectiveness at the high school level, but it has only a very small effect" (Vegas and Ganimian, 2013: 48).

A teacher's experience, test scores and regular licensure have positive effects on student learning, according to Kane, Rockoff and Staiger (2006), who used data from the 1998–99 to the 2004–05 school years to examine the relationship between student achievement and teacher certification for reading and mathematics teachers in grades 4 to 8 in New York City. Kane et al. looked at the effectiveness of certified, uncertified and alternatively certified teachers on student achievement. This "panel data" allowed the authors to observe a teacher's effectiveness within the same school, grade and year over time and use combinations of fixed effects to account for factors that confound the effect of certification. They discovered that the effects of teacher certification were, at best, small. In fact, "in mathematics, students assigned to teachers without a certification performed, on average, no differently than peers assigned to traditionally certified teachers" (Kane et al., 2013: 49). However, among teachers with the same certification status, there were large and persistent differences in teacher effectiveness.

This finding has been confirmed by the research of Boyd et al. (2007) who also found that the variation in effectiveness on student achievement was far greater within programmes than the average difference between programmes. When they ranked teachers by the value they added to student achievement, they found that the impact of assigning a student to a top-quartile teacher vs. a bottom-quartile teacher was 10 times the impact of assigning a student to a teacher with a particular kind of certification or from a particular programme.

When looking at the impact of alternative ITE programmes, Vegas and Ganimian (2013) cite the findings of the most rigorous study by Decker et al. (2004) on TFA's impact. Decker at al. conducted the research in 2001 in grades 1–5 in six of the 15 regions in which the programme places its members (Baltimore, Chicago, Los Angeles, Houston, New Orleans and the Mississippi Delta). Decker et al (2004) randomly assigned

students at the same school in the same grade to TFA or control teachers and compared the students' achievement after one year. Control teachers included all those to whom students would have been assigned in the absence of TFA teachers (who were neither necessarily certified nor experienced). In fact, TFA teachers were more likely to have attended competitive colleges and to have acquired their education degrees, but less likely to have education-specific training and student-teaching experience than control teachers. Yet, overall, students of TFA teachers performed 0.15 of a standard deviation higher in mathematics than those of the control teachers and 0.26 higher than those of novice control teachers (with one to three years of experience). In reading, however, there was no difference.

This appears to be the most conclusive evidence regarding the effectiveness of TFA teachers on student learning compared to traditionally trained teachers - the subject of endless debate and research. However, because TFA teachers enter the profession through a highly selective programme, this does not tell us whether the bulk of alternatively certified teachers who enter the profession through far less selective pathways will be less effective than traditionally certified teachers.

This question was explored by Constantine et al. (2009), who compared the impact of traditionally and alternatively certified teachers on student achievement in the US with a sample of 2,600 students in 63 schools in 20 school districts. The findings indicate that the difference between traditionally and alternatively certified teachers was less clear-cut than policy debates suggest because:

- Both types of teachers varied widely in the hours of preservice training they had undertaken;
- On average, the teachers did not differ in their scores on college entrance exams, the selectivity of their colleges, or their educational attainment;
- Neither group was more effective on average in raising student achievement; and
- Neither the amount nor content of the courses that alternatively certified teachers took made a difference in their effectiveness.

Thus Vegas and Ganimian (2013) conclude that alternatively certified teachers who do not enter the profession through selective programmes are not all that different from traditionally certified teachers. Overall, they argue that:

> *While it is not known which entry requirements are most effective at predicting teacher effectiveness, neither is there any compelling case for doing away with such requirements altogether. A better understanding is needed of which entry requirements (if any) serve to ensure a minimum "floor" of teaching quality* (2013:19).

Characteristics of effective ITE programmes

For the purpose of identifying the lessons that the international literature might hold for alternative routes into teaching in South Africa, the research conducted by Lowery et al. (2012) and Humphrey et al. (2006, 2008) are of particular value, because these researchers explored the perceptions of teachers about the effectiveness of ATCs compared to traditional teacher preparation programmes and the characteristics of effective ATCs, respectively.

Lowery et al. (2012) undertook qualitative research in four public schools in the south eastern United States. They interviewed K-12 teachers, half of whom were trained through a traditional teacher education programme and the other half through alternate route programmes. The research findings confirmed what Zeichner and Paige (2007) and Goldhaber and Brewer (2000) maintain: teachers who hold subject-area degrees produce better students. Teachers who have deep content knowledge understand the reasoning behind concepts and facts in their subject areas and they are better able communicate them to their students. Most of the teachers felt that content knowledge should be learned in the university classroom, but teaching skills and classroom management are better learned by observing a practitioner actually teaching in a classroom than by listening to a professor lecture about elementary or secondary methods. Despite how long they had taught or their subject areas, all participants in this study indicated that they had received little classroom management training and more was needed before entering a classroom to help manage the students. Many had had very difficult first years because of the lack of this training. More classroom experience before entering the profession emerged as the most crucial need of the overwhelming majority of both alternate route and traditional route teachers. This "real-world" experience in classrooms was seen as far more important than anything that could be learned in a textbook or university classroom. Experience was especially important in the areas of classroom management and pedagogical training. The researchers found that both methods of teacher preparation programmes are effective but that "placing teacher candidates in the classroom as much as possible to gain experience is the best way to train future teachers" (Lowery et al., 2012: 1).

The characteristics of effective ATC programmes were investigated by Humphrey and Wechsler (2006) with funding from the Carnegie Corporation of New York. Given that the variation within programmes has been found to be as great as the variation between programmes, the common methodology of comparing programmes is unable to discern the qualities of programmes with positive teacher outcomes. To account for within-programme variation, Humphrey and Wechsler's (2008) analysis of the seven ATCs (as discussed earlier in this paper) clustered individuals across programmes based on common background characteristics, programme experiences and school contexts. They employed multiple data collection activities at both the programme and participant levels. In their case studies of the seven ATCs, they included multiple interviews with key personnel and document reviews. Participants were surveyed twice —at the beginning of the programme and at the end of their first year of teaching. A sample of participants were also observed teaching and were interviewed both at the beginning and end of their first year of teaching. Humphrey and Wechsler (2006, 2007) found that teacher-candidates' preparation and teaching ability are shaped by the interaction of three forces: their personal background (academic record and previous classroom experience), their formal training (the coursework they experience) and the context of their school placement (principal and mentor support, professional community and availability of materials). These three factors—personal background, preparation and school context— define candidates' paths into the teaching profession.

The research of Johnson, Birkeland, and Peske (2005) has also underscored the greater influence of teachers' paths into the profession than of the certification programmes they completed. The certification programme was only one element that determined how teachers fared in the classroom; the skills and experiences they brought to their programmes, as well as the support they received in their schools, also mattered.

In analysing each of the programme, personal or contextual elements, Humphrey and Wechsler (2006, 2007) found that each element impacted various outcomes differently and contributed to the development of skilled, confident teachers. However, the element with the strongest effect on all measured outcomes was school context. In this regard, the authors indicate that: "There probably is no precise recipe to create a school that helps alternative certification participants succeed, but our survey analysis identified collegial relationships, strong leadership, and adequate supplies and materials as important components" (Humphrey and Wechsler, 2008:15).

Factor analysis suggests that a professional collegial environment it is one in which teachers analyse student work samples together; seek each other's advice about instructional issues and problems; observe each other's classrooms and offer feedback and/or exchange ideas; and discuss student assessment data to make decisions about instruction.

In summing up the key factors that make for effective ATCs, Humphrey and Wechsler (2008) suggest that effective ATCs:

- Place candidates in schools with strong leadership, a collegial atmosphere and adequate materials;
- Select well-educated individuals or work to strengthen subject-matter knowledge and recognise that previous classroom experience is an asset;
- Provide carefully constructed and timely coursework tailored to candidates' back-grounds and school contexts; and
- Provide trained mentors who have the time and resources to plan lessons with candidates, share curricula, demonstrate lessons and provide feedback after frequent classroom observations.

These findings are similar to those of Darling-Hammond (2006) and Zeichner (1993) who conducted case studies of effective programmes. They found that powerful teacher education programmes include a clinical curriculum as well as a didactic curriculum. They teach candidates to turn analysis into action by applying what they are learning in curriculum plans, teaching applications and other performance assessments that are organised around professional teaching standards. These attempts receive detailed feedback, with opportunities to retry and continue to improve and they are followed by systematic reflection on student learning in relation to teaching.

Humphrey and Wechsler (2006) point out that the research base on which the endorsement and criticism of alternative certification are based is thin and that their findings demonstrate that many of the assumptions about teacher preparation programmes of all kinds, whether traditional or alternative, made by both proponents and opponents, are inaccurate. Because they found "more variation within a single preparation program than there is across programs, in terms of the training teacher-candidates are offered, their experiences in their programs, and their effectiveness when they become teachers", they conclude that programme-to-programme comparisons make no sense (2006:46).

Passionate debates between proponents and opponents of alternative certification may reflect a broader philosophical divide over teaching as a profession, but Humphrey and Wechsler (2006) believe these cannot lead to real improvement in teacher preparation. Instead of the search for a perfect programme, they

advocate a broader conception of teacher preparation that emphasizes paths into the profession and understanding the unique contributions of each component of a teacher's path into the profession, and the interaction of multiple components, in the quest to prepare more skillful teachers (Humphrey and Wechsler, 2006).

England

In the United Kingdom (UK), there are separate education and training systems for England and Wales, Scotland and Ireland. Although they also apply to Wales, here we will focus only on initial teacher training (ITT) in England, where the Department for Education (DfE) has encouraged many different types of ATCs.

In the last three decades, the ITT landscape has changed dramatically in England as the government and private organisations have developed alternative routes into teaching. A prime reason for the shift to more school-based ITT routes is a change in government policy: since the mid-1990s, the government has experimented with school-based ITT as a means of increasing teacher supply and, especially in the last decade, has developed many more routes into teaching in line with its objective of devolving more power to schools. This is clearly expressed in the latest DfE White Paper (2016) "Educational Excellence Everywhere":

> *We believe in supported autonomy: aligning funding, control, responsibility and accountability in one place, as close to the front line as possible, and ensuring that institutions can collaborate and access the support they need to set them up for success. And we will work to build a system which is responsive to need and performance, ensuring that institutions respond to changing needs* (DfE, 2016:3).

In an interview, senior DfE officials also indicated that a key reason for setting up more school-based routes was the widespread dissatisfaction expressed by schools about the universities' "ITT package" which they found inadequate. However, university spokespeople expressed the view that the shift of power to schools was ideological and the result of the Conservative government's mistrust of university departments which they saw as being too left-wing.

Currently, there are a number of avenues that can lead to a role in teaching. However, all teacher preparation in England is based on standards for initial certification as a teacher – leading to Qualified Teacher Status (QTS) – which are mandated by the Education Secretary of State.

ITT programmes are either school- or university-led. There may be differences in the way the training is delivered and led, but all include a minimum of 24 weeks in at least two schools to provide practical classroom experience; academic study to provide the knowledge and understanding to teach successfully; and an assessment of trainees' teaching skills through classroom observation.

The minimum entry requirements are: C-grade General Certificate in Education qualifications (GCSEs) (or standard equivalents) in English and mathematics plus a science subject to teach in a primary school or key stages 2/3 (children up to age 14); and a UK undergraduate degree or a recognised equivalent qualification to enrol for a Post Graduate Certificate in Education (PGCE). In addition, most providers and schools expect

applicants to have some school experience (even if only for a few weeks before a course begins). Students typically have to pay fees of up to £9,000 for ITT programmes (but not in most salaried routes). Student loans and maintenance grants are available to UK students and loans apply also to EU students. Training bursaries and scholarships worth about £20,000 may be available to top graduates, depending on their subject areas.

University-led ITT

Universities and colleges offer ITT for both graduates and undergraduates.

Post-graduate courses

Those with a degree can complete a PGCE at a university or college. This will consist of 12 weeks at a university/college and 24 weeks in schools. Universities work with school partnerships to offer at least two school experience placements.

If a graduate does not have a degree subject that links closely to the intended teaching subject, there are subject knowledge enhancement courses for some secondary level subject areas to fulfil the application requirements.

PGCEs include credits towards a Master's degree, but the number of credits can vary across universities.

Undergraduate degree courses

Those who want to obtain a degree in education can study for a degree and complete teacher training at the same time at various universities and colleges.

Most undergraduate degrees in teaching are in primary education. Trainees spend about half of the course in placements in schools. Full-time courses usually take three years (B. Ed for primary school), or four years (B. Ed for secondary school) and part-time courses take four to six years.

A minimum of two A-levels (or equivalent) is usually required for admission, with a grade C or above in GCSE English or mathematics. Those wanting to teach early years and primary school also need a grade C or above in GCSE science. Students will also need to pass a skills test in Numeracy and Literacy.

School-led ITT

School-Centred Initial Teacher Training (SCITT)

SCITTs are the oldest form of school-led training and were initiated to increase the supply of teachers by offering more flexible ITT options. SCITT programmes are delivered across England by groups of schools and training providers. Those groups of schools that qualify for government approval as SCITTs after a rigorous appraisal process are allowed to run their own training programme and award students with qualified teacher status (QTS). Most of the training is delivered in the classroom by experienced teachers and may include attending a partner university if the training includes a PGCE. Trainees have one 'base' school and go on to further placements in at least one other school. Training through a SCITT particularly suits applicants

who already have a lot of school experience. Applications are made directly to the SCITT programme, rather than the university.

