CHAPTER 2

A Review of International Practice

The single salary schedule has been the dominant form of compensation for teachers across the world for over half a century. Based on degrees earned and years of experience, the single salary schedule provides a secure salary with small annual increases for remaining on the job, regardless of the quality of the teacher's performance. Differences in salary levels have been negotiated with trade unions at the national, regional and local levels but they have generally affected the level of pay rather than the structure. In many countries, the teacher unions have been instrumental in maintaining the single salary schedule, with a few salary incentives, but no recognition for performance-based pay or incentives for those working in schools serving disadvantaged students. In **Ireland**, for example (Sclafani and Tucker, 2006), assuming additional responsibilities such as teaching the Irish language or working in remote locations, are the only acceptable reasons for teachers to receive additional pay.

In the last 15 years, both developed and developing countries have experienced shortages of qualified teachers in certain subjects or types of schools, such as those serving disadvantaged students, leading them to develop incentive programmes aimed at improving individual teacher performance. The incentive programmes may be based on teachers' knowledge and skills, the amount of extra responsibilities they have assumed or the quality of their work. In these areas, however, the additional salary is above the regular single salary schedule amount, ensuring that teachers are not at risk of earning less than they would have, based on the degrees held and the number of years of experience. **Sweden** is the exception to this as in the mid 1990s it moved to a centrally-developed minimum first-year salary with all increases from that point developed through individual pay negotiations between the school and the individual teacher.[1] This chapter characterises the varied ways in which both developed and developing countries are addressing teacher compensation issues through incentives. To assist the reader, Annex 2A at the end of the chapter provides a description of different incentives, and also presents results from studies on teachers' attitudes toward incentives.

FINANCIAL INCENTIVES

Incentives for teacher education

Many countries see scholarships or stipends for teacher candidates as an incentive to attract new teachers into the profession, but it may be a wasted expense for a government if students use the funds to complete their education but do not actually enter teaching. As a case in point, in the State of **Victoria** in **Australia**, out of every 100 students who applied for teacher education programs in 1999, 56 were accepted, 41 enrolled, 31 were expected to graduate, 23 were available for employment, and only 15 were employed as teachers in schools.[2] Despite that, a number of countries, including Australia, have chosen to use this strategy to increase the number of young people preparing to become teachers, especially those pursuing majors in teacher shortage subject areas, such as mathematics, science and technology. For example, the **Western Australia** Department of Education and Training (Skillbeck and Connell, 2004) provides teacher education students in subject areas of need (*e.g.* mathematics, science and technology), a scholarship of AUD 10 000 in their last year of study in return for a two-year commitment to teach in a rural school. It recently added payment of university fees for students studying to be science teachers. The **Northern Territory of Australia** provides a training bursary for students studying to be teachers in shortage subject areas, including information technology, mathematics, science, and special education.

Ross and Hutchings (2003) report that both **England** and **Wales** developed a number of financial incentives for students studying to be teachers, starting in 1986 with grants for students in certain secondary education fields. This evolved into the Shortage Subject Support Scheme that provides up to GBP 5 000 for students facing financial hardships and who are studying a secondary subject identified as a national teacher shortage area. Since 1998, prospective teachers entering a postsecondary training programme receive a GBP 6 000 training bursary with half paid at the completion of the first module and the other half paid once the student has achieved Qualified Teacher Status at the end of the programme. Developing countries such as **Chile** and **Uruguay** (Vegas, 2007) also provide scholarships. In **Chile**, talented students in teacher education can receive

a scholarship covering all of their tuition in return for committing to teach for three years. The priority subject areas are mathematics, science, English, language arts and primary education. **Uruguay** provides free tuition for all teacher education students, but also supplies scholarships for living expenses to attract talented students from disadvantaged backgrounds into teacher education programs.

Singapore (Sclafani, 2008) goes farther than other countries, offering free tuition and fees to prospective teachers, along with a monthly stipend for bachelor degree candidates and a monthly salary equal to a college graduate in a civil service position for those entering the postgraduate programme. To ensure that it does not lose money on students who later choose other professions, Singapore requires that any teacher who does not complete the three to six years of teaching required in the contract for the tuition and stipend support must pay liquidated damages with interest. This is true regardless of whether the individual or the school system determines that the teacher is not a good fit with the system.

The **United States** (**U.S.**) has established a number of programmes at the federal and state levels that offer scholarships or loan forgiveness to attract high-performing teacher education students to either shortage subject areas or to hard-to-staff schools. Starting in the Sputnik era (from the launch of Sputnik in 1957 through the decade of the 1960s), the National Defense Education Act offered loan forgiveness of USD 1 000 per year for up to five years to teachers of foreign language, mathematics, and science in schools serving low-income students. The Stafford Loan programme, established in 2004, provides up to USD 17 500 in loan forgiveness for teachers of mathematics, science or special education. Recently the U.S. Department of Education established the Teacher Education Assistance for College and Higher Education grant programme, which provides a grant of USD 4 000 per year to teacher candidates who agree to teach in shortage subject areas for four years in schools serving disadvantaged students. If the teachers do not fulfill their commitment within eight years, the grant converts into a loan that must be repaid. According to Johnson (2005), by 2004, 24 states had established loan forgiveness or scholarship programs to attract teachers in shortage subject areas, and 12 states had established them for hard-to-staff schools. The State of **Oklahoma** has a loan forgiveness programme for teachers of mathematics or science who agree to teach for a minimum of five years, while **Mississippi** requires three years of teaching for teachers who have received four years of funding from the state to become teachers in geographic or subject shortage areas (Chait, 2007). The State of **Arkansas** provides up to USD 3 000 to current teachers to go back to school to earn certification in a shortage area.[3]

INCENTIVES BASED ON TEACHER'S KNOWLEDGE AND SKILLS

A number of countries that wished to reward teachers for increasing their effectiveness have focused on rewarding new knowledge and skills, with programmes setting clear expectations about what teachers must do to improve their skills in priority areas. Odden *et al.* (2001) differentiate knowledge and skills-based pay from merit pay that used school principal evaluations as the method to determine how to divide a fixed sum of funds for teachers. They also differentiate knowledge and skills-based pay from career ladders that required teachers to assume additional responsibilities while remaining in the classroom for part or most of the day. Knowledge and skills-based compensation acknowledges that teachers develop new knowledge and skills throughout their career, and these should be rewarded upon clear documentation of achievements. In some cases, this means that teachers move up to a new category of the salary schedule or that they receive a one-time or annual bonus for demonstrated competencies. In the **U.S.**, this is done through external evaluations, such as the National Board for Professional Teaching Standards or PRAXIS III or school-based evaluations based on rubrics.

Evaluation of teacher performance

Based on the negotiations between the Education Ministry and the Teachers Association of **Chile**, ongoing from 1991 to 2002, Chile created the Pedagogical Excellence Reward to recognise excellent teachers. The reward is

based on individual evaluations using The Framework for Good Teaching (*El Marco para la Buena Enseñanza*), but not on student test scores. Teachers can volunteer for an evaluation twice within each of four levels of years of experience. The evaluation is made up of two parts, a written test of pedagogical and content knowledge, and a portfolio of classroom teaching, including a video observation. Teachers may be awarded additional salary for excellence. A quota is established each year, based on budgets. Once teachers receive the reward they keep it as long as their evaluations are satisfactory and they are in the same strand of experience. The programme includes both primary and secondary teachers.[4]

In some states in **Germany**, teachers are able to move faster through the salary levels, based on their performance evaluation. In **Baden-Wuertemberg**, each year 10% of the teachers in each school can move up a step on the salary schedule for outstanding performance. In addition, poor evaluations can delay movement to the next step. In **North-Rhine Westphalia**, the step increases are no longer automatic; teachers' step advancement depends upon the evaluation of their performance every two to four years.[5]

The Netherlands has allowed local school boards to establish personnel management systems that include opportunities for a limited number of teachers to move to a higher salary scale or to move more rapidly through the steps in their current scale. School-based personnel budgets give schools greater discretion to award performance-related allowances or bonuses to teachers. Schools decide the conditions under which bonuses or allowances will be granted and how much money they are prepared to spend on them.[6]

Singapore may have the most extensive performance management system, providing bonuses equivalent to one to three months' salary based on their rating on an annual evaluation. Both teachers and evaluators take evaluation very seriously as part of the continuous improvement focus in Singapore. The evaluation process is quite extensive, with a planning meeting at the beginning of the school year to set goals for student achievement, professional development, and contributions to the school and community. It is followed by a review meeting midyear and a final evaluation based on portfolios of work, as well as input from the senior teachers and department/subject area chairs who have worked with the teacher. In addition, teachers may earn bonuses for outstanding individual or team contributions to creativity, cost savings, or peer support, as documented in the evaluation portfolio.

In some regions of **Switzerland**, teachers must successfully complete self and external evaluations before advancing to the next stage of the salary scale. The external evaluations use a broad range of criteria to determine teacher eligibility.[7] **Zurich** established the "salary-effective qualification system" in 1999, which applies only to teachers in the middle phase of their career. It is not available to teachers at the end of their careers, except in cases of truly outstanding evaluations. In the middle phase, teachers are assessed and, if the evaluation is positive, the teacher may receive a 1-3% salary increase for each of the next four years. A specially trained team of representatives of the school committee conducts the evaluation. The team observes the teacher in the classroom, interviews the teacher, and reviews a report prepared by the teacher describing pedagogical approaches employed in the classroom. If the evaluation decision is negative, the teacher may apply again after a year of work on the areas of identified weakness, but he/she receives no promotion to higher salary until a successful evaluation is achieved.

In **Switzerland** as well, **St. Gallen** initiated the "systematic salary-effective qualification" in 2000. The salary schedule has four grades with steps within each grade. Salary increases from step to step are automatic, but not from grade to grade. When a teacher has completed a grade, he or she is evaluated for promotion to the next grade. Without a successful evaluation, the teacher cannot be promoted to the next grade or receive a salary increase. The teacher meets with an evaluator from the school committee to agree upon the criteria for the evaluation, which includes both self-assessment and external assessment in three areas: "organisation and delivery of lessons; interactions with students, teachers and parents; and participation in in-service training".[8]

The Cincinnati Public Schools in **Ohio** (Odden and Wallace, 2008) established a complex knowledge and skills-based compensation system that included five career levels, with two to three salary steps in each level, based on 16 teaching standards. Teachers moved from Apprentice to Novice levels by passing the PRAXIS III exam with a rating of at least "2" in each area of evaluation. Novice teachers had to move within five years to Career status by receiving a minimum rating of "3" in each evaluation area to remain employed. The programme had a permanent salary increase for teachers with one additional degree or certification, and annual supplements that were valid for one to three years based on demonstration of skills. Although the pilot plan was approved by the teachers' union and the board of education, it lasted only three years before the teachers voted against the continuation of the plan. Soon after, the superintendent left and school board members in favour of the programme were replaced through elections. One of the major complaints was that teachers at the high end of the previous salary schedule did not have their salary protected under the new system, and those teachers lost up to USD 10 000 each. In addition, teachers did not believe the evaluation system was fair and found it to be too complicated for them to understand.

In the **United Kingdom** (**U.K.**) (Sclafani and Tucker, 2006), the top of the salary scale can be reached in five steps, considerably less time than in many other countries. In 2000, the School Teachers' Review Body came out in support of the government's proposal for performance-related pay for an upper scale of the salary schedule, based upon eight nationally agreed upon teaching standards. Teachers at the top of the main pay scale may apply to be assessed against the standards to pass beyond "the threshold" to the upper pay scale. The standards are divided into five groups: knowledge and understanding (one standard); teaching and assessment (three standards); pupil progress (one standard); wider professional effectiveness (two standards); and professional characteristics (one standard). Principals in **England** and **Wales** were trained to complete the assessment, with the results confirmed by an external assessor. This marked the first use of student performance as part of the evaluation of teachers. Approximately 80% of the eligible teachers applied, and around 95% of them moved forward to step one of the upper scales in 2002.[9] In the upper pay scales, teachers earn from 12-25% higher salaries. Teachers normally progress along the upper pay scale every two years based on annual evaluations, although progression is not automatic. Teachers who have crossed the threshold must display substantial and sustained performance and contributions to the school before a performance point is awarded.

Additional pay for additional instructional responsibilities. In 1990, the Schools Council for the National Board of Employment, Education and Training in **Australia** recommended the creation of a national classification, Advanced Skills Teacher. Not all states, however, established the Advanced Skills Teachers (AST) programme. **New South Wales** began the programme in 1992, selecting ASTs based on their contributions to professional development of other teachers, curriculum development, student progress, and involvement in improving the educational outcomes of students, and supporting beginning teachers with classroom performance. They were required to operate under the same workload parameters as all other teachers, and to take on a number of added activities and responsibilities. The term of the AST status was one-year and the stipend was approximately AUD 1 200.[10] Other states in Australia have added this category to their salary systems.