School Direct

School Direct is the youngest of teacher training routes. It was introduced in 2012 to give schools the chance to train graduates in subjects in which there are shortages and in areas of local need. Groups of schools recruit and train teachers on the job in partnership with other schools, SCITTS or a university. The School Direct courses are designed by groups of schools with SCITTS and universities and lead to the achievement of QTS. Most School Direct courses also award PGCE and/or Master's-level credits. Trainees learn on the job: after spending time observing and being supported by a mentor, they gradually take on teaching responsibilities. There is an expectation, but not a guarantee, of employment within the training school at the end. The programme takes one year, if studied full time. There are two training routes available in School Direct:

- Unsalaried - available for all graduates; and
- Salaried - employment-based, for graduates with three years' work experience, although some schools may accept applicants with less work experience, especially in mathematics, physics, chemistry, languages and computing. A trainee receives an unqualified teacher's salary from the school and the cost of training is covered, but there may be charges for a qualification such as a PGCE, if awarded.

Teach First

The Teach First charity (England and Wales) is high-profile programme supported by business and government. It is an offshoot of TFA and aims to address educational disadvantages by training high achieving graduates to teach in challenging schools in which more than 50 per cent of pupils are from low-income backgrounds. The programme targets graduates who are considered to have 'the energy, commitment and ability to communicate required to succeed in secondary classrooms, as well as the potential to become outstanding leaders in any field'. Applicants need to have at least 300 Universities and Colleges Admissions Service (UCAS) points and a second-class honours, upper division (2:1) degree or above, A-levels in relevant subject areas and grade Cs in GCSE mathematics and English. Trainees will also need to show qualities such as resilience and organisational skills. In 2015, Teach First had 2,000 places nationally across primary, secondary and early years schools. Teach First offers a two-year programme. Canterbury Christ Church University and the University of Manchester provide six weeks of intensive preservice training to participants in the summer before they start in secondary schools as unqualified teachers, usually with a small group of other Teach First participants. During their first year they work towards a PGCE qualification and QTS is often achieved by the end of that year.

Trainees are paid as unqualified teachers in their first year and as qualified teachers in their second year. Teach First only works with schools that are able to support participants through providing in-school subject and professional mentors. The programme provides additional support through social and professional development events and online tools. Volunteer coaches support participants in their second year as they

determine how they want their careers to develop. Participants also undertake a leadership development course involving the Tanaka Business School at Imperial College London and the Institute of Education.

Since Teach First began in 2003, 7,000 teachers have been placed and one million pupils living in low-income communities across England and Wales have been supported by a Teach First teacher in 1,000 partner schools.

Early Years Initial Teacher Training (EYITT)

Early Years trainee teachers teach in the foundation stage (from birth to five years old) and go on to gain Early Years teacher status. Graduates can apply for a part-time 12-month programme while working in the sector, or for a university-led programme of a 12-month full-time course with school placements. Some Early Years School Direct places may also be offered. There is an Assessment Only route for experienced graduates who can already demonstrate all of the teaching standards.

Researchers in Schools Programme

This school-centred, salaried teacher training programme is available in non-selective state schools. This programme is for researchers who are nearing completion of, or who have completed a Doctorate. Trainees gain QTS and NQT status by the end of two years and can then return to work in an HEI or continue to teach in schools.

Most national curriculum subjects are available on the programme, with the possibility of enhanced salaries of up to £40,000 a year for subjects in which there are shortages such as mathematics and physics.

Premier Pathways

A paid two-year teacher training programme, Premier Pathways is for high-calibre graduates. The unique programme offers a graded approach to teaching around the core concepts of support, flexibility and professional growth. Participants will complete the course at a school of their own choosing and achieve full QTS.

Troops to Teachers

This is small programme that recruits about 50 of the best armed services personnel who have left the service into teaching each year. The leadership and management skills and experiences gained during their service are seen as invaluable additions to the teaching corps. The recruits have to have the equivalent of a degree and receive in-service professional training.

Ark Teacher Training

In addition to the alternative ITT programmes described above, which are officially supported by the DfE, there are other programmes that have obtained accreditation. One such is the Ark Teacher Training (Ark TT) programme developed by Ark, an international charity that runs a network of 34 academy schools educating some 20,000 pupils in the U.K. who live in low-income areas and who have a history of educational

underachievement. Ark TT is a School Direct programme recently established to train teachers for Ark schools. In 2016, the programme enrolled its third cohort of some 70 trainees. Information about this programme was obtained from Ark documentation and an interview with one of its senior staff in London. From a large number of applicants, Ark carefully selects trainees, half of whom tend to be new graduates and the others career changers and teaching assistants sent by their schools. The applicants apply for specific places in their subject areas. After regular training, coaching and placements, every person who graduates from Ark TT and thus meets all the required teaching standards will gain QTS. They also receive an internationally recognised PGCE from Goldsmiths, University of London, based on three essay assignments of some 3,000 to 5,000 words each at Master's level as well as five to six training sessions. The PGCE counts as 60 credits towards a Master's degree. The Ark TT programme includes:

- School orientation: before the course starts, new trainees spend time meeting their colleagues, interacting with pupils and getting to know their school so they can hit the ground running in September;

- Summer school: all new trainees come together for two weeks for an introduction to the programme, Ark and the principles of great teaching.

- Online platform: for trainees to complete, track and store the evidence they generate as they go through their training. It is also used by trainees' coaches for assessment. Coaches use 25 rubric descriptors across a range of areas to assess whether a trainee is at the level of 'pre-novice', 'novice', 'beginning proficiency', 'advanced proficiency' etc.. Assessments are captured three times a year at the end of every term. This allows Ark TT to compile trainee data very easily, track trainees' progress over the year and identify where support or an intervention might be needed.

- Weekly coaching: trainees are observed for 15 minutes every week and, according to a specific formula, have positive feedback sessions sharing manageable, bite-sized changes to their practice. The feedback process is the 'six step model' - praise, probe, action step, practice, plan ahead, follow-up - developed by Paul Bambrick Santoyo in *Leverage Leadership* (https://www.amazon.co.uk/Leverage-Leadership-Practical-Building-exceptional/dp/1118138600).

- Weekly co-planning: working with an experienced teacher to learn how to plan lessons and teach specific elements of the curriculum.

- Classroom teaching: primary school trainees undertake a full term in small group teaching and secondary teachers begin with five hours a week of teaching. If they are found to be able to do so, their teaching increases to 90 per cent of a full load over time.

- Weekly training sessions: every week trainees come together at a central venue for four-hour training sessions with their tutors. These sessions focus on how to teach the curriculum and sometimes include broader areas like behaviour management techniques or assessment.

- Contrasting school experience: trainees will spend time in three different schools: they swap with a fellow trainee in another Ark school, observe a school outside the Ark network and spend time in another Ark school in a completely different context.

During their training, trainees also have to master the Ark mathematics programme, Maths Mastery, and an Ark literacy programme, English Mastery. The Ark brochure spells out the Ark TT Formula:

- 500 hours of training (including two weeks of summer school);
- 120 hours team teaching with a great teacher;
- 66 observations with feedback on a trainee's practice;
- 190 school days to put learning into action.

As case study on the Ark TT is found in the Report of the Carter Review of Initial Teacher Training (ITT) in England (2015: 28)

> **Case study: Ark Teacher Training - integrating theory and practice**
>
> A fundamental aim of Ark Teacher Training's ITT programme is to develop trainees into rigorous evaluators of their impact on pupils; critical engagement with theory and research is central to this. The Master's assignments place evidence of direct impact on pupil progress as the main indicator that the trainee is able to understand and adapt the key general principles governing classroom practice. By continuously reflecting on the relationship between theory, research and what's happening in their own classrooms, trainees develop into teachers who can confidently contribute to the education debate from a solid evidence base. By working with their university partner to redesign the Master's level assignments, Ark Teacher Training are able to show trainees that a teacher can make the conscious application of theory a very real part of their everyday practice.

Ark also provides a NQT programme which trains and supports qualified teachers during their first two years as well as Career Development programmes aimed at developing and supporting middle and senior leaders.

In terms funding, as Ark TT is a School Direct provider, trainees can qualify for a government bursary, salary or scholarship. If trainees graduated less than three years before commencing the programme, they may qualify for a government bursary to cover the tuition fees and cost of living during their training year. The amount depends on the class of degree and teaching subject and could total £30,000. Trainees may also qualify for a student loan to cover their tuition fees.

Career changers can earn a salary if they have worked for three years or more after graduating; their school will pay the tuition fees. Those who have graduated in mathematics, physics or chemistry and achieved a 2:1 degree might be eligible for a tax-fee scholarship of £30,000. There are also a limited number of scholarships for recent graduates.

Ark indicated that 85 per cent of its graduates were graded as 'outstanding' and 93 per cent of their 2014 cohort and 97 per cent of the 2015 cohort have remained in teaching.

Research Findings on Alternative ITT Programmes in England

As discussed under Section 2, the same philosophical and ideological debates can be found in the literature on alternative ITT in England, but there is limited empirical research, not least because the English ITT landscape has continually changed during the last three decades, with new school-based ITT options being introduced.

As a result, in order to obtain an understanding about the challenges, strengths and weaknesses of the various models, the following section surveys the findings from official data and reports, reports of independent commissions, the reports of the Office for Standards in Education (Ofsted) on ITT providers and the most useful literature (mostly on Teach First). In addition, information is included from independent provider websites, such as Teacher First and Ark, and from the interviews and documentation provided by the DfE and the National College for Teaching and Leadership (NCTL) in June 2016.

Data provided by the DfE in Figure 1 (Table 2) below shows that in the academic year 2013 – 2014, the vast majority of graduate teachers were trained in HEIs in England and that those in school-led programmes constituted about a third of the total.

Figure 1: DfE table showing where teachers received training

https://www.gov.uk/government/statistics/itt-performance-profiles-management-information-2013-to-2014

Table 2: Postgraduate QTS awarded and employment within 6 months by route, 2013 to 2014 academic year[1]

	All Trainees	Awarded QTS	All trainees awarded QTS	In a teaching post	Seeking a teaching post	Not seeking a teaching post
All postgraduate trainees, of which:	**27,433**	**91%**	**25,089**	**94%**	**3%**	**3%**
HEIs	18,742	91%	17,001	94%	3%	3%
School led:	**8,691**	**93%**	**8,088**	**96%**	**2%**	**2%**
SCITT	2,351	94%	2,203	95%	4%	1%
School direct (fee)	4,005	92%	3,700	96%	1%	3%
School direct (salaried)	2,335	94%	2,185	97%	2%	1%
All undergraduate trainees	**6,445**	**87%**	**5,580**	**92%**	**4%**	**4%**

[1]excludes Teach first, self funded and EBITTS.

Department for Education

The quality of ITT

Ofsted, the official government inspection service, inspects all ITT providers. In 2014 Ofsted reported that, of the ITT partnerships that remained open on 31/8/2014, 78 partnerships were judged 'outstanding (35 per cent)', 142 were judged as 'good' (63 per cent) and 5 were judged 'satisfactory' or 'requires improvement' (2 per cent) at their last inspection. None were judged inadequate. (Ofsted, 2014).

With regard to the teacher trainees, between November 2013 and May 2014, Ofsted indicated that

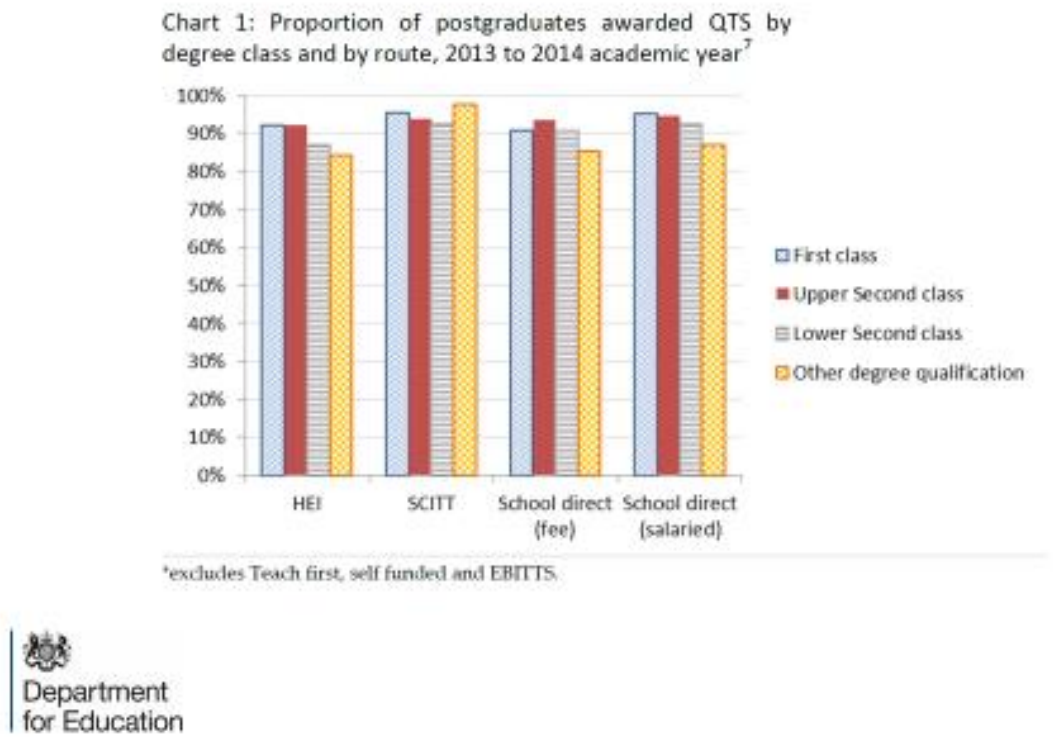
- 1, 855 (14 per cent) were trained by outstanding ITT partnerships;
- 10, 870 (82 per cent) were trained by good ITT partnerships; and
- 505 (4 per cent) were trained by ITT partnerships requiring improvement.

In addition, in the 2014 NQT survey (National College for Teaching and Leadership, 2014), the quality of ITT was regarded as at least 'good' by 89 per cent of primary trained respondents and 93 per cent of secondary

trained respondents (Carter Review, 2015). However, it should be noted that the survey had only a 20 per cent response rate.

Data provided by the DfE in Figure 2 (Chart 1) below, depicting the proportion of postgraduates awarded QTS by degree class and route, shows no significant difference in the quality passes across the different routes.