In 1998, the governments of **England** and **Wales** also created an Advanced Skills Teacher (AST) programme to provide a career path for excellent teachers who did not want to leave the classroom to take management positions. It was envisioned that 3-5% of teachers would receive this designation. Candidates for AST submit a portfolio demonstrating they have met the standards for the position. The portfolio must be evaluated as successful by an external assessor in order for the teacher to be appointed to an AST post. In that role, they share their skills in teaching practices through outreach work in many schools. Normally they are required to spend 80% of their time teaching in their own classes and 20% sharing good teaching practices with teachers in other schools. AST posts are funded by local authorities in the **U.K.**, or by specific individual schools. There is a separate salary scale for ASTs, and upon appointment as an AST, one can move to the bottom of a five-point

range of pay. Pay also varies according to geographic boundaries, defined as: England and Wales (excluding London), Inner London Area, Outer London Area, and Fringe Area. Teachers at the top of the AST salary scale can earn 43% more than senior teachers at the top of their salary schedule.[11]

Experienced teachers in the **Netherlands** can take on a different role as a Plus Teacher, replacing ill teachers and also coaching newer teachers while at the school, and receive a bonus for taking on these responsibilities. Such positions provide a variation in routine as well as the challenge of mentoring newer staff.[12] In **New Zealand**, each secondary school can name a specialist teacher who receives an additional NZD 6 300 salary and a four- or eight-hour reduction in teaching duties weekly, depending on the size of the school, for assuming responsibilities for professional development and mentoring other teachers.[13]

INCENTIVES FOR TEACHING IN SHORTAGE SUBJECT AREAS

Students are short-changed when their teachers are not qualified to teach the specific subjects they are teaching. Although the concept of supply and demand is clearly applicable in education, teacher unions in the **U.S.** as well as other countries have remained opposed to the idea of using incentives to attract qualified teachers of specific subjects. They claim that suggesting that mathematics or science teachers are somehow more important than English or social studies teachers will create dissension among teachers, who are a highly democratic group. However, in the U.S., states without collective bargaining have been more active in establishing such programmes. For example, 43% of districts in **Texas** offer incentives for teachers in shortage subject areas. **Utah** offers a USD 5 000 signing bonus for teachers of mathematics and science who stay in the district for at least four years (National Council on Teacher Quality, 2008). Many school districts in the U.S. offer additional stipends of USD 1 500 to USD 3 000 for shortage area teachers. New York City offers housing assistance of up to USD 15 000 in moving expenses, down payments on homes or security deposits on apartments, and USD 400 monthly housing stipends for two years to attract experienced teachers of mathematics, science and special education.

School systems in other OECD countries have developed financial incentives to attract and retain teachers in shortage areas (Sclafani and Tucker, 2006), such as teaching in indigenous languages in **Australia** and **Ireland** or teaching in French in **Brussels**. In addition, **England** and **Wales** have established loan forgiveness programmes for teachers of mathematics, science, special education and technology. The programmes repay all teacher preparation tuition expenses up to GBP 16 000 over ten years of teaching. They also offer a Golden Hello programme that provides GBP 4 000 for successfully completing the first year of teaching in shortage areas. **St. Gallen** is the only canton in **Switzerland** that provides salary allowances for teaching subjects facing shortages. Despite these efforts, in 2003, principals in countries participating in an OECD study of upper secondary schools reported that over 30% of their students attend schools where there are teacher shortages in foreign languages, mathematics, science, and technology.

INCENTIVES FOR TEACHING IN SCHOOLS IN DIFFICULT ENVIRONMENTS

Remote schools. Many countries face challenges in attracting teachers to teach in schools in remote areas. If the salary schedule is uniform across a country, there is little incentive for teachers from metropolitan areas to move to remote and isolated areas. Therefore, some countries have initiated monetary or promotion incentives. Although there has been no evaluation of the effect of providing incentives for teachers to move to remote schools, countries can track the degree to which qualified teachers staff these schools. One must assume that national or provincial/state governments have established the levels of their stipends in response to supply and demand.

In **Australia**, the **Queensland** Remote Area Incentive Scheme (Sclafani and Tucker, 2006) provides cash awards of up to AUD 5 000 for the teacher to travel from their remote area to a metropolitan area for shopping or visiting

family, as well as retention stipends of up to AUD 5 000 per year. **Denmark** provides free accommodations in remote and sparsely populated areas as well as a home personal computer and access to wholesale shopping clubs, while **Ireland** provides an annual stipend of EUR 1 321 to teachers in schools on remote islands. **New Zealand** offers a High Priority Teacher Supply Allowance (HPTSA) of NZD 2 500 for teaching in schools designated as needing special assistance in recruitment and retention. The HPTSA teacher receives transfer and moving allowances to go to the school and to move to another school after having taught there for three years. Countries are also using larger incentives in more remote areas. For example, **Nunavit**, a remote province in **Canada**, provides significant incentives for teachers in its communities, ranging from CAD 12 100-28 350 per year and an additional daily housing stipend of CAD 50-75. Some countries make service in remote schools a prerequisite for promotion, as in **Korea** and **China** where teachers who spend time in schools in remote areas get credit toward promotion to positions of senior teachers or vice-principals.

In Latin America, **Chile**, **Peru** and **Bolivia** have financial incentives to encourage teachers to serve in rural schools. **Chile** (Sclafani and Tucker, 2006) provides geographic incentives of as much as 30% of annual salary for working in areas that are far from urban areas or represent geographic isolation, extreme poverty or difficult access. **Peru** (Crouch, 2005) offers rural bonuses as one of nearly 20 incentives and bonuses that can be added to the basic salary and that can represent 95% of the total salary. Since basic salaries in real dollars are only 50% of what they were in the 1970s, 5% of basic salary for teaching in a rural school does not provide much of an incentive to teachers who would prefer to live in or near metropolitan areas. A further complication is that teachers maintain the bonus even though the school would no longer qualify as rural due to urbanisation, or the teacher may have transferred to a non-rural school.