Figure 2: DfE chart showing proportion of postgraduates awarded QTS by degree class and route



In 2014, Sir Andrew Carter was requested by the Secretary of State for Education to undertake an independent review of ITT in England. The 2015 Review report provides valuable of information on the quality of ITT providers. The aims of the Review were to: define effective ITT practice; assess the extent to which the system currently delivers effective ITT; recommend where and how improvements could be made; and recommend ways to improve choice in the ITT system by improving the transparency of course content and method. In the course of its work, the Review group gathered a wide range of evidence and views through a range of activities including: extensive discussions with sector experts and stakeholders; 31 visits to ITT providers and schools; a call for evidence (which received 148 responses); a review of course materials; and a review of the existing evidence base, including international evidence, evidence from Ofsted and findings from the 2014 Newly Qualified Teacher (NQT) survey.

Carter Review Report (2015)

The Carter Report indicates that England and Wales need to train some 35,000 teachers a year through a range of providers and partnerships, involving both schools and universities (2015: 3). Consequently, In line with the conclusions of some of the US researchers on ATCs, the view expressed in the Carter Review is that given the significant national challenge of maintaining a supply of outstanding teachers for all children throughout their schooling, "possible debates around whether ITT should be delivered by School-Centred Initial Teacher Training providers (SCITTs) or universities, School Direct or not, are not terribly helpful in this process" (2015: 3). The country needs to offer diversity of provision that enables all prospective teachers to find a route that suits their particular needs. The emphasis is placed on partnership as the key:

> *Sometimes universities will take the lead, sometimes and increasingly, it will be the schools that lead the way. However, neither can do it alone and our review has made recommendations that emphasise the strength of working together within a system that is increasingly school led* (2015: 4).

In summing up the evidence it obtained, the Carter Report (2015: 6) states:

> *It is difficult to draw conclusions about whether one route into teaching is any more effective than another. We have found strengths across all routes. The findings from the Good Teacher Training Guide (Smithers and Robinson, 2013), the 2014 NQT survey (NCTL, 2014) and a report by the Institute for Fiscal Studies (Allen and others, 2014) suggest that the move towards school-led ITT has had benefits.*

While critics of school-led routes, particularly teacher educators at universities and teacher associations, have claimed in the past that the English government wants to reduce the complexity of teaching to a craft learnt on the job and dismisses the role of theory and research in ITT - to the detriment of the standing of the profession - neither the Carter Report (2015), nor the latest government White Paper on education, *Education Excellence Everywhere* (DfE, 2016), reflect these views.

In fact, Recommendation 1 of the Carter Report (2015) states that:

> *…the DfE should commission a sector body (for example, the Teaching Schools Council, a future professional body (College of Teaching), or another sector body) to develop a framework of core content for ITT. We feel it is critical that a framework is developed by the sector, rather than by central government (2015: 6).*

In addition:

> ***Evidence-Based Teaching***
>
> *XVI. We believe it is critical that ITT should teach trainees why engaging with research is important and build an expectation and enthusiasm for teaching as an evidence-based profession. International evidence, including the RSA-BERA inquiry (British Educational*

> *Research Association (BERA), 2014), shows us that high-performing systems induct their teachers in the use, assessment and application of research findings* (2015: 8).
>
> *XVII. Our findings suggest that sometimes ITT focuses on trainees conducting their own research, without necessarily teaching trainees the core skills of how to access, interpret and use research to inform classroom practice. It is important that trainees understand how to interpret educational theory and research in a critical way, so they are able to deal with contested issues* (2015: 8*).*
>
> *Recommendation 1c: Evidence-based teaching should be part of a framework for ITT content* (2015: 8).
>
> *Recommendation 6: The Teachers' Standards should be amended to be more explicit about the importance of teachers taking an evidence-based approach* (2015:8).
>
> *We have seen evidence that the best courses, be they PGCE, undergraduate based or QTS only, offer an academically rigorous and highly effective introduction to the classroom* (2015: 13).
>
> *Recommendation 15: DfE should undertake a review of the effectiveness of the skills tests in selecting high quality trainees* (2015: 14).

However, the bias towards the QTS certification in a school-led system, rather than the PGCE, is clear;

> *Recommendation 14: Building on the development of school-led ITT, DfE should work in collaboration with those involved in ITT to consider the way in which teachers qualify, with a view to strengthening what has become a complex and sometimes confusing system. We would like applicants to understand that QTS is the essential component of ITT and that a PGCE is an optional academic qualification* (2015: 13- 14).

White Paper 2016, *Education Excellence Everywhere*

The new DfE White Paper, *Education Excellence Everywhere* (2016), which charts the DfE's goals in education over the next five years, echoes these findings. It makes clear that the education must be able to recruit, train, develop and retain the best possible teachers.

To this end schools will continue to play the central role in the management, training, retention, development, pay and performance-management of existing teachers, particularly as more schools become academies. Government will better support schools with:

a) Recruitment: by reforming the National College for Teaching and Leadership (NCTL) to design and deliver well-targeted incentives and teacher recruitment campaigns; and by enabling schools to advertise vacancies at no cost on line and creating a new national teacher vacancy website to be

able to recruit sufficient, high quality new entrants to the profession looking to return to the classroom.

b) ITT delivery: by allocating teacher training places on a multi-year basis to the best HEIs and school-led providers where new entrants are most needed; and by increasing the proportion of ITT offered by the best schools that are up-to-date with what works best in the classroom and with the keenest interest in maintaining rigorous ITT standards. Universities should establish ITT centres of excellence for subject-knowledge and research in ITT.

c) ITT content: by strengthening ITT content to ensure new teachers enter the classroom with sufficient subject knowledge, practical behaviour management skills, understanding of special educational needs and a greater understanding of the most up-to-date research on how pupils learn.

d) Accrediting new teachers: by replacing the current QTS with more challenging accreditation that will raise the quality and status of the teaching profession, better recognising advanced subject knowledge and pedagogy that is rooted in up-to-date evidence. This will be based on a teacher's effectiveness in the classroom, as judged and recommended by the employing school and moderated by a second school. (This marks a significant change from the current recommendation by HEIs on the QTS award.)

e) Strong, evidence-informed profession: by fostering a world-leading, vibrant teaching profession and addressing issues such as workload and unnecessary bureaucracy that teachers say cause them to leave the profession. This will include the establishment of a new, independent voluntary membership organisation, the College of Teaching – a professional body along the lines of the Royal Medical Colleges - responsible for the teaching profession's own improvement; the establishment of a new peer-reviewed British education journal, independent of government; and expanding the role of the Education Endowment Foundation in supporting evidence-based teaching, character education and preventing poor outcomes post-16 (2016: 11-13).

Interviews

Interviews with the DfE senior officials who work with teacher policy and in the NCTL provided useful insights into the challenges and successes of England's teacher supply and development policy. The challenges are seen as recruiting sufficient teachers in a recovering economy; helping candidates choose the right route given the confusing array of many routes into teaching; and adequately projecting teacher supply and demand, nationally and regionally, to prevent the under-recruiting of the past four years.

Successes achieved were given as: higher quality trainees selected by school-led ITT; better teacher performance and quicker development into mid- and senior-level management; and the development of a simplified set of Teachers' Standards for the professional practice and conduct of teachers. These standards are used by ITT providers for recommending the award of QTS, to assess NQTs at the end of induction, for performance appraisal of teachers and Ofsted inspections of schools and for assessing reported cases of teacher misconduct. A school survey carried out in 2012 provided evidence that the Teachers' Standards had improved the appraisal and management of teacher performance (Lamont and Pyle, 2013).

Interviews were also conducted with staff from King's College London, judged an outstanding ITT provider by Ofsted in 2015, and The Institute of Education, part of University College London, which is an ITT provider and global leader in education research at all school levels. School Direct ITT provider, Beal School, in northeast London was also visited and interviews conducted. The pertinent views relating to the strengths and weaknesses of alternative routes into teaching are captured below.

The King's College interviewee pointed to the difficulty of forward planning and staffing of the education faculty when the allocation of places is only done annually (this will change in line with the 2016 White Paper). Universities do not follow a common pattern in organising when the school experience and course work is undertaken in the year and this is not ideal for any of the parties. King's College front-loads its programme with the course-work first. King's College is very strict about maintaining rigorous standards in its ITT programme and will only grant 60 Master's level credits with a PGCE, not 120 as some universities do. King's College promotes its Master's Degree in Teaching and Learning and some 20 to 30 per cent of PGCE graduates do undertake it. King's does not partner with any SCITTS because it is not financially viable, unless there are a large number that wanted to partner with it. A key point made by the university was that it was necessary for universities to change their traditional ITT approach and work in partnership with schools to deliver high quality ITT. Universities which were stuck in their old approach and resisted the changes and had lost trainee places in the annual allocation.

The school-led routes do tap new pools of recruits into teaching and there are new opportunities for university providers, such as multi-academy trusts, wanting teacher training for their schools. King's worked in close partnership with Beal School, ranked as an outstanding school by Ofsted and accredited as one of 150 Teaching Schools in England which are entitled to lead the training and professional development of staff. Beal School is in a teaching alliance, the North East London Teaching Alliance (NELTA), made up of 14 secondary and 12 primary schools in its area and three universities, King's College, Middlesex University and The Institute of Education.

The interviewee pointed to the high attrition rate among teachers in England, citing poor classroom behaviour of pupils and too much red tape as key 'push' factors – as recognised in the 2016 White Paper. In London, in particular, teacher retention was a real problem because of very poor pupil classroom behaviour, but as a result of the "London Challenge" initiative, it had improved significantly.

The Institute of Education spoke mainly about its blended learning approach and especially its PGCE in Advanced Education Practice (AEP) that it offers online nationally and internationally to chains of schools such as GEMS Education. The Institute of Education was also in partnership with a local SCITT and School Direct provider.

The interviews with the principal, senior staff and trainees at the Beal School produced valuable insights for this paper. Beal applied to become a School Direct provider in order to 'grow its own staff'. In 2016, it was involved in training 42 trainees of different types. Those on the salaried route, who are typically former teaching assistants, substitute teachers or some who have had some kind of teaching experience outside schools, only teach a 50 per cent load because it is a challenging course. In Beal's partner school, Forest, which serves low-income learners who qualify for free meals, Teach First teachers are also employed.

Beal School indicated that it found it much better to be involved in the recruitment, selection and training of teachers as in School Direct than to receive NQTs who are PGCE graduates from universities as it had done in the past. Beal School would recommend the School Direct route because the benefits for a school were huge, especially in being able to recruit the teachers it needs. In 2016, 38 new staff were needed for the school's whole operation and 80 per cent of the new recruits will be trained by NELTA.

Every Thursday all trainees come to Beal for pedagogical training and every session is modelled as a lesson. Every trainee has a subject mentor and these mentors are recruited with a proper job specification. They meet with their trainees for one hour a week. Tutors from the universities are also involved in training. Beal uses a coaching model in which the teacher and trainee are on a learning journey together. They are at pains to develop trainees' skills in assessment of learning and giving them effective feedback.

University staff and external moderators monitor the quality of the training. As a teaching school, Beal has to undertake self-evaluation and is visited by the NCTL and inspected by Ofsted. To successfully run a Teaching School, the school has to be properly staffed and make sure it is financially viable, based on the income it obtains from the DfE for trainee places. As a Teaching School, Beal is also responsible for the professional development of its teachers and to undertake this it appoints quality teachers with a higher salary and a lighter teaching load (one to two days a week free).

Literature

The literature available on the English alternative school-led ITT routes, many of which are very new, is limited, particularly empirical research. The vast majority of the literature is focused on Teach First which has been in operation since 2003.

The best review of all the literature on Teach For All programmes, of which Teach First is an example, is the balanced and thorough one undertaken by McConney et al. (2012) of the Centre for Learning, Change and Development at Murdoch University Perth, Western Australia, for the New Zealand Post-Primary Teachers' Association (NZPPTA). The Association commissioned the research to inform its decision-making about the possible introduction of Teach For All in New Zealand (NZ). All three reviewers have substantial experience in traditional university-based teacher preparation, two as teachers in public schools in the US and Australia and one who co-led the design and implementation of a federally-funded ATC in the US during the mid-1990s. In addition, they commissioned researchers on teacher education across three countries to check the literature they found to ensure it was fair and balanced. In their comprehensive literature review, McConney et al. (2012) identify the positives and negatives of Teach First.

The positive features include:

- Successful, selective recruitment and careful screening of highly able university graduates into teaching and public education more generally. The Hutchings et al. (2006) study found that the Teach First UK programme was more successful in recruiting from "elite" universities such as Oxford and Cambridge than traditional ITT programmes. In general, students at 'elite' universities are less likely to enter teaching than those from other universities because those at "elite" universities tend to have a poor perception of the teaching profession. Teach First specifically targets these elite

universities in their recruitment campaigns, marketing themselves as "a cut above the rest" (Hutchings et al., 2006: 10). Interviewees in schools remarked on 'the calibre' of the Teach First UK trainees (Hutchings et al., 2006: 11).

- An appeal to both graduates' altruism and ambition is a feature of Teach First UK's advertising. Hutchings et al. (2006) indicate that one of the key attractions for participants selecting Teach First UK is that they are able to keep their career options open. The programme is relatively short and the transferability of the skills gained in teaching means that participants who are not committed to a long-term teaching career see Teach First as a viable option that enables them to move on to other careers (Hutchings et al., 2006).

- The extra week of intensive training in Teach First as opposed to TFA (six weeks vs five weeks) provides important additional time for participants to engage with fundamental aspects of teacher education.

- Teach First's partnership with experienced schools of education in well-respected universities adds strength to its programme. The added in-school support of university tutors seems to increase the likelihood that critical 'on the job' training is supported, even if in-school mentoring is not available or effective.

- Mercer and Blandford (2011) argue that "Teach First has been more successful than Teach For America (TFA) in addressing educational disadvantage because it has enthusiastically partnered with academia, whereas TFA has deliberately maintained its independence" (2011: 1). In its 2008 report on Teach First, Ofsted points to the importance of the training and professional support that is provided by an accredited university provider.

- The requirement of Teach First that all participants attain a regular teaching qualification by the end of either the first or second year is a strength compared to TFA. The participants "are trained to meet the Standards for Qualified Teacher Status (QTS) while employed as unqualified teachers" in their first year….Second year Teach First UK participants continue to teach in challenging schools as newly qualified teachers" (Ofsted, 2008: 18).

- The quality of Teach First training has been judged as good or better by Ofsted. In its 2008 inspection report, Ofsted indicates that the training sessions were good and some were outstanding, in which a balance of theory and the "practicalities of teaching" were presented.

- There is a positive correlational relationship between Teach First participation and pupil attainment. For example, for the 2003 cohort, from 2005 onwards, pupils in Teach First schools on average showed higher levels of performance in the GCSEs (Muijs, et al., 2010). This evaluation study, "Maximum Impact", based on teachers in their second year of school practice, was commissioned by Teach First UK and conducted by a group of university-based researchers. The qualitative data collected on the Teach First teachers in the case study schools supported the patterns seen in the quantitative analyses (Muijs et al., 2010). For example, classroom observations of Teach First teachers suggested that they were "particularly strong in creating a positive classroom climate,"

"rate highly on classroom management and on instructional skills" and "show high levels of self-efficacy, and feel they can make a difference to their students" (Muijs et al., 2010: 25). On the other hand, Teach First teachers were "somewhat weaker" in fostering active learning and metacognitive skills" (Muijs et al., 2010: 25).

- In addition, on balance, well-designed, larger-scale studies indicate that Teach For All-prepared teachers are at least as effective in supporting student learning compared to traditionally-prepared teachers, and more so in mathematics and science (McConney et al., 2012) .

- The development of a consensus resulting in national professional teacher standards that guide teacher preparation has been fuelled by the alternative teacher preparation movement (McConney et al., 2012).

On the negative side, however:

- Fast track schemes, like Teach For All, carry with them the potential "to communicate an understanding of teacher education that discounts the complex nature of teaching, in that the fast track approach implicitly suggests that few special skills are needed to teach" (McConney, 2012: vii).

- Research indicates that a high proportion of Teach For All -prepared teachers leave teaching after two years (in line with their two-year commitment) and this turnover results in higher direct and indirect costs to the schools and students of these teachers, which would be more burdensome for schools in challenging circumstances. According to Muijs et al. (2010: 32), some administrative interviewees participating in the UK evaluation indicated that the high turnover rate is "somewhat destabilising". However, Teach First teachers also indicated that they encountered obstacles with continuing teaching: as one respondent said, "if we felt we were valued, and not that we are being exploited, we would probably stay longer" (Muijs et al., 2010: 32).

- Wide variations have been identified in school-based mentor support for trainees in Teach First UK (Hutchings et al., 2006). Not all the subject mentors had the understanding or skills to fulfil their training role to a high standard; others lacked the time they needed to carry out their role effectively. This meant that some trainees did not reach the level of competence of which they were capable (Ofsted 2008: 5). However, in Teach First, university tutors provide additional guidance and this is especially important when associates do not receive support from their in-school mentors (Hutchings et al., 2006; Ofsted, 2008; Scott et al., 2010).

McConney et al. (2012) conclude their literature review with:

> *Are TFA teachers potentially 'good' teachers? The empirical evidence would suggest that yes some are! But is the TFA model the best way to educate teachers and improve outcomes for students? Despite the remarkable success and spread of the approach, important questions nevertheless remain about TFA's longer-term impact for students, schools and unquestionably for teachers and the teaching profession* (McConney, 2012: 48).

The Netherlands

The Netherlands is one of the few European countries that has introduced alternative pathways to obtain a teaching qualification (European Commission, 2013). In Europe, when they have been introduced, alternative pathways are flexible, employment-based programmes, normally shorter than traditional programmes, and typically introduced to combat teacher shortage and to attract graduates from other professional fields.

The key driver for the introduction of these programmes in the Netherlands is a teacher shortage resulting from an ageing teaching force: in secondary education, almost half of teachers are aged over 50 in the Netherlands, Bulgaria, the Czech Republic, Germany, Estonia, Italy, Austria, Norway and Iceland (European Commission, 2013). In addition, in the Netherlands the duration of the traditional ITE route to teach at the upper secondary school level is long because a Master's degree is required for entrance into a one-year postgraduate ITE programme (a Bachelor's is required for the lower secondary level). The government thus decided in 2000 to develop more flexible school-based routes of a shorter duration to attract career changers and other pools of prospective candidates.

Before discussing the alternative ITE routes, it is necessary to briefly sketch the nature of mainstream ITE programmes in the Netherlands.

Traditional ITE pathways

ITE in the Netherlands is offered through full-time as well as part-time programmes provided by two different kinds of HEIs. There are seven HEIs, known as HBOs which provide, literally, "higher professional education" (hoger beroepsonderwijs). This "higher professional education" is different from that provided in academic university programmes and prepares teachers for primary and lower secondary education. Five universities educate teachers for upper secondary education (NCEE: 2009).

The HBOs offer four-year undergraduate programmes, in which subject study and pedagogical training are integrated; the universities offer one-year postgraduate programmes with a specifically pedagogical emphasis. These regular programmes include a final internship of six months, in which student teachers are given full responsibility for approximately three classes. They are paid to teach about 13 hours per week and receive supervision from a mentor teacher in the school.

To become a primary school teacher in the Netherlands, any student who has completed upper secondary school may apply for admission to a teacher education programme. Prospective teachers over the age of 21 who did not complete upper secondary school may apply if they have passed an entrance examination. The HBO curriculum is focused on teaching practice and students also receive practical experience as part of the course. At the end of the first year of the programme, all teaching candidates must take an examination in language and mathematics. Those who do not pass this examination are not allowed to continue in the programme. Once coursework is complete, students take a final examination and, if they pass, receive a certificate of higher professional education, which allows them to teach all subjects and all ages between four and twelve.

Secondary teachers may either elect to pursue a teacher education programme at an HBO or take a postgraduate course in education after receiving a subject-based Bachelor's degree at a university. Both HBOs and universities grant Bachelors and Masters degrees, although only universities can grant Doctoral degrees. Teachers receive certification to teach at either grade two (lower secondary) or grade one (all secondary) levels. Prospective teachers with a Master's or Doctoral degree obtain a grade one certificate after their post-graduate ITE course.

The Dutch government does not require a formal probationary period for new teachers, although as of 2006, it requires that every school establish its own teacher initiation orientation and training programme. The government is also working to establish a common core curriculum for teacher education programmes as well as common final examinations (NCEE: 2009).

Alternative ITE Pathways

From 2000, accelerated ITE certification programmes were introduced both in primary and in secondary ITE, in order to increase enrolment and numbers of graduates and diversify institutions' ITE models. The government hoped that the alternative pathways would attract certified teachers who had entered other professions, but then decided to return to teaching, and career changers who want to switch to the teaching profession. These programmes typically combine three or four days of teaching with one day of seminars per week at ITE institutions (Brouwer: 2007).

The alternative routes offered include:

- A 'Minor in education' programme, which allows Bachelor students at universities to earn a limited second-level teaching qualification (for the first one to three years of general secondary education).
- 'Side-entry' or 'lateral entry' programmes provide another option for people with tertiary education qualifications who want to enter the teaching profession without a prior teaching qualification. Teachers appointed this way work on a temporary contract for a maximum of two years while receiving the training and support needed to achieve a full teaching qualification and thus a permanent contract.

Impact of Alternative ITE Pathways

There is very little literature available on the effectiveness of the alternative programmes. However, Brouwer (2007) investigated the effectiveness of the early programmes introduced in the Netherlands between 2000 and 2005 by synthesising the findings from six evaluation studies. Brouwer points out that an important assumption underlying the new pathways is that the participants are able to attain professional teaching competence within a shorter time span than students in the regular programmes through accelerated learning in the workplace. They are expected to do so, because their earlier experiences in training, work and life should enable them to transfer already existing competencies and knowledge to their new profession. His study examined this assumption, among other issues. Brouwer's more detailed findings included:

- **Enrolment and intake**: Specific programmes meant to attract certified, but inactive teachers, proved to be a temporary phenomenon and this source of new employees was depleted quite soon. The second-career teachers moving from previous jobs suffered from coordination problems between national and regional employment agencies, commercial agencies for temporary employment and teacher education institutions. The intake assessments amounted mostly to selection procedures, while less attention was paid to advising candidates. Not all candidates completed an assessment procedure. After finding work and certification as teachers, the career changers did not receive much ongoing support from either employment agencies or teacher education programmes.

- **Attrition:** By 2005, 2000 second-career teachers in primary education and 1,550 in secondary education had been certified. However, at the end of 2005, only 1,500 of those in primary education and 800 of those in secondary education were actually teaching. Thus, the attrition rate of certified second-career teachers in primary education was 25 per cent and 48 per cent for those in secondary education. The participants in the alternative routes formed a quite heterogeneous group. They differed considerably in age, previous training, work and life experiences and ambitions, but in most cases, their motivation to work in education was high.

- **Diversification of ITE Programmes**: Since 2000, the number of ITE programme types had increased, and in addition to the existing regular programmes, tailor-made training routes with varying durations had become possible, as intended by the government.

However, across the alternative routes, there were considerable differences in the relative size of practical and theoretical components. The study load and learning activities taking place in schools and in the teacher education institutions varied significantly and the workplace learning period varied from a minimum of eight weeks to a maximum of two years. Schools and teacher education institutes cooperated in implementing the programmes, but not very intensively. The mentorship component was not strong: only 51 per cent of the candidates in primary education indicated that they had regularly had conversations with their mentors and only 26 per cent felt that the programme sufficiently addressed their learning needs.

Effectiveness

The introduction of alternative routes did increase teacher supply in a relatively short time by attracting new pools of recruits. The Dutch Inspectorate for Education also found that during their first year in education, second-career teachers were functioning on a level comparable to beginning teachers, but their weak areas were in “activating” pupils and pedagogical content knowledge (Brouwer, 2007: 34). However, there were areas in the new programmes that needed considerable improvement. Although tailor-made routes which fitted each candidate’s personal learning needs was the proclaimed goal of developing alternative pathways, Brouwer argued from his synthesis that the alternatively certified teachers were offered too few opportunities to qualify themselves in all the aspects of teaching within the relatively short time span available to them. In the candidates’ workplace learning, work often overrode learning and they received little mentoring. Thus drop-out rates were high and detracted from the effectiveness of the new alternative routes.

In summary, Brouwer concluded that the evidence available raised concerns about the efficacy of accelerated workplace learning for aspiring teachers, pointing to the need for improvements in these programmes.

Continuing Reform of ITE

Since 2005, the Dutch government has introduced new policies to improve the quality of teachers and the professionalisation of the teaching force, so the nature of the ITE landscape has continued to change.

In 2006, the Dutch government implemented the Education Professions Act, which regulates competence standards for all education-related professions. The essence of the Act is that all educational staff – teachers, assisting staff members, school managers – must not only be qualified, but also competent. To this end, sets of competences and requirements have been developed for all educational staff. All Dutch teachers are required to have the same basic competences and the framework of competence requirements specifies four professional roles of teachers: interpersonal role; pedagogical role; organisational role; and the role of an expert in subject-matter and teaching methods. ITE institutions use these competences as a guideline for their educational programmes (European Agency, 2016). The Act requires schools to take competent staff into their employment and subsequently enable them to keep up their competences at a high level and further improve them. Thus schools must establish a support programme for new staff and formulate teacher training and induction programmes in conjunction with training institutions. For this purpose, primary and secondary schools have received additional resources for the support and professionalisation of their staff.

Recent policy documents and action plans of the Ministry of Education, Culture and Science, such as the "Working in Education 2012" and the action plan, "The Teacher 2020: A Strong Profession" aim to improve the quality of teacher training programmes by raising their standards. Thus the professionalisation of the teaching profession is a key goal and to this end the government looked to the creation of a stronger professional organisation for teachers that will be able to evaluate teachers and provide teacher training grants. However, researchers, such as Hammerness, van Tartwijk and Snoek (2012) point out that in recent years, with regard to alternative pathways, the picture is far from clear. The latest reports from the Ministry of Education, Culture and Science do not mention these routes or the intake of students into them, although it points out the need to increase teacher supply, especially for secondary schools. What does feature in official reports and literature is the introduction of Teach First in the Netherlands, known as "Eerst De Klas" (First Class).

First Class

First Class in the Netherlands follows a similar model to that in England. The First Class website (2016) states that

> *There is demand for a new generation of leaders that combine vision of social responsibility. For these people to train we have the best people are needed for the class. Teachers who are at the heart of society, looking beyond the boundaries of their field and cooperation with the outside world look. In other words, pick the outside world into the*

> *classroom. And also bring out the educational world. So we can provide inspiring and socially relevant education. For everyone. That is the purpose of First Classroom* (http://www.eerstdeklas.nl/algemeen/about_the_project).

As in the English model, First Class is a two-year traineeship provided for excellent young academics with an interest in education and business. They teach in secondary education while they obtain a first degree teaching qualification and are provided with a leadership programme designed by the leading organisations in the Netherlands.

An introduction period starts in August and consists of workshops, training sessions, school visits, lectures and other preparatory activities in order to prepare the trainees as well as possible for teaching and enable them to meet their fellow trainees. In their first year, trainees work three days a week in a high school. In the second year, when they have completed their teaching qualification, the time working the school increases to four days a week. The content of the work is determined in consultation between the trainee and school and could include providing lessons, guiding profile projects and the development of a new school.

The trainees complete a leadership programme on Fridays during the two years to enable them to develop their leadership skills before pursuing a career in business. Corporate partners sponsor First Class and are actively involved in the programme.