Bolivia (Urquiola and Vegas, 2005) bases salaries on a complex matrix of school designations of urban, provincial and rural, credentials earned in teacher preparation programmes, and seniority. Teaching in a rural school provides a 20% increase in initial salary placement over teaching in a provincial and urban school at each level of training credentials. The levels of training range from interim (no training) to experienced-certified (no formal training but more than nine years of teaching), ABD (completed training but missing a requirement for certification) and certified (graduated from teacher training and completed two years of service in a rural or provincial school). Entry into the highest salary levels is dependent on being fully certified. When experience is factored into the salary equation, location represents only about 9% of the total salary. There are two additional bonuses for teaching in rural areas: the Zone or Frontier incentives of 20% of monthly base salary for teaching in inaccessible areas or within 50 kilometers of international borders. The IPR (*Incentivo a la Permanencia en el Area Rural Pobre*), a permanent rural incentive, provides an increase of about 10% of monthly base pay for teaching and remaining in poor rural areas. Adding these bonuses and incentives to the maximum incentives and bonuses a teacher can earn for all categories of experience, location, seniority, training, and other behaviors, makes location worth approximately 12.5% of total salary, probably not high enough to really attract teachers to the most remote areas of Bolivia. In 2001 the Ministry abolished the requirement for teaching in provincial or rural schools to attain full certification. While this enabled more teachers to enter the higher salary ranks, it also removed the strongest incentive for teachers to serve in rural schools. As in **Peru,** Bolivia still has schools designated as rural despite urbanisation and teachers designated as rural despite transfers to urban schools, probably due to reluctance to re-categorise schools and teachers and lower the salary levels of the teachers involved.

Hard-to-staff schools. While remote schools pose a significant challenge in attracting teachers, urban and suburban schools serving disadvantaged students face similar challenges. Given choices among positions, teachers often select the schools with the best principals, most engaged parents, and students who come to school ready to learn. **France** has established programmes to recruit experienced teachers to schools serving disadvantaged students in the suburbs of Paris by establishing priority posts that provide additional benefits

regarding placement, training and career progression. These programmes did increase the number of applicants who were fully qualified, but only 40% of them were experienced teachers. The teachers union has been adamant that the current point system of transfers, that favours seniority among other factors, not be changed.[14] In **New Zealand**, a Staffing Incentive Allowance of NZD 1 000 is available for teachers for up to three years for teaching in schools designated by the Secretary of Education as priority schools.[15] London (Ladd, 2007) has raised salaries in its schools by approximately 12% in order to attract teachers, but still has vacancy rates that are higher than other areas of the country. Goldhaber (2008) reports on incentive programmes in the **U.S.**, and identifies 20 states that have established incentive programmes for teachers who are willing to go to schools with staffing challenges. In addition, some states established programmes to attract teachers to low-performing schools, offering annual cash incentives, loan forgiveness programmes and housing allowances. **Arkansas** provides USD 4 000 stipends for the first year, USD 3 000 for the next two years and USD 2 000 per year starting in year four. The state credits this programme with reducing first-year teacher attrition from 19.7% in 2001-02 to 7.1% in 2007-08 (Arkansas Department of Education, 2009).

Many large districts also provide stipends of from USD 2 000 in Los Angeles, **California** and Charlotte, **North Carolina** to USD 3 000 in New York City. Fairfax County, **Virginia** and Miami, **Florida** provided percentage increases of 12% and 20% respectively for working in the lowest-performing schools and required that the teacher workday be extended by one hour (Odden and Wallace, 2007). Guilford County Schools, **North Carolina**, established a programme for its 30 schools with the greatest staffing problems; the programme offered recruitment and retention stipends ranging from USD 2 500 for primary school teachers to USD 10 000 for algebra teachers. In addition, teachers in the state's Mission Possible Schools can earn high student achievement awards of USD 2 500-4 000. Ingersoll (2008) reported that in the first year of the programme, the number of applicants for mathematics positions increased from 7 to 174.

Milanowski *et al.* (2007) conducted focus groups at three teacher training institutions, a large public urban, a small private urban and a large public non-urban, soliciting information as to what would influence prospective teachers' choices of attractive or unattractive schools in which to teach. A survey was developed from the focus group information and administered to over 200 students at the three institutions. Responses indicated that a school with support teachers and a principal known to understand teaching and learning would be the greatest influence on their choice of that school, increasing the probability of taking the job by 17%. In addition, curricular flexibility increased the probability by 10% and a good induction programme by 9%, while a USD 5 000 increase in starting salary raised it less than 4%. The percentage of minority students at the hypothetical school had a very small effect on job choice, equal to about a USD 365 salary increase.

When the analysis was done within each type of institution, large public urban, small private urban and large public non-urban, Milanowski *et al.* (2007) found that responses to the quality of the principal, the induction programme, and curricular flexibility were more important than the increase in salary for respondents across all schools, but the issue of high percentage of minority students was a larger factor for students in the small private urban institution. Overcoming this factor would require a salary increase of nearly USD 10 000. For large non-urban institution students, the differential would be about USD 9 100 for female students and about USD 5 800 for male students. The analysis suggests that improving the quality of principals may be more cost effective than higher beginning salary levels, noting that it would take nearly USD 25 000 to overcome the effect of a poor principal for students from large non-public institutions. However, Kirby, Naftel and Berends (1999) found in a study of data from 1979 to 1995 that in high-risk districts with high numbers of highly disadvantaged students in **Texas**, a USD 1 000 increase in salary was linked to a 6.2% decrease in attrition rates as compared to 1.0% in low-risk districts and 1.6% in medium-risk districts. They also found that African-American and Hispanic teachers were more likely to stay than teachers in general, 5-6% as opposed to 2.9%. The differences were significant.

Findings from Milanowski *et al.* (2007) are congruent with Hanushek, Kain, and Rivkin's (2004) research findings that working conditions were more important to experienced **Texas** teachers than pay differences in their decisions to change schools. Since their findings (Milanowski *et al.*, 2007) differ from those of Clotfelter *et al.* (2008) regarding retention, Milanowski *et al.* suggest that it may take larger incentives to attract new teachers with concerns about their preparation to teach in high-needs schools than to retain those already there. Two other cautions are mentioned; one is that a survey of new teachers may not provide an accurate representation of real attitudes as they may repeat what they have heard from their professors about social justice when they were students, especially concerning willingness to teach in schools with high minority participation. The second is that the survey was done in a state with a surplus of teachers, so students' willingness to take a job that is less than their ideal would be more expected.

OTHER FINANCIAL INCENTIVES

Incentives for high performing teachers. **England** (Ross and Hutchings, 2003) provides a Fast Track Teaching Programme designed to encourage and develop promising new teachers with leadership potential. Fast Track teachers receive an annual retention incentive of GBP 2 000 for each year in the programme, as well as additional coaching, mentoring and participation in leadership development activities. The goal is to encourage the identified teachers to move into leadership positions on a shorter timeline than usual.