First Class is promoted by the Dutch government, influenced by the programme's success in England. In the words of the Secretary of State, Marja Van Bijsterveldt in 2009 at the launch of the Programme as pilot with 50 trainees:

> *We must have the courage to draw this level of excellent graduates into the education sector. "Eerst De Klas" is part of the modern approach to education, namely creating various avenues for people to enter the teaching profession…The youth of today do not opt for a fixed 30-year career path with a single organisation. They must have the option of making career changes and taking meaningful steps in career development, such as starting in education, then transferring to the business sector and later returning to education.*
>
> *…The education sector, the business community and the national government are all committed to Eerst De Klas. We expect a great deal from the programme and will work together to make sure these expectations are met*
>
> (http://www.eerstdeklas.nl/algemeen/about_the_project).

As indicated in the quote above, the Dutch government brought university academics on board through the Association of Universities in the Netherlands – an important move.

Impact of First Class

The Ministry reports that First Class was launched as a pilot in 2009, but with positive evaluations, growth in participants and appreciation by its partners, it has become a standing initiative since 2012 to contribute to inspiring and socially relevant education for all.

The First Class website indicates that currently more than 200 secondary schools are involved in the programme, but no information could be found as to how many trainees are in the programme currently.

The role of universities has been significant in the programme. The university teacher training departments were involved in developing the customised first class training programmes for trainees. The university teacher training departments also agreed that the directors of three major teacher training institutions would decide on the admissibility of a candidate for the training programme at a selection of both HBOs and universities.

The Ministry also decided to transfer the direction of First Class to the Secondary Education Council to bring it closer to the secondary school sector. This move was seen as giving the Secondary Education Council the lead role so they could give more attention to the programme for its members and the schools and thus strengthen the position of First Class.

This indicates that in the Netherlands, First Class has become institutionalised within the schooling and teacher education sectors as a successful alternative ITE pathway – a significant development.

ALTERNATIVE TEACHER CERTIFICATION PROGRAMMES IN DEVELOPING COUNTRIES

Many developing countries have introduced ATCs to supply many more teachers quickly when the supply of traditionally trained teachers has been inadequate to meet the rapid growth of enrolments in primary and secondary schools (Lynd, 2005). Lynd has categorised these "fast track" programmes as follows:

- ***Crash training programmes:*** *aim to train as many new teachers as possible in as short a time as possible in countries or areas faced with an urgent and immediate need for large numbers of teachers. In this model, the contact time with teachers is shorter than traditional models.*
- ***Distance education:*** *in which the prospective teacher is largely removed from the institution of learning for the duration of the course. A short period of time is spent at a school for practice teaching.*
- ***Mixed-mode model:*** *combines periods of institution-based teacher training with distance learning, gaining practical teaching experience at schools and tutorial support.*
- ***Local recruitment:*** *teachers are recruited from the local community and trained at schools. No university degree is required for this model.*
- ***Structured materials model:*** *the model uses highly structured instructional materials to relieve under-trained teachers in remote areas, simultaneously empowering learners to study on their own. This is the only model that focuses on the learners rather than the teachers (2005: 33).*

A useful table based on Lynd's review was developed by the Evaluation Research Agency (2015: 7) for its evaluation of the ISASA Mathematics and English Internship Programme and is reproduced below.

Table 1: Alternative methods of teacher education

Models	Key Features	Primary Locus	Examples
1. Crash programmes	The model produces a high number of teachers in a very short time period. They are common in countries that need a high number of teachers at a go, e.g. post conflict countries (Lynd, 2005:32)	Institution based training (e.g. in the form of short seminars).	In Angola 20000 teachers trained (2004). In Sri Lanka 2000 teachers were trained (2001). 50 000 teachers were identified and oriented in Afghanistan in one programme.

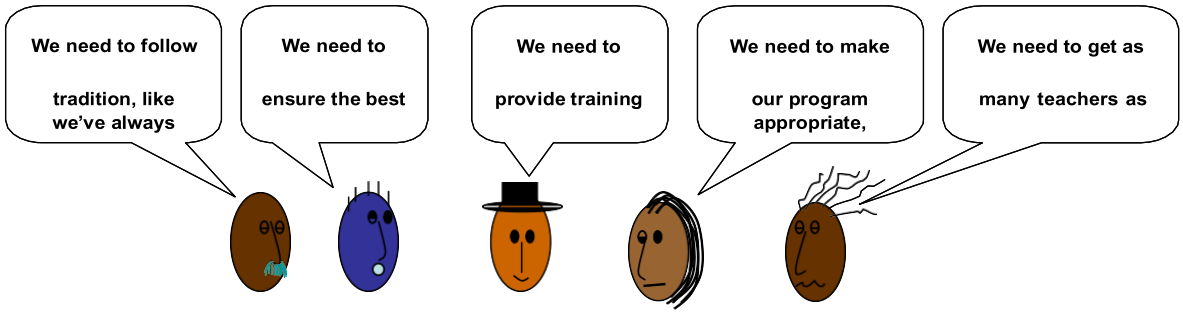
Models	Key Features	Primary Locus	Examples
2. Distance education models	The prospective teachers are geographically 'removed' from an institution or school in terms of distance for a larger part of their training. This allows the prospective teacher to study in his or her own environment.	Home based.	Sri Lanka print based programme that was complemented by tutor mentoring and support (2005). Nicaragua mathematics programme used Interactive Radio Instruction (1974). SA Open Learning Education Trust (1980s).
3. Mixed-mode models	This method combines periods of institution-based teacher training with distance learning, gaining practical teaching experience at schools and tutorial support.	A mixture of both school based and college based training.	Teach for Australia and Teach First UK both take associates through 6 weeks residential intensive training and this is followed by school based mentoring and complemented by a university tutor. They have a formal relationship with a university (McConney et al., 2012). Teach for America also mixes institute based training with school based training. Associates attend 5 weeks of institute based training, after which their training is school based. However, as of 2012 there was no formal relationship with a university. (Muijs et al., 2012). Zimbabwe had an Integrated Teacher Education Course which produced 19 000 teachers in 1983 and 66 000 teachers in 1990 (Lynd, 2005).

Models	Key Features	Primary Locus	Examples
4. Local recruitment models	Local schools recruit teachers locally from the community and train the recruits.	School based training.	India District Primary Education Programme had 5,384 such schools in Madhya Pradesh by the year 2000 (Lynd, 2005). Bangladesh Rural Advancement Committee (BRAC) and Village Schools Model in Egypt (Lynd, 2005).

Source: Evaluation Research Agency (2015: 7)

Lynd (2005) provides an excellent review of the literature on fast track programmes in developing countries, developed to inform the South Sudanese government as to the best model to adopt. South Sudan faced the huge challenge "of creating an entire education system capable of recruiting and training teachers, educating pupils, and managing educational delivery – all at the same time, quickly, and literally from scratch" (2005: 70). Lynd's paper was developed as a desk study of "fast-track teacher training programs" for the USAID-funded Sudan Basic Education Program in order to provide educators and decision makers with information needed to tackle the teacher education challenge. There are very few thorough overviews like Lynd's and although his is now somewhat dated, it deals with the key issues which are still very current. He outlines evaluations that were conducted prior to 2005. To supplement his overview, the findings of the recent review by Vegas and Ganimian (2013) of robust evaluations of ATCs in a few developing countries will also be included in this section.

Lynd's (2005) paper discusses key issues and trends in teacher training, both in the literature and in practice, and provides the following illustration of the kinds of teacher education issues facing decision-makers:



The traditionalist perspective was adopted by Nigeria, even though it faced an urgent need to provide a significant number of qualified teachers for its primary schools, especially in remote areas. Despite this, Lynd reports that a senior official indicated that the Nigeria Certificate of Education (NCE), a three-year

full time institutional programme (or a four-year part-time institutional course) is the minimum requirement for qualification of all teachers in Nigeria. When alternative routes to teacher qualification was broached, the reply was: "All of the Commonwealth countries have this as a minimum for qualified teachers, so why shouldn't Nigeria?" (Lynd, 2005: 17). This suggests a position that "reflects a common and resilient belief that institutional, preservice training is the best possible way to train all teachers – what Evans (2004) has called 'the edifice complex" (cited in Lynd, 2005: 17).

Research Findings on ATCs in Developing Countries

The question about which model of teacher training is best has to be considered in terms of the decision-making context, which varies hugely between industrialised and developing countries, and in contexts ranging from emergency to reform situations. No matter the context, however, any discussion of the quality of a teacher training programme needs to consider cost and effectiveness.

Cost

Preservice training programmes are expensive and often incur costs per student many times more than conventional higher education. According to Lewin (2002), this is because they are heavily 'front-loaded' with most investment at the beginning of a teaching career, and their unit costs can exceed those of university education and may be 50 or more times the annual cost of a primary school place. Moreover, the cost of preservice programmes can be two to three times higher or more than in-service programmes for a number of reasons: the length of training, the small size of training institutions, low student teacher ratios, inefficient working practices, historic budgeting largely unrelated to enrolments and student scholarships and allowances (Lewin 2002; McGinn and Borden 1995).

Effectiveness

As we have seen above, the research on effectiveness has investigated a large number of indicators; Lynd points to some which are key:

- **Output:** in-service programmes can produce more teachers – and sometimes, many more teachers – than traditional preservice models within a given time frame. Preservice institutions cannot compete with in-service models in terms of output. Institutionally-based preservice programmes are not equipped to handle more than several dozen or several hundred student teachers at any given time. Their typical entry requirements of a secondary school qualification limit the number of potential recruits and the requirement that students reside in or near institutions for long periods of time restrict the participation of rural people and women.

- **Teacher retention rates:** several distance education programmes have reported considerable success in teacher retention. One such was the Zimbabwe Integrated Teacher Education Course (ZINTEC) programme: five to 10 years after being trained, 5,401 of 5,887 teachers trained were still working in primary schools and 270 in secondary schools in 1985.

- **Teacher performance in the classroom:** some studies have shown that teachers trained in ATCs performed as well or better than those trained in the traditional three-year preservice programme. In Guinea, for example, teacher observations found that teachers trained in an 18-month alternative programme performed as well or better than the traditionally trained teachers (Allard 2002, cited in Lynd 2005: 19). However, results of observations of teachers in Tanzania, Sri Lanka and Indonesia who had been trained in distance education programmes were more mixed.

- **Student achievement:** there is little evidence that preservice teacher education provides skills and develops attitudes that carry though into a better education for pupils in school. Three overviews of the research data (Avalos and Haddad 1978; Husen, Saha and Noonan 1978; Schiefelbein and Simmons 1981) found only modest evidence of the effectiveness of preservice training as measured by student achievement scores. Research analysed by Fuller (1987) suggests that graduates of teacher training institutions often do no better than secondary school graduates in terms of student achievement. Similarly, UNICEF found that "in different parts of the world, primary education programs that operate with underqualified and para-professional staff are often showing equal or even better student results than those operating with professional, certified teachers" (Del Castillo 1996: 449).

Similarly, a study was conducted by PASEC, a research programme of the Conference of Education Ministries of Francophone Africa, or CONFEMEN[2] in nine countries in Francophone Africa. The study found that in Togo and Guinea, teachers trained in a three month in-service programme and an 18-month course, respectively, performed as well as those trained in preservice programmes in terms of student achievement in grades 2 and 5.

However, Chapman and Snyder (2000) found the opposite in their research in Botswana. Teachers with post-graduate training presented content more logically and made better use of teaching aids than did uncertified teachers, although untrained teachers gave more attention to their lesson preparation and exhibited more of a student-development orientation in their use of discipline in the classroom.

Indeed, many researchers have investigated whether any teacher training makes a difference. Fuller (1987), reviewing 60 multivariate studies of school factors related to student achievement in the developing world, found that preservice training was positively related to student learning in only 12 of the 26 studies that included amount of teacher schooling as a variable. His findings suggest that relative to the magnitude of the investment, the payoff from preservice training is often small. Husén et al. (1978) reviewed 11 studies on teacher training and found that six showed a positive effect, three showed no effect and two showed a negative effect (cited in Dembele and Miaoro-II, 2003: 21).

These findings is give rise to a key question: Why is the record on preservice programmes so mixed? Villegas-Reimers (1998, 2003) presents a list of problems that exist in teacher preparation in Latin America which are

[2] PASEC is Programme d'analyse des systèmes éducatifs de la CONFEMEN

equally relevant to other developing countries: the poor quality of most candidates; inadequate curricula; too much theory and too little school experience and a weak link to school practices; programmes that are too short; the poor preparation of teacher educators; and negative perceptions of the teaching profession.

The inescapable conclusion from the research above is that most preservice programmes fail to achieve the desired quality or economies of scale necessary for most developing country contexts.

What then is the best way forward in teacher education? In 1999, Coombe noted in a literature survey that the most cost-effective strategy to improve the quality of education in the developing world seemed to be a relatively brief period of preservice training followed by systematic provision of in-service training, especially during the early years of teaching. In 2004, the Association for the Development of Education in Africa (ADEA) argued for a slightly longer initial training period of at least six months, followed by a professional development plan, follow-up supervision and a range of pedagogical support adapted to the conditions of the student teacher (cited in Lynd 2005: 21). In short, the majority of research points to shorter initial periods than the traditional preservice model and more intensive on-the-job training and support. In the multi-country MUSTER study, researchers argued that, "there is no necessity for core periods of training to be continuous or front-loaded in terms of costs or training inputs" (Lewin and Stuart, 2003 xxi-xxii). They recommended the use of "mixed-mode" methods that use a variety of delivery channels, including distance education and on-the-job training – both in terms of effectiveness and cost-savings.

What is most relevant for this purposes of this paper, is that Craig, Kraft and Plessis (1998) make the same point with regard to the different pathways to teacher certification in developing countries as Darling-Hammond (2006), Lowery et al (2012), Johnson et al (2005) and Humphrey and Wechsler (2007) have made:

> *The reality is that there are a variety of ways to prepare and support teachers in a variety of environments. Just as there is no single type of effective teacher, but there are common elements associated with successful teachers, there is no single type of effective initial preparation course, but there are common elements that should be discussed and incorporated where appropriate in design and implementation* (1998: 55).