Retention bonuses. **Singapore** created the Continuity, Experience and Commitment programme (CONNECT) to counteract attrition from the teaching profession. It provides retention payments upon retirement to teachers, over and above the social security system available to all employees in Singapore. In 2001 in response to the loss of mathematics and science teachers to the private sector, Singapore increased the amounts of the annual payment to SGD 4 200-6 200 per year for teachers with 1 to 15 years of experience and SGD 3 200 per year for more experienced teachers. In addition, it makes some funds available for withdrawal every three to five years to maintain motivation for remaining in the profession. It currently has a teacher retention rate of 97%.

Funds for individual professional development. In addition to 100 hours of professional development available to every teacher, **Singapore** provides reimbursements of SGD 400-700 per year for expenses teachers incur to improve their knowledge and skills. Teachers may purchase software, take foreign language or computer training, join professional organisations, subscribe to journals or participate in activities to enhance their cultural awareness. Teachers may also arrange for full-time or part-time professional development leaves partially funded by the Ministry of Education. They may study or travel abroad, teach in an international school, or work in the private sector to better understand the applications of the subject they are teaching. The goal is to improve their professional skills to better serve Singapore's students.

Additional support in the work environment. In 2003, **England** developed a programme, Raising Standards and Tackling Workload – a National Agreement (Teacher Development Authority, 2003) to improve working conditions for teachers. In a PricewaterhouseCoopers survey, teachers had said that two-thirds of their time was spent on non-teaching activities. Since teacher workload was given as a major reason for teacher retirements and attrition, the new programme reduced workloads by reducing the overall hours in the teacher contract, providing guaranteed planning time, reducing paperwork requirements and adding support staff to provide routine administrative services and help teachers and support students. Support staff including bursars, administrative, technical and classroom support staff were recognised as important members of the school team, and the programme created new career paths in three areas: pedagogical, behavioural/guidance, and administrative/organisational. Hopkins and Ahtaridou (2008) reported that the addition of support staff had a positive impact on teaching, teachers' job satisfaction, stress and workload, and student learning and behaviour. The purpose of the programme was to ensure better learning environments for students and a better working environment for teachers

Flexible use of teacher time. Flexibility in how teachers use their time can be a major incentive for some. For example (Jacobson, Hickcox and Stevenson, 1996), deferred salary leave plans, available in **Canada** since the 1970s, and more recently in some **U.S.** school districts, enable teachers to defer a portion of their salary each year to allow them to schedule a leave with pay at a later time. This leave can be used for further study or travel to learn about other educational systems. **Singapore** (Sclafani, 2008) allows teachers to accrue a month of full-pay for half-time service or half-pay for full-time study for each year of service, up to 12 months. Teachers are able to use this time in any way that will benefit the Singapore education system. Examples of the activities undertaken include further study in Singapore or abroad, teaching in an independent or foreign school, or working in the private sector to learn more about applications of education knowledge and skills. Another version of flexibility in the use of time is the opportunity for senior teachers to engage in an increased variety of tasks and to reduce their work schedule with or without a small reduction in salary (OECD, 2005). Some local districts in **Norway** allow senior teachers to reduce teaching time and overall duty time to participate in professional development, mentor new teachers, develop curriculum and advise other schools. **Brandenburg**, **Germany** allows teachers to reduce teaching time by 50% for a 20% reduction in salary, an opportunity accepted by about 10% of the teachers. To retain more experienced teachers, the **Netherlands** allows teachers over the age of 52 to request a reduction in their schedule of duties for a smaller reduction in pay. For example, a teacher who is 52-55 years old can reduce his or her hours by 10% for a salary reduction of 2.5%; for teachers who are 56 or older, the reduction is 20% in time for a reduction in salary of 5%. This has been popular with teachers, with around 40% of eligible teachers participating.[16]

INCENTIVES BASED ON PERFORMANCE IN THE CLASSROOM MEASURED BY STUDENT RESULTS ON EXTERNAL EXAMINATIONS

Over the last twenty years, many countries and provinces/states have established large-scale assessment systems that test all students, rather than a representative sample of students, in given grade levels. This has resulted in an opportunity to use the examination results to establish a link between student performance and teacher effectiveness, creating new accountability for teachers and the possibility of linking compensation to teacher effectiveness. This has been the case in **Chile**, **Mexico** and the **U.S.** Full descriptions of the programmes in **Chile** and **Mexico** are provided in the section of this chapter on effectiveness. All states in the **U.S.** are required under the No Child Left Behind legislation of 2002 to establish state testing systems and publicly report the results for grades three through eight and once in upper-secondary school in reading and mathematics. This has provided a rich dataset that enables more states to connect schools and, in some states, teachers, to student test results. Some states had established large-scale testing programmes in the 1990s and have used those systems to establish school recognition and incentive programmes.

Incentives for high-performing schools. The Secretary of Education in São Paulo, **Brazil** established a performance incentive system in 2007 that rewarded school teams for meeting or exceeding performance targets for student achievement, enrollment, graduation and dropout rates, and teacher attendance and stability. Teachers in schools that meet all of their targets receive up to an additional three months salary, with the pay proportional to the schools' levels of achievement. Schools that exceed their targets receive additional incentives. The programme has not been evaluated, and it continues. **England**, as part of its performance management system, established a School Achievement Awards Scheme that awards staff bonuses shared by all teachers in schools that have demonstrated high achievement or rapid improvement. Approximately 30% of the schools are identified each year for awards.

In the **U.S.**, the State of **Alaska** (Prince *et al.*, 2008) has a Public School Performance Incentive Program that rewards schools that average more than a year's progress in student reading, writing and mathematics as measured on state examinations. Staff members earn awards ranging from USD 2 500 to USD 5 500 for certified staff, and from USD 1 000 to USD 2 500 for non-certified staff, depending upon the amount of additional growth

the school achieved. **California** has had a Distinguished Schools Awards programme since 1986, honouring primary and secondary schools in alternating years. However, the award is honorific, not financial. As of 2009, schools have to show not only progress in improving student achievement, but must also demonstrate that they are closing the achievement gap among students from different subgroups within their schools.

The State of **Florida** has had a School Recognition Program since 1999 that rewards schools receiving an accountability system designation of "A"; schools making exemplary improvement by improving at least one letter grade or sustaining the improvement the following school year; and alternative schools receiving a rating of "Improving" or improving at least one level. The total amount awarded to schools in 2008 was close to USD 150 million, distributed at USD 85 per student enrolled full-time in the eligible school. The funds may be used for staff bonuses, purchases of instructional materials, equipment or the addition of temporary personnel to assist the school in improving performance. It is up to the staff and school advisory committee to decide how to spend the funds, and, if they select staff bonuses, they must also decide which staff will receive them and how large the bonus is for each person. If the committee cannot decide by November 1st, the funds are divided equally among all staff members.

Over the last decade the **Florida** Legislature has developed and eliminated ideas for linking individual teachers' salaries and bonuses to student performance. The BEST Career Ladder programme was established in 2003 with a pilot funded for four county school districts. While each district developed its own plan, the Teacher Advancement Program (TAP)[17] was recommended as the model. TAP established a career ladder of four steps with additional salary stipends connected to each level. The pilot was cancelled after one year and the programme repealed in 2005 over concerns about the estimated cost of USD 650 million. While the programme was eliminated, districts were still required to develop plans to link teacher salary to performance. Special Teachers Are Rewarded (STAR) was written into the state budget in 2006 to reward 25% of the teachers with a 5% bonus, based on achievement of their students. Because of union and teacher opposition, STAR was replaced in 2007 by the Merit Award Program (MAP). MAP allows districts to develop plans based on group or individual teacher incentives negotiated as part of the collective bargaining process. Districts may develop plans and apply to the state for funding to implement the programme. Only a third of the districts had applied for the 2007-08 school year (Chait, 2007). There has been no evaluation of any of these programmes.

In 2006, the State of **Texas** in the **U.S.** created and funded the largest teacher incentive programme in the country, the Texas Award for Educator Excellence. The programme has three components. The first, the Governor's Educator Excellence Grant (GEEG), provides three-year grants to 99 schools that are in the top third of schools serving highly disadvantaged students and earning an accountability system rating of exemplary or recognised. Schools design their own plans and are required to use gains in student test scores and measures of teacher collaboration, and they can add optional subjective measures of teacher collaboration, teaching in hard-to-staff positions, and teacher initiative and commitment. The first year evaluation looked only at the plans and the attitudes of the teachers. While the programme recommended minimum awards of USD 3 000, the average awards fell between USD 2 897 and USD 3 726, with actual awards ranging from USD 100 to USD 10 937. The initial evaluation found that teachers were generally positive about the programme, perhaps in part because of their direct involvement in its design at the school level. In the mid-year and spring surveys, teachers indicated that they had changed their practice to focus on those behaviours linked to higher student achievement, and those teachers that received awards were more likely to report they had changed their practice in this way. Teachers did not report that the programme had reduced collaboration or lowered teacher morale. Future evaluations will consider if there are resulting changes in student achievement and teacher turnover.

The second component of the **Texas** plan is the Texas Educator Excellence Grants programme, (TEEG) which awards incentives to teachers in schools serving proportions of disadvantaged students that fall in the top half of the state distribution and that have achieved either high scores or great improvement of scores on the state

accountability tests. It requires that 75% of the funds go to teachers determined by the school through objective measures to have demonstrated impact on student achievement and collaboration. Over 97% of the eligible schools applied for the grants in the first year of the program. Participation in the programme is less stable than GEEG from year to year because of the volatility of the Comparable Improvement ratings and budget constraints. While the programme recommends minimum awards of USD 3 000, maximums are often less than this amount. As in GEEG, evaluations showed that teachers were generally positive about the programme and reported they had implemented more classroom practices linked to higher student achievement, but the teachers did not credit the programme for that change. The evaluators did find a sharp increase in teacher turnover among those who did not receive awards or received small awards and a marked increase in teacher retention among those teachers who received high bonus amounts. This is exactly what Lazear (2003) suggested: one of the great values of incentives is their effect on selection: more effective teachers stay while less effective teachers leave. The question to be answered in future evaluations is whether it is the most effective teachers who are receiving the large awards and remaining in the schools.

The third **Texas** programme component, the District Awards for Teacher Excellence, required districts to develop and implement an award plan district-wide or selected campuses. This is the only plan that focuses on districts and allows districts to volunteer to participate. A little over half of the district plans made all schools eligible for participation, while 40% limited participation to a selected group of schools, and about 7% used the funds to implement the TAP. The review of the initial year of the programme was included in the TEEG evaluation (Springer *et al.*, 2008). At least 60% of the grant award must be used to reward classroom Texas school district teachers who are the most effective at improving student performance. The other 40% can be used on teacher stipends, teacher mentors, principal incentives, awards to other campus employees, and elements of the TAP. Springer *et al.* (2008) reviewed the programme but it has not yet been fully evaluated.

North Carolina and **Texas** have used the data from their state-wide accountability testing programmes as the basis for offering bonuses to schools for high performance or growth. Neither Texas nor Florida has yet evaluated the programmes for impacts on student achievement, although Texas plans to continue its evaluations and will look for evidence of impact. **Arizona** and **Missouri** established teacher career ladder programmes that have recently been evaluated using state testing data. The results of evaluations of the Arizona, Missouri and North Carolina programmes are in the section of this chapter on effectiveness.

Certain school districts in the **U.S.** (Koppich, 2008) have established pay-for-performance programmes although their states may not have done so. Houston (Behrstock and Akerstrom, 2008) has had a series of pay-for-peformance programmes since 1976, with the latest, the ASPIRE programme, created in 2006 and now the largest pay-for-performance programme in the **U.S.** Although the current plan encountered major opposition in its first iteration because only a segment of teachers who taught in tested subjects and grades were eligible for awards, it was totally revamped using Sanders' SAS model, a value-added analysis, to make all staff eligible for at least some payments. Teachers are rewarded for value added when their students' progress scores are in one of the top two quartiles in subjects measured by the **Texas** state exams or the Stanford 10, a national norm-referenced exam. All teachers and support staff have access to school-wide bonuses if their school ranks in the top two quartiles of demographically similar schools; if their school ranks in the top two quartiles of progress compared to state education agency-designated comparison schools; if their school earns a ranking of exemplary or recognised; or if 70% or more of the students writing scores meet the college readiness standard in grades 4, 7 or 11 or the top two quartiles in improvement. The total amount of awards per teacher ranges from USD 0-7 800; for instructional support staff from USD 0-1 450; for teacher assistants from USD 0-850; and for operational support staff from USD 0-500. The union and teacher organisations continue to object to the programme and to claims that it has reduced attrition or increased student performance. The largest teacher union representative believes that future work on the system must include the involvement of teachers and

teacher organisations. They also believe that the system is too complicated for teachers to understand what they have done to receive rewards.