Research findings and insights into what elements make for effective teacher preparation is the most useful way forward.

The recent literature review by Vegas and Ganimian (2013), economists of education, adds some relevant findings from empirical research in two countries, Chile and Peru. The evaluation in Chile looked at Teach Chile, a variant of Teach For All. Alfonso, Santiago and Bassi (2011) evaluated the impact of an adaptation of TFA in Chile called Enseña Chile ("Teach Chile" or eCh) during the 2009–10 and 2010–11 school years. After a year, students in schools that received an eCh teacher scored .22–.51 of a standard deviation higher in Spanish and .17–.43 higher in mathematics. After two years, students scored .75 of a standard deviation higher in Spanish and .33 higher in mathematics. Vegas and Ganimian believe that these estimates are too large for an educational intervention and suggest a selection bias, but point out that the effect of such alternative ITE programmes "might be greater in developing countries, where average teacher effectiveness is lower" (2013: 18).

Vegas and Ganimian (2013) also investigated research on entry requirements for ITE pathways. Education systems and ITE programmes are increasingly using examinations which typically assess teachers' subject-matter knowledge or field-specific pedagogical knowledge. They found that the evidence on the usefulness of these tests is still evolving, but it suggests that they show some promise for identifying individuals who will be successful classroom instructors. In this regard, Vegas and Ganimian point to research conducted in Peru by Meltzer and Woessmann (2010). They used the fact that students and teachers were tested in the same year on two subjects to determine whether the same student taught by the same teacher in two different subjects performs better in one of those two subjects if the teacher's knowledge is relatively better in that subject. Using a fixed effects methodology to focus on the within-teacher, within-student variation in student outcomes while controlling for the fixed characteristics of students, teachers and subjects, Meltzer and Woessmann found suggestive evidence that a teacher's subject-matter knowledge affects student achievement: a 1 standard deviation increase in teacher test scores raised student test scores by .10 standard deviation units.

This means that if a student switched from having a teacher at the 5th percentile of the distribution of subject-matter knowledge to one at the 50th percentile, the student's achievement would increase by .17 of a standard deviation by the end of the year.

Vegas and Ganimian (2013) thus conclude that studies on entry requirements "seem to find slim support for the effectiveness of traditional requirements (e.g., certification) in developed countries, and encouraging results for the use of alternative requirements (e.g., entry exams) in developing countries. Yet, important questions remain about the generalizability and robustness of these findings" (2013: 17).

ALTERNATIVE TEACHER CERTIFICATION PROGRAMMES IN SOUTH AFRICA

As explained in the introduction to this paper, in the South African component of the literature review there are only the two recent evaluations of alternative ITE programmes, the evaluation of the internship component of the Mathematics and English Programme of Independent Schools Association of Southern Africa (ISASA) and the evaluation of TEACH SA to review. Consequently, in this section, the findings of these two evaluations will be analysed and synthesised in order to identify the overall lessons and insights they provide for effective alternative pathways here and abroad.

There are only two officially recognised university qualifications that allow registration as a teacher in South Africa, which is a legal requirement to teach in public and independent schools: the four-year B. Ed degree or a Bachelor's degree followed by the PGCE to obtain the professional teaching qualification. These can be studied full-time at a university or part-time by distance education.

As a result, all providers of alternative, more school-based pathways have to use the part-time distance education route, typically through University of South Africa (UNISA) or North-West University (NWU) to ensure that their trainees obtain one of these two qualifications. This is key reason why most of the short 'fast-track' ATCs in developed or developing countries which do not result in a university qualification are not relevant to the current South African situation.

As this literature review has identified, as in so many countries, the quality of university-based ITE in South Africa is very variable and has been found by government and independent research to be inadequate, and its effectiveness highly questionable. (Centre for Development and Enterprise, 2015; JET Education Services, 2014).

To address these weaknesses and obtain greater uniformity in ITE curricula, government introduced the new Minimum Requirements for Teacher Education Qualifications (MRTEQ) in 2011 and a revised version in 2015. Government gave notice that by July 2014, all teacher education programmes had to be re-designed, so as to give particular emphasis to what is taught (subject or disciplinary content knowledge) and how it is taught (pedagogical content knowledge) as well as a strong practice teaching component. Only re-designed ITE programmes that conform to the MRTEQ policy will be approved and recognised as sufficient for graduates' employment in education. As this applies to both private and public providers of ITE, any existing or new private provider offering ITE through an alternative route will have to obtain MRTEQ approval.

Inter alia, a lack of sufficient school practice teaching has been identified as a key weakness in the university ITE curricula (JET Education Services, 2014). In MRTEQ, the work-integrated learning (WIL) requirement for the B. Ed was increased to 20 to 32 weeks (12 weeks in any given year for at least three consecutive weeks) and for the PGCE to eight to 12 weeks with at least four of those being consecutive. This work integrated learning, learning-in-practice, workplace-based component of ITE should take place mainly in schools and classrooms, but could include service learning in community settings. It should be structured, supervised, integrated throughout the learning programme and formally assessed.

The UNISA model of teacher training employs Open Distance Learning, which means that all students, including prospective teachers, have to study part-time. Students receive their course and study material which they have to interrogate in their own time and without the presence of a university intermediary. Students have access to on-line support services such as lecturers, tutors, peer study groups and interactive talk forums – there is therefore a heavy reliance on the students' access to reliable internet connectivity. Students complete their three-year degree part-time, followed by the one-year PGCE in order to teach in a high school. Although the PGCE is also a part-time course, student teachers have to complete the compulsory 10 weeks of practice teaching. A UNISA student can also complete a four-year B. Ed degree which includes practice teaching for five weeks in each of the four years of study.

Evaluations of Alternative ITE Pathways in South Africa

ISASA Mathematics and English Internship Programme

The June 2015 evaluation report by the Evaluation Research Agency (ERA) was based on research with a two-fold purpose: to examine the ISASA Mathematics and English model of pre-service teacher education and to make recommendations for going to scale with the ISASA model.

ISASA is membership-based service provider for some 700 diverse, independent member schools, which charge a very wide range of fees. Internships to produce 'home-grown', high-quality teachers, and particularly black teachers, began in ISASA schools as early as the mid-1990s. The ISASA programme systematised these internships into its model. This employs a rigorous selection process to identify high potential, committed interns from disadvantaged backgrounds, who are then placed in selected ISASA member schools and supported to achieve their B. Eds or PGCEs through UNISA.

The ERA report uses data from previous ERA evaluation reports (2012 - 2014) on the ISASA model, which included interviews with interns, observations and an on-line survey of students. However, the report focusses predominantly on the data and findings in relation to seven interns that were funded by the Zenex Foundation and were still part of the evaluation process at the end of 2014. The small number of interns imposes an obvious limitation on the generalisability of ERA's findings, but its research has produced some important lessons to inform alternative ITE programmes in South Africa:

Achievement of expected outcomes

The ISASA model sets three key outcomes - competent mathematics, science or English teachers, who have satisfactory UNISA results, and are employed in ISASA or public schools. For the most part the model was judged to have achieved all these expected outcomes. Feedback from ERA observers and school mentors indicated that these interns had become confident and competent teachers.

Suitable host schools

The Zenex interns experienced low-fee and high-fee independent schools quite differently, with positive and negatives associated with both types. For example, some interns were over-utilised at low-fee schools and their studies suffered, while some of the interns at high-fee schools were not given sufficient teaching time, as schools were concerned about parents' and learners' reactions to an unqualified intern. Consequently,

the management agency should monitor, evaluate and assess the involvement of all host schools, especially the low-fee schools. The evaluators concluded that the key to a good host school is not the fee-level, but good practice and a commitment to community service and building the education sector as a whole.

Range of support for interns

ERA identified good support for the interns as essential for the success of the programme. Adequate support was affected by a number of issues. Many of the interns reported having experienced feelings of isolation and a sense of alienation at some stage of their internship. This was particularly so in cases where interns resided in the hostels, even where there was more than one intern at the school. In this regard, all types of social media should be used to ensure the group is cohesive and shares challenges, successes and useful content.

Regular contact and interaction between interns and the programme manager, in addition to that at academic camps and workshops, was found to be important for an intern's settling-in process during the first year and critical to the intern's development during the following years. The managing agent should have continuous contact with schools, mentors and interns through monthly meetings, which can be telephonic. However, an actual quarterly visit would be important. The managing agent must also provide regular updates to all stakeholders

The academic workshops were seen as vitally important for academic support, but could be strengthened with the facilitation of intern study groups. Academic workshops could be structured in forms of support groups between locally-based interns who could help each other.

Having to teach in schools in which the medium of instruction is English presented a challenge to many of the interns, especially in their first years. This affected the confidence of interns when it came to teaching learners and interacting with them; their lack of confidence also placed interns at a disadvantage in their interactions with staff members. In this regard, an English language immersion course after their selection to the programme, if required, could help to allay their early anxieties

Because the interns need to graduate with a B.Ed or PGCE, the delicate balance of academic work, school life and teaching practice needs to be managed and carefully monitored by all stakeholders in the programme. Clear guidelines for schools, mentors and interns are thus critical.

The issue of how much interns are paid as a stipend, whether this is sufficient for the interns (e.g. interns staying in hostels versus interns who must commute) and whether interns are paid for additional duties must be carefully investigated and assessed.

Replicability

In terms of replicability, the evaluators identified a number of issues:

- The model could be replicated in public or independent schools, but if public schools were brought into the model, incentives which could involve public-private partnerships might have to be put in

place. Public school teachers are often over-burdened and may not want to carry out the additional task of mentoring.

- Large numbers of interns cannot be placed at schools unless the school has a comprehensive intern system in place, such as they encountered at some ISASA host schools. The evaluators recommend that these examples of good practice should be researched more carefully and where possible replicated in other host schools to ensure effective implementation and support of intern programmes. The replication of these effective intern systems could be done in a phased approach and may not involve all the components of the full intern programme.

- Another well-organised, supportive management agent, which understands both the independent and public education sectors and has networks in both sectors could implement and manage the model.

- The ISASA model involves a large amount of support and monitoring and this is a key consideration if it is to be successful on a larger scale.

Necessary pre-conditions for a school-based ITE model

While ERA believes that the ISASA internship model is scalable, the evaluation identified many pre-conditions that have to be in place for the model to be successful on a larger scale.

- **Support of school principal:** The principal and a school's senior management team (SMT) play an important and necessary role in creating a receptive environment for an intern. Over the three years of evaluation visits, it was evident that many of the principals took an active interest in the progress of their interns, which enhanced the interns' feeling of acceptance by the school and promoted the view that the interns were, in fact, part of the staff. Principals also set the tone in terms of how the interns are regarded by the rest of the school community, parents included.

- **Strong mentoring:** The mentoring relationship is a key element in ensuring positive role-modelling, strong support and quality supervision for the teacher-learners. The choice of mentor and the relationship with the mentor is critical to the success of the programme and to the teacher-intern's happiness while in the school. In this regard various observations were made by ERA:

  - Selection of general school mentor: Where there is both a general school mentor and a subject-specific mentor, it is preferable that the former is a member of the SMT and someone with previous experience as a mentor. Such a senior staff member is in a position to affirm the receptive ethos created for the intern and also to guide the intern through the professional induction s/he requires. This would require that such a senior staff member also attends initial M&E mentor induction training and is familiar with the contents of the training manual.
  - Selection of senior teachers with same subject as intern: It would be more beneficial for the development of the intern that the mentor is a senior teacher who teaches the same subject as the intern. Because this mentor has such a critical role to play in the intern's induction into the subject-specific knowledge, classroom practice and teaching methodologies, s/he should have

years of experience in that subject and a range of teaching skills and strategies. Allocating an inexperienced teacher to the role of mentor, however enthusiastic and committed, may not be the best strategy to assist an intern to achieve his or her potential.

- Role of mentors in managing work load: Some interns regarded their duties as too onerous, especially at the start of their internship. Mentors should mediate the expectations of the school and the intern's need for sufficient study time. The development of an intern's annual work schedule or timetable, which includes both study time and school time and is made available to all to the relevant people in the school, will help an intern's time management..
- Training of mentors: Both interns and mentors indicated that mentors in the programme need to understand their roles and responsibilities and also should be quality assured. Schools also need to take succession planning into account for mentors who are leaving the school or who will no longer be mentoring.

Conclusion

ERA concluded that the mixed-mode of teacher education is a viable parallel system to the current conventional teacher education processes in South Africa. An alternative model to mainstream preservice teaching is necessary both for producing greater numbers and more competent teachers. The mixed-mode alternative model of preservice (on which ISASA's internship model is based) is a model that has been used internationally to produce a greater quantity of competent teachers. If we require both quality and quantity in terms of developing the South African teaching body, this is the model that seeks to address both issues.

TEACH SA

This evaluation was conducted by Eric Schollar and Associates (ESA) in 2015. TEACH SA is based on the US model of TFA rather than on Teach First, in that the participants or ambassadors are not required to study for a teaching qualification. However, as a key funder, the Zenex Foundation has required, as a condition of its funding, that TEACH SA ambassadors do enrol for a UNISA distance education PGCE.

A number of factors influenced the research methodology of the ESA evaluation. ESA had hoped to track the same groups of learners during the term of the evaluation, but once operational planning of the design had started, it became clear that because the contractual term of ambassadors is only two years and because of problems with how schools deployed them, it could not be expected that any specific group of learners would benefit from exposure to ambassadors for the same (or any) subjects from one year/grade to the next. Consequently, it was not possible to apply a reliable longitudinal research design because a 'treatment group' of specific learners who would all receive the benefit of the same intervention programme over three years was not available.

Extensive formative and qualitative research was built into the original evaluation design, but this was very significantly reduced because the most of budget was reallocated to pre- and post-testing of learners in order to preserve the basic validity of the impact research.