The Toledo Review and Alternative Compensation System (TRACS) created in 2002 (Koppich, 2008) provides three tracks: TRACS A providing professional development for teachers requiring remediation; TRACS B for school-based rewards for student performance; and TRACS C for individual teacher performance and eligibility for an additional 15% bonus above base pay. TRACS C requires that teachers have at least five years of successful experience and allows them to move up a career ladder. Career teachers, the first level, focus on an area of student achievement, Accomplished teachers help other teachers as peer reviewers and curriculum developers, and Distinguished teachers serve in high-needs schools for at least three years. The evaluation is underway and will compare the student test scores for TRACS teachers with similar student scores of non-TRACS teachers.

NON-FINANCIAL INCENTIVES

Devolution and greater school autonomy. **Nicaragua** (Parker, 2005) began decentralising the control of its schools in 1993 to move education closer to the community, increase financial resources available for education, and increase efficiency in schools' use of human and financial resources. Schools had the option to become autonomous, based on a vote of 80% of the staff of a school. Autonomous schools created school councils that included parents, teachers, the school principal and a non-voting student. The councils make hiring and firing decisions for staff and principals. Although many teachers voting for autonomous schools expected to receive bonuses from the increased obligatory fees contributed by parents, these bonuses were greatly reduced when fees were banned in 1995 for primary schools and limited in size for secondary schools. The bonuses were eliminated, by law, for all schools in 2002. In a separate program, primary school teachers received up to 30% of base salaries in World Bank incentives for student attendance and in local bonuses from the school council. For secondary teachers, the range moves up to 50% of base salaries. Despite these two bonus programs, Parker found no differences between autonomous and centralised schools in terms of student achievement, although autonomous schools have younger and wealthier students, as well as better resources and infrastructure. She suggested that further research is required and wondered if the instability of teacher incentives has limited their effect on teacher behaviour.

Positive working conditions. Darling-Hammond (1997) has raised the issue of working conditions as a major source of teacher satisfaction and retention. She found a strong association between teachers planning to stay in teaching and their views of the quality of support provided to teachers by the school's administration, as well as the availability of resources and teachers' ability to have a voice in the school's decisions. Other teacher surveys have shown that it is the lack of such positive work environments that contribute to high attrition rates from schools in high- poverty schools and schools with high-minority student populations (Loeb, Darling-Hammond and Luczak, 2005). Teachers in **England** and **Wales** (OECD, 2005) responded very favourably to the 2003 *Raising Standards and Tackling Workload* agreement. This agreement reduced the amount of administrative/clerical duties assigned to teachers by adding support staff and providing them with better training to assume those responsibilities. It also phased in guaranteed, additional planning, preparation and assessment time for teachers. Over 97% of teachers surveyed for the Department of Education and Skills in 2004 responded that teaching and learning had improved because of the agreement, and about half reported that teacher workloads had decreased overall.

In the **U.S.**, a **California** study using teacher survey data linked to district data on salaries and staffing patterns, Loeb, Darling-Hammond and Luczak (2005) examined the connection between teacher attrition and student demographics, working conditions and salary. They found that salaries and working conditions, such as large classes, facilities problems, school schedules based on multi-tracks, and lack of textbooks, are strong and significant factors in teacher turnover. Once those factors have been accounted for, student demographics

become a smaller factor in a teacher's decision to leave a school. Quartz *et al.* (2004) studying graduates of an elite teacher training programme focused on preparation for teaching in inner-city schools found similar results and suggested that student demographics may appear as a proxy for poor working conditions since high-poverty, high-minority schools so often provide poor working conditions. Although it is suggested that teachers leave high-needs schools because they do not feel prepared to meet the needs of inner-city students, the graduates of the programme still left inner-city schools despite their special training. The teachers reported that they went to schools with better working conditions and more opportunities to learn and grow.

External examinations. PISA and PISA-Extension studies in **Germany** (Juerges, Richter, and Schneider, 2004) that compare states with and without external exit examinations have concluded that accountability in the form of external exit examinations leads to higher student achievement in mathematics and German reading, especially in lower secondary schools when exams are imminent. Using surveys of students and parents, the study concluded that teachers of mathematics in states with external exit examinations put more pressure on their students to perform, have more disciplined classrooms and provide exercises that are more innovative and less repetitious than mathematics teachers in non-exam states. Thus, even without specific connections of teacher pay to student performance, Juerges *et al.* (2004) conclude that teachers value their reputations and increase their effort if the output of their efforts, student exam scores, is measured and published, as they are in states with external exit examinations. Maintaining one's reputation is an incentive to work harder for high performance.

Development of new salary systems. While districts, states and nations have created incentive programmes, only a few have replaced the salary schedule with a new system. **Denver** Public Schools is probably the best known, because it created its programme in collaboration with the teacher union and is funded by long-term tax override placed in a trust administered by the district and union. The programme replaces the single salary schedule with optional components selected by the teacher from increased knowledge and skills, willingness to teach in hard-to-staff schools or shortage subject areas, student test scores and annual evaluations. The programme is voluntary for experienced teachers and required for new teachers entering the district after 2006. Although the evaluation has not been completed, Koppich (2008) cites data showing greatly increased interest in teaching in hard-to-staff and hard-to-serve (high poverty) schools: the number of applicants for transfer into the hard-to-staff schools increased by a factor of eight. In a review of the 16-school pilot, the Community Training and Assistance Center (2004) found that teachers reported greater focus on student achievement and the use of student achievement data. However, teachers still had issues of trust in and their perceptions of the fairness of the programme and believed that principals' evaluations were not consistent. They did not believe that there was sufficient alignment among the systems of instruction, assessment, human resources and professional development. Chapter 7 discusses in depth the issue of alignment.

The Vaughn Next Century Learning Center, a charter school in Los Angeles, **California** (Kellor, 2005) provides an excellent example of a new method of rewarding teachers. Although it is a single school, its strategy could be applied more broadly. The plan was designed by a staff committee and approved by a governance committee with the understanding that it would be refined over time, based on identification of aspects through annual staff surveys that could benefit from change. The school uses standard salary steps for the first 11 years and provides one additional step at 15 years of experience. In addition, it provides supplements of USD 1 000-6 000 to the salary for credentials, such as a master's degree or 30 additional credits in education, National Board Certification, Elementary Teaching Credential (*i.e.* for primary level) or Demonstration Teacher certification. Competency-based supplements up to USD 13 000 can be earned annually for Level One, up to USD 3 500 for increased competence in depth of essentials, such as literacy, technology or classroom management; or Level Two, up to USD 5 000 for increased in breadth and depth, for example, in subjects areas or strategies for English Language learners; or Level Three, up to USD 4 000 for high levels of teaching performance in addition to high performance in Levels One and Two. In 2003-04, the school added a Level Four, Distinguished Teacher, for

those who had held Level Three status for five years. The competency-based supplements are evaluated using detailed rubrics based on the Danielson (2008) *Framework for Teaching* and its four levels of performance. The ratings of a supervisor, a peer and self-evaluation all count equally in the final rating.