Thus, to supplement the impact study, small-scale quantitative surveys of ambassadors and learners were carried out, along with short case studies in four participating schools as well as interviews of TEACH SA management, mentors and ambassadors and a few lesson observations.

Expected Outcomes

- PGCE pass rate: The Zenex Foundation set an objective of a 100 per cent pass rate in PGCE for a cohort of ambassadors, however analysis of TEACH SA reporting to the Foundation indicates that only just over one third of the 2012-2013 ambassadors successfully completed a PGCE by the end of 2013. This rate will presumably improve as the ambassadors who had completed five or more courses by then, as well as those who started late, complete the course, but the formal 'throughput rate' over 2012-2013 did not meet the criterion stated by the Foundation.

- Ambassadors choosing teaching career: Regarding entry into teaching in terms of the proportion of ambassadors who will eventually opt for a teaching career, a survey of 19 ambassadors indicated that 53 per cent had actively decided to actually become teachers after spending the first of their two years as a supported teacher. Around one third reported that they were still 'undecided' and it is possible that all, or most, of this category may eventually choose teaching as a career. It should also be acknowledged that the views of part of one cohort of ambassadors may not represent those of other cohorts, but again, we can only work with what data we have at hand. However, 73 per cent of the ambassadors had already enrolled, or firmly intend to enrol, for a teaching qualification.

- Learner performance: Two significant factors limited the intervention's effect on learner performance: the inconsistent and unpredictable nature of the involvement of ambassadors with learners; and the very large proportion of learners who are well below the expected competency levels for grade 10 in which they were enrolled. The latter means that for the ambassadors to obtain significant improvements on the test instruments standardised for grade 10, they would have to improve performance across several grade-competency levels before they could realistically be expected to have much effect on the current grade. The test data showed that there was no significant evidence of intervention effect, whether positive or negative, measured against the mathematics, reading or writing instruments. On the other hand, a statistically significant positive effect was obtained against the science instrument, even though the effect was still weak. In the context of the internal and external factors which limit the intervention effect, the positive effects obtained against the science instrument become more educationally significant.

- Learners choosing mathematics and science: In terms of encouraging more learners to opt for mathematics and science in the further education and training (FET) phase, a survey of grade 9 learners in both project and control groups of their intended subject choices indicated that no statistically significant effect was achieved for mathematics, although there was clear evidence of an increase in the likely science enrolment. This finding is consistent with the positive effect estimation obtained for science.

- Implementation of TEACH SA model: Overall, there were clear indications that TEACH SA should revisit the 'translation' of their theoretical/strategic model into a detailed operational plan capable of consistently achieving the expected/predicted process outcomes and conditions assumed by the strategic model to be the 'levers' of change at classroom level.

Quality of recruits

The ESA research found that the ambassadors were a positive group of young people who were genuinely doing their best in the practical circumstances in which they found themselves; they had good content knowledge, were enthusiastic and very keen to 'make a difference' in education.

However, the prevailing negative perception of the teaching professionals and teaching as a desirable career places great pressure on the generic TEACH SA assumption that the 'best and brightest' students be selected for ambassadorships. The influence of this factor was evident in the selection and recruitment of ambassadors: their academic subjects were very varied - agricultural science, biology, psychology, commercial subjects, rather than mathematics, science and English as intended.

School Context

Schools with poor levels of functionality, management and teacher professionalism did not provide an effective setting for the 'internship' of academically qualified ambassadors who do not have any real teaching experience: these schools are characterised by late starts, early finishes, short teaching terms/year, high levels of absenteeism, poor learner discipline, poor attention to curriculum planning and delivery, etc. The result was that ambassadors were typically isolated in their schools and had little real support from other teachers who themselves were performing well below their maximum potential.

The initial allocation of ambassadors to grades and, especially, subjects was haphazard: mathematics ambassadors, for example, were allocated, inter alia, to arts and culture, life orientation, general studies and economics and management studies – clearly not conducive to achieving improved learner performance in mathematics. Other anomalies were: a botany major teaching physical science and mathematics, and a psychology major teaching English first additional language. Ambassadors were used as 'spare' or 'relief' teachers when a school lacked a teacher for a particular subject or other teachers were on extended sick or maternity leave.

Virtually all of the ambassadors surveyed believed that they would have been much more effective, and learned more about teaching per se in strongly functional schools. For the realities of schools and classrooms in which they were placed, the training and support model of TEACH SA was not operating 'sufficiently effectively' to 'sufficiently' prepare and support the ambassadors

Support for interns

The evaluation found that the in-school mentor system was effectively failing. The mentors were supposed to provide the ambassadors with 'front-line' support on a routine and ongoing basis, but very few did to any degree of consistency and effectiveness.

The TEACH SA mentorship/support model is based on in-school support by another teacher, but is very strongly influenced by the personal willingness, motivation and capacity of the individual teacher concerned. This component of the TEACH SA model received a low level of approval from the ambassadors: only about a third were positive about the support that they received from in-school mentors. In general, ambassadors were typically 'isolated' in their schools and many received little, if any, direct support and monitoring in curriculum planning and delivery - or in classroom management in schools in which learner indiscipline and disengagement is common.

The external TEACH SA mentors were generally of high quality - subject specialists with a great deal of experience in teacher education. However, organisationally, external mentors lack the 'routine' authority of the department and it was difficult, if not impossible, for them to ensure the coherent delivery of a planned – sequential and cumulative - course of instruction by the ambassadors so that significant impacts on learner performance could be expected.

ESA also found that the initial planned four weeks of training followed by with two weeks of formal induction after placement of the ambassadors was reduced to only two of the four weeks training and the induction was reduced to a school visit in the first two weeks by an external mentor.

Recommendations

On the basis of its findings, ESA made a number of key recommendations:

- **In terms of selection of ambassadors**, two possible options were suggested for TEACH SA: to simply insist on ambassadors with degrees in mathematics, science and English, or accept the 'near enough' principle and expand/extend the support of an external mentor to allow more sustained attention to be paid to the subject/content quality of ambassadors.

- **A clear formal agreement between education departments, schools and intervention agents** should spell out an integrated and operationally coherent relationship between department officials, school management, external mentors and in-school mentors so that they cooperate and coordinate with each other, have a common idea of how best to use, manage, monitor and support ambassadors to maximum effect and understand what each of them needs to do in order to achieve this goal.

- **An agreement with provincial departments that ambassadors will be placed only in strongly functional schools** that are already achieving an acceptable, preferably excellent, level of learner performance is essential.

- **The formal cooperation agreements between all parties must be translated into integrated, operationally coherent plans**. District or circuit officials should actively participate in and facilitate the intervention programme; curriculum advisors have to understand what ambassadors are doing and why; school management teams need to know and understand what they are expected to do in practice in the allocation of ambassadors to appropriate grades and subjects and in coherent curriculum and classroom management. The relationship between TEACH SA and each school needs

to be institutionalised and operated as a routine to achieve its maximum effect - and the intervention needs the routine operational 'authority' of the department to achieve that objective over the medium to long-term.

- **The selection, training and monitoring of in-school mentors** as part of the TEACH SA model should receive urgent attention from programme managers. These sorts of organisational, practical and operational issues, in one form or another, were cited by most of the ambassadors as the main conditions which limited the achievement of their potential educational effect in schools and classrooms.

- **There was a very strong case for expansion/extension of the amount ('dosage') of support provided by external mentors in terms of both practical classroom teaching and of subject/content.**

The overall conclusion reached by ESA is that the TEACH SA model could serve as a model for internship only if significant attention was paid to pre-selecting and preparing the schools that host ambassadors and the support and training of the ambassadors is increased.

ESA noted that the TEACH SA management, the mentors and the past/current ambassadors themselves had all not only extended experience in operating the current model, but had already identified key problem areas within the overall intervention programme and had their own recommendations to improve it. Thus there was a fertile base for the recommended re-examination of the implementation of the TEACH SA model.

General Findings of the SA Evaluations

Achievement of expected outcomes

ERA judged that the ISASA model in the main had achieved the three expected outcomes: competent mathematics, science or English teachers, who had satisfactory UNISA results, and were employed in ISASA or public schools.

However, in the case of TEACH SA, a range of internal and external factors hindered the achievement of most of the expected outcomes by the 2012/2013 cohort of ambassadors. The evaluation found that:

- The ambassadors' PGCE pass rates did not meet the 100 per cent pass rate set by the Zenex Foundation.
- 53 per cent of the ambassadors indicated they would choose a teaching career.
- There was no significant evidence of an intervention effect for mathematics, reading and writing, but a statistically significant, positive effect was obtained for science.
- In the case of FET subject choices, more grade 9 learners of ambassadors chose science, although this did not hold for mathematics.
- TEACH SA's theoretical/strategic model had not translated into a detailed operational plan, capable of consistently achieving the expected/predicted process outcomes and conditions.

Suitable host schools

Both evaluations highlighted the importance of finding suitable host schools for the interns and ambassadors if they were to develop into good teachers that would support learning gains. In the case of the ISASA internship, there were positives and negatives associated with low-fee and high-fee independent schools, but the evaluators concluded that the key to a good host school is not the fee-level, but good practice and a commitment to community service and building the education sector as a whole.

The choice of school was an even more critical issue in the case of the ambassadors. Most of that cohort were placed in schools with poor levels of functionality, management and teacher professionalism and this did not provide an effective setting for the 'internship' of ambassadors who had no real teaching experience

Support for the interns/ambassadors

Both evaluations identified strong support for the interns as essential for the success of the programmes. Unless this happened, the interns/ambassadors felt isolated and without the help they needed to achieve their potential. The quality of mentoring was all-important for their nurturing and development as teachers. In this regard, the mentors should be carefully selected and trained. In particular, the role of subject mentors was critical in the intern's induction into subject-specific knowledge, classroom practice and teaching methodologies. Mentors also had an important role to play in mediating how the school placed and utilised the interns/ambassadors in order to moderate their workload and ensure they were used to the benefit of all parties.

Replicability

In terms of replicability, ERA felt that the ISASA internship model could be replicated in public or independent schools, but would require very good programme management, frequent communication and interaction with the programme management and their peers, considerable support for the interns, mentors and schools, and regular monitoring.

The overall conclusion reached by ESA is that the TEACH SA model could serve as a model for internship, only if significant attention was paid to pre-selecting and preparing the schools that host ambassadors and the support and training of the ambassadors was increased.

Value of alternative school-based teacher education

ERA concluded that an alternative mixed-mode of teacher education, such as the ISASA M&E model, is a viable parallel system to conventional teacher education in South Africa and is needed in order to produce greater numbers and more competent teachers.

OVERALL FINDINGS OF THE LITERATURE REVIEW

As this literature review has shown, there has been considerable research on ATCs over decades in developed countries in particular and, more recently, some relevant research in developing countries. This section provides a broad overview of the latest and most important findings from all the research reviewed above. The quality of the research and its relevance for the purpose of informing South African alternative ITE programmes has influenced the choice of the main findings.

It is important to note that because so much of the literature has compared traditional and alternative ITE programmes, some of the findings are also relevant to the conventional university programmes, especially the research that has identified the characteristics of effective teacher education, of whatever type.

The main findings from the literature reviewed are outlined below.

Developed Countries

- **Research on alternative teacher preparation has revealed a number of misconceptions and red-herrings that confuse the debate**. Alternative and traditional routes are not fundamentally different and the lines between them are becoming blurred. Many university programmes increasingly integrate coursework and student classroom experience, and many ATCs resemble traditional teacher education programmes in content, rigour and expected outcomes and have developed strong partnerships with universities.

- **ATCs differ from university-based ITE mainly in that they focus on a different source of trainees**, often screen candidates for subject matter competence and/or prior teaching experience, compress the schedule for preservice training and provide a different mix of professional knowledge and skills, typically devoting more time to teaching methods and classroom management than subject competence.

- **The debate about traditional and alternative pathways into teaching reveals significant philosophical and ideological divides**. Teacher education stakeholders and academics do not agree on the nature of the work of teachers, what constitutes teacher expertise and the purposes of teacher education programmes. The opponents of ATCs believe that they are the result of the spread of neo-liberal ideas and policies that support markets, choice and privatisation, embody a highly technicist approach to teacher education, and are a significant threat to the professional status and standards of teaching

- **There is a lack of strong empirical research on which either the endorsement or criticism of ATCs is based.**

- **Numerous studies have produced very mixed results about the comparative effectiveness of ATCs and traditional routes on student achievement, given the many confounding variables.** In the US, however, it appears that teachers' certification status, pathway into teaching, teaching experience,

graduation from a competitive college and mathematics SAT scores are significant predictors of teacher effectiveness in elementary and middle grades mathematics. A student's achievement has been found to be most enhanced by having a fully certified teacher who had graduated from a university preservice programme, who had a strong academic background and who had more than two years of experience. Students' achievement was most negatively affected by having an inexperienced teacher with a temporary licence.

- **Comparative evaluations of ATCs and traditional routes have shown that the differences among ATC and traditional university programmes are greater than those between these two types**. Because more variation has been found within a single preparation programme than across programmes, in the training teacher-candidates are offered, in their experiences in their programmes and in their effectiveness when they become teachers, programme-to-programme comparisons make little sense.

- **When the effect of teacher certification alone has been researched, it has been found to be very small.** However, among teachers with the same certification status, there were large and persistent differences in teacher effectiveness.

- **The attrition rate of ATC teachers is higher than traditionally certified teachers.**

- **ATCs succeed in attracting candidates who otherwise might not enter teaching**. It has been found that ATC entrants are older than university ITE entrants, are more often male, and have had more experience in urban school environments. Some are career changers and many have had teaching experience. In the US, most have also been found to have qualifications similar to those of traditional teachers because many ATCs require them to take more education courses while teaching.

- **Between ATCs, however, the nature of entrants differs hugely, from non-certified teachers in areas with heavily disadvantaged populations, to carefully selected high-quality entrants in the Teach For All (TFA) programmes**. Moreover, within most programmes, participants' education, experience and commitment vary greatly and thus participants have very different developmental needs.

- **The effectiveness of ATC teachers is influenced by their personal backgrounds (academic record and previous classroom experience), their formal training (the coursework) and the context of their school placements** (principal and mentor support, professional community and availability of materials). However, the intrinsic desire and motivation of both alternate route and traditional route teachers ultimately determine their success in the classroom.

- **School context has the strongest effect on the outcomes of effective ATCs.** Effective ATCs:

  - Place candidates in schools with strong leadership, a collegial atmosphere and adequate materials;

  - Select well-educated individuals or work to strengthen subject-matter knowledge and recognise that previous classroom experience is an asset;
  - Provide carefully constructed and timely coursework tailored to candidates' back-grounds and school contexts; and
  - Provide trained mentors who have the time and resources to plan lessons with candidates, share curricula, demonstrate lessons, and provide feedback after frequent classroom observations.

- **The most common weaknesses of ATCs have been found to be a lack of adequate and consistent mentoring of trainee teachers and too little individualised training and support.**

- **Overall, students of Teach for All teachers have been found to perform 0.15 of a standard deviation higher in mathematics than those of control teachers** and 0.26 higher than those of novice control teachers (with one to three years of experience), although in reading there was no difference.

- **A high proportion of Teach for All-prepared teachers leave teaching after two years.**

- **Some researchers believe that fast track schemes like Teach For All have the potential "to communicate an understanding of teacher education that discounts the complex nature of teaching** because the fast track approach implicitly suggests that few special skills are needed to teach.

- **The development of a consensus resulting in national professional teacher standards that guide teacher preparation has been fuelled by the alternative teacher preparation movement.**

- **In the UK, both Ofsted and DfE data indicate that the vast majority of ITT partnership training programmes were good or outstanding** and the proportion of postgraduates awarded QTS shows no significant difference in the quality passes across the different routes.

- **The independent Carter Review (2015) found that it was difficult to draw conclusions about whether one route into teaching is any more effective**, because strengths were found across all routes; and school-led ITT has brought benefits and provided important training options to improve the supply and quality of teachers.

- **Both the Carter Report (2015) and the UK's latest government White Paper on education, Education Excellence Everywhere (2016), do not reflect the views of critics** who have claimed that the government wants to reduce the complexity of teaching to a craft learnt on the job and dismisses the role of theory and research in ITT and thus diminishes the standing of the profession.

- **The interviews in London with universities, school-led ITT providers and Ark produced valuable insights** that testify to the strength of the university-school-led ITT partnerships, the good quality, well-structured training that is offered and the need for flexible training options to recruit a wide variety of candidates into teaching.

- **Teach First has been judged by Ofsted as good, or better, than traditional ITT. Teach First is successful in attracting participants from elite universities; a strength is the requirement that participants obtain a teaching qualification; and there is a positive correlational relationship between Teach First participation and pupil attainment.** In addition, researchers have judged Teach First to be more successful than the American model, TFA. .
- **However, wide variations have been identified in school-based mentor support for trainees in Teach First UK.**
- **The Teach First model has spread to the Netherlands, some other European countries and Australia and New Zealand.**
- **The Netherlands First Class (modelled on Teach First) illustrates the importance of involving the universities and schooling sector in developing and delivering a programme.**

Developing Countries

- **In developing countries, there is little research evidence that preservice teacher education provides skills and develops attitudes that produce better education for pupils in school**. A review of 26 studies found that preservice training was positively related to student learning in only 12 of them. This suggests that relative to the high cost of preservice training, the payoff is often small.
- **Research indicates that most university-based preservice programmes fail to achieve the desired quality or economies of scale necessary for most developing country contexts.**
- **Research on effectiveness has found that in-service programs can produce more teachers than traditional preservice models within a given time frame** because institutionally-based preservice programmes are not equipped to handle more than several hundred student teachers at a time; their entry requirements limit the number of potential teaching recruits and the residential requirement for long periods of time restrict the participation of rural people and women.
- **Alternative routes that rely on considerable in-service training are far less expensive than university-based ITE.**
- **Some studies have shown that teachers trained in ATCs performed as well or better than those trained in the traditional three-year preservice programme,** although other studies of teachers trained in **distance education programmes produced more mixed results.**
- **Several distance education programmes, such as ZINTEC in Zimbabwe, have shown considerable success in teacher retention.**

South Africa

- **In general, the findings of the South African evaluations on the ISASA internship model and TEACH SA align with the international ones:**

- Research limitations affected the strength of the findings. The TEACH SA evaluation suffered from significant limitations brought about by wider contextual and internal implementation factors;
- The ISASA model, in the main, achieved the expected outcomes and TEACH SA achieved an improvement in science results and the choice of science as a FET subject;
- The impact of the TEACH SA model depends on the translation of the theoretical and strategic model into a detailed operational plan and clear formal agreements between all parties as to their roles and responsibilities;
- The selection of functional, supportive, host schools with committed teachers and good practice is critical;
- Strong support for the interns/ambassadors is essential for the success of the programmes and the selection and training of effective mentors is all important; and
- Both models could be replicated subject to certain provisos and conditions.

RECOMMENDATIONS

As so many teacher educators and researchers have acknowledged, there are high-quality and low-quality programmes in both routes, and although high-quality ITE programmes of both types have been found to positively impact on student learning, in general both types need improvement. To this end JET proposes a number of recommendations about ITE for donors, business, government, alternative ITE programmes and universities:

- **Instead of South African teacher education stakeholders and providers entering the same fruitless debate about the effectiveness of traditional versus particular alternative ITE programmes, they should consider international research and increasing convergence in the debate that indicates that both have an important role to play in meeting nations' challenge of supplying sufficient quality teachers.**

- **The literature provides valuable insights into the characteristics of effective ITE and common weaknesses** and these should be seriously taken into account by all alternative and traditional ITE programmes in the country.

- **Closer work between schools and universities and hybrid partnership models are the way forward to adequately prepare teaching students for the realities of schools and classrooms and effective practice that will support learning achievement.** Studies of strong ITE programmes show that 'learning to practice in practice' with expert guidance is essential to becoming a great teacher of students with a wide range of needs. In this regard, the American Association of Colleges of Teacher Education (AACTE, 1986) has recognised the needs for more flexible pathways into teaching and has proposed that universities in partnership with districts and schools develop alternative training programmes that meet the following criteria:

- Selective admission standards, including but not limited to (a) a baccalaureate degree,(b) assessment of subject matter competence, (c) assessment of personal characteristics, and (d) assessment of communication skills;
- A curriculum that provides candidates with the knowledge and skills essential to the beginning teacher;
- A supervised internship in which candidates demonstrate pedagogical competence; and,
- An examination that assures competence in the subject field and in professional studies.

- **Teacher education stakeholders have been urged to adopt a broader conception of teacher preparation that emphasises paths into the profession, rather than specific programmes** and that contributes to understanding and implementing the elements that make for effective programmes and how they interact.

- **To this end, the research suggests that it is important to recognise the individual paths of trainees entering teaching, which highlights the importance of assessing the skills and knowledge of teacher-candidates early and frequently and tailoring a package of coursework, clinical practice, mentoring and appropriate placement to fit the needs of different trainees.** This approach requires an assessment-based and individualised set of training and support, although few traditional or alternative ITE programmes devote many resources to the assessment of their candidates, nor are they sufficiently flexible to tailor their programmes to individual needs.

- **The choice of school training providers or host schools for internships/ambassadors in ATCs is critical.** Both international and local research has found that the school context has the greatest effect on outcomes in alternative ITE programmes.

- **A high level of support in schools, and especially effective mentoring**, is essential for interns and trainees.

- **In the case of developing countries, cost-effectiveness research comparing the traditional and alternative ITE programmes has been neglected and warrants special attention**. Policy decisions require combining information about benefits with that about costs. Research is needed that measures the costs of various training programmes, but these costs must be related to the quality of the teachers that the different training programmes produce.

CONCLUDING COMMENTS

The research evidence reviewed in this paper indicates that, as in many developed and developing countries, alternative mixed-mode teacher education programmes which combine a distance education teaching degree with school-based internships are viable options to traditional teacher education in increasing the supply of competent teachers. The great strength of alternative programmes is that they provide the much needed school-based learning-in-practice that has been found to be so lacking in most university-based programmes in South Africa.

As researchers have pointed out, the debate about the effectiveness of specific ATCs is fruitless. What matters most in teacher preparation is how to prepare effective teachers. For the sake of the neediest learners, the real fight in all ITE should be about the best way to assess and prepare any given candidate so that all new teachers can be equally successful on their first day on the job.

No teacher educators in traditional ITE programmes can rest on their laurels, as Téllez points out:

> *Until teacher educators can demonstrate clearly that preservice preparation has a measurable effect on student achievement, and that they are clearly preparing their students for urban schools, the moral argument against TFA and other alternative programs will carry little weight* (2011: 33).

Similarly, Darling-Hammond (2010) comments:

> *…schools of education must hold themselves to a higher standard. Teacher educators must be prepared to create partnerships with schools in their communities, confront and dismantle those regularities of the university that prevent investments in strong academic and clinical training, and behave as members of a profession. This will mean embracing a new form of professional accountability that leverages universally strong practice in all programs that prepare teachers. This is a tall order, to be sure, but it is perhaps the last best chance for dramatically improving educational opportunity in the United States of America* (2010:45).

With regard to the future of ITE as a whole, Darling- Hammond (2010) argues:

> *We need to raise our expectations for the teacher education enterprise as a whole, requiring in every program a common vision that informs a tightly integrated program of high-quality clinical work married to a supportive learning-focused curriculum. This will require hard work within institutions to secure needed supports from administration and to reshape faculty and coursework. It will require equally hard work with schools, not only to create partnerships but also to help create settings where equitable, state-of-the-art practice is possible. The key levers needed to accomplish this work include, as in other professions, the much more effective use of accreditation and of licensing for new entrants.* (2010: 43).

This review of the international and local literature has filled a gap in the research and debate about alternative ITE in South Africa. A comprehensive literature review has not been undertaken before, as the ERA evaluation of the ISASA Internship programme recognised. As such, JET believes the findings should be used as an analytical framework in a second phase of this research to investigate promising new and emerging alternative ITE programmes in South Africa and to analyse their different models and implementation strategies for their potential to effectively improve the supply and quality of teachers (see Annexure A).

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Annexure A: Alternative ITE programmes in South Africa

In addition to the ISASA internship model and TEACH SA, there are some other examples of new or re-designed alternative ITE programmes that JET has identified in South Africa which may well merit investigation in terms of their models and implementation strategies. These programmes all seek to address both teacher supply and quality and involve public-private partnerships, blended learning opportunities through distance and contact ITE and strong school-based experience.

- **Instill Education** has been recently established to provide a practical, intensive PGCE programme in which trainees spend over 50 per cent of their time in the classroom teaching and building proficiency through deliberate practice. Instill Education employs evidence-based pedagogies that focus on the core skills of teaching and uses data to drive candidate selection, student performance and teaching practice and to continuously adjust and improve the programme. The organisation has partnered with teacher training institutions and global education experts to develop its methodology and ensure it remains at the cutting edge of teacher education.

  The Instill programme is demand-driven and its initial clients are chains of independent schools with innovative teaching and learning models, such as Spark and Pioneer, which require teachers able to use those schools' particular methodologies. As new innovative chains of affordable independent schools are being established every year, the need for differently trained teachers who can implement new approaches will only increase.

- **Embury Institute for Teacher Education (EITE)** outside Durban has been operating for many years and was recently bought by Curro Holdings. EITE specialises in educating students to become sought-after, classroom-ready professionals who have obtained significant classroom experience. Effective training of early childhood development (ECD) and foundation phase (FP) teachers – in very short supply in the country - is one of its success areas. EITE has developed multiple partnerships with two education departments, three universities (including an international one), NGOs and public and independent schools to provide quality ITE and is now scaling up with two new campuses: one on the Waterfall Estate in Midrand and one in Montana in Pretoria. More high-quality ITE programmes for FP teachers is a critical need and a key question is whether EITE can successfully implement its model in multiple sites and retain its effectiveness.

- **Northwest University (NWU)** uses a blended-learning, very flexible distance ITE model. This model, which has been employed for many years for the National Professional Diploma in Education (NDPE), has recently been re-designed for MRTEQ accreditation of the university's new PGCE and B.Ed programmes. The university uses a private provider to assist with delivering ITE that includes live-steaming of televised lectures to 55 teacher centres across the country where students can gather at set times to interact directly with the lecturers. School-based experience is also included. This model provides far more student support than the UNISA programme and is likely to produce a better throughput rate.

- **The Elma Foundation,** in partnership with the DBE, the Free State Education Department and Save the Children, has set up an internship ITE programme known as the "District Based Teacher Recruitment Strategy" to recruit unemployed youth to train as FP teachers. The trainees will receive Funza Lushaka bursaries to study for B.Ed degrees through UNISA. To help deliver and support the programme, which includes mentorship, Elma is providing additional funding to secure the services of NGO service providers, including Harambee, Vuleka Schools and the Primary Science Programme. Fifty recruits began this year in 20 well-performing schools in one district and 50 more will begin in 2017. This programme is intended as a pilot to test a new model of increasing the supply of high-quality FP teachers and it holds the promise of influencing how UNISA delivers its ITE programmes so that they are more efficient and effective.

- **A considerable number of teacher internships for post-graduates and graduates in independent schools exist**. Many schools train interns outside of the ISASA Internship programme. For example, Western Province Preparatory School in Cape Town takes in and trains 10 interns every year. Across ISASA member schools in South Africa, in 2015, there were some 880 teacher interns being trained, both within the ISASA Internship programme and outside it.

In addition to these, there may well be other alternative ITE programmes in the wings: JET is aware of 'edupreneurs' and companies that have indicated their intention to set up alternative ITE programmes.