The Vaughn incentive programme was required for all new teachers and voluntary for those with less than five years of experience, although at teacher request, eventually all teachers were eligible for participation. In the second year, the school added a School-Based Performance Award based on school-wide student achievement on three tests, with goals set for progress on each one, and on report card grades. If the school met its goals, every teacher and administrator received equal awards. The system was later changed to use the new state system, the Academic Performance Index (API), and the school provides awards of USD 2 000 per teacher using the API criteria. The Consortium for Policy Research in Education, University of Wisconsin, conducted an evaluation of the school using hierarchical linear modeling to compare student test scores and teacher competency evaluation scores. The evaluation found a statistically significant correlation between teachers' literacy scores and student achievement in reading on the Stanford Achievement Test, SAT9, and positive gains for mathematics and language arts. The school has exceeded its goals for the API every year since its start and is one of the highest performing public or charter schools in California, despite its disadvantaged student population.

The State of **Minnesota** developed a voluntary Quality Compensation (Q-Comp) system that enabled school districts, in collaboration with the exclusive teacher collective bargaining organisation, to design new salary schedules based on required components. In return, the district receives USD 260 for each full-time student enrolled in the district to implement the programme. According to state guidelines, the alternative teacher professional pay system agreement must:

(1) describe how teachers can achieve career advancement and additional compensation;

(2) describe how the school district, intermediate school district, school site, or charter school will provide teachers with career advancement options that allow teachers to retain primary roles in student instruction and facilitate site-focused professional development that helps other teachers improve their skills;

(3) reform the "steps and lanes" salary schedule and base at least 60% of any compensation increase on teachers' performance using:

  (i) school-wide student achievement gains or locally selected standardised assessment outcomes, or both;

  (ii) measures of student achievement; and

  (iii) an objective evaluation program that includes:

    - individual teacher evaluation aligned with the educational improvement plan… and the staff development plan…; and
    - objective evaluations using multiple criteria conducted by locally selected and periodically trained evaluation team that understands teaching and learning;

(4) provide integrated on-going site-based professional development activities to improve instructional skills and learning that are aligned with student needs…, consistent with the staff development plan… and led during the school day by trained teacher leaders such as master or mentor teachers; and

(5) allow any teacher in a participating school district, intermediate school district, school site, or charter school that implements an alternative pay system to participate in that system without a quota or other limit.[18]

In 2002, the Minneapolis Public Schools (Koppich, 2008) developed a new salary system, Professional Pay (Pro-Pay), under the **Minnesota** Q-Comp programme. In 2006 the district and its teachers' union developed the Minneapolis Alternative Teacher Professional Pay System. It created steps, called career increments, based on

experience, participation in professional development and maintenance of a portfolio. The new lanes of the salary schedule, named professional growth credit lanes, provide additional compensation based on earned National Board Certification, masters' degrees in specific subjects and certificates of specialisation in areas needed by the district, such as English as a Second Language or Gifted and Talented certification. As developed under ProPay, teachers can earn supplements above the salary schedule for participating in professional development, using that experience to conduct action research and developing a paper on how they applied the learning to their classroom activities and what results they achieved. Teachers can also receive additional compensation for assuming additional responsibilities such as mentoring, coaching, leading professional development sessions and serving on or leading school or district committees. Schools received Quality Performance Awards prior to 2008 based on student academic achievement measured by test scores, attendance and satisfaction surveys, and a school's score provides its teachers with additional credit toward compensation. Since 60% of increases in teacher salaries have to be based on student achievement under Q-Comp, the QPA programme is being redesigned. Unlike **Denver**, Minneapolis chose to make its ATPPS initially voluntary for all teachers; however, teachers hired after 2006-07 were required to participate. The district has had annual approval by staff to continue the programme, and it revises portions of the plan each year in response to concerns. There has not yet been an evaluation of the programme's impact on student achievement or teacher recruitment and retention.

EVIDENCE OF EFFECTIVENESS

A variety of incentive plans have been developed in the last 20 years. However, most countries do not mandate or do not have the systems in place to collect data from local schools that would provide researchers with clear evidence to determine what has been effective. States in the **U.S.** have been encouraged, through federal grants, to establish robust data systems that collect data on student and teacher demographics, as well as links between teachers and students that enable researchers to connect the performance of teachers to that of their students. However, it is estimated that fewer than 20 states currently have that capability.

There have been sound evaluation studies of some pay-for-peformance programmes based on student test scores at the national or state levels, primarily in **Chile**, **Mexico** and the **U.S.**; smaller experimental studies of teacher attendance and student test scores in **India**, **Israel**, and **Kenya**; and analyses of teacher surveys regarding the pay-for-peformance programme in **England**; but few of the other types of incentive programmes have been rigourously evaluated.

EVALUATIONS OF NATIONAL AND STATE/REGIONAL PROGRAMMES

Conditional scholarships and loan forgiveness programmes. Most conditional scholarship and loan forgiveness programmes in the **U.S.** have not been rigourously evaluated. Steele, Murnane and Willett (2009) report on a random assignment study of law students done by Field (2009) which found that conditional scholarships increased the likelihood of first job placement in public interest law by 36-45%. Steele *et al.* (2009) studied the State of **California** Governor's Teaching Fellowship programme, which provided a conditional scholarship of USD 20 000, competitively awarded to academically-talented students to attract them to teach in schools in the bottom half of the state's achievement ranking system for at least four years. The programme was in effect for two years before funding problems led to its elimination. Steele *et al.* compared the recipients of that scholarship to others receiving state grants under the Assumption Program of Loans for Education (APLE), which was easier to attain and offered loan forgiveness of USD 11-19 000 for graduates of teacher licensure programmes who taught in shortage subject areas or in hard-to-staff schools for at least four years. Using the APLE database to track recipients for up to four years after earning teacher licenses, the study compared the GTF recipients with the total database of APLE recipients and determined that the GTF scholarship increased by 28% the likelihood that highly talented recipients taught in low performing schools for at least two years. In addition, 85% remained in their schools for at least two years, and 75% completed the four-year commitment.

However, taking the total cost of the programme, approximately USD 14 million, and dividing it by the number of teachers who might not have otherwise taught in low-performing schools, the per-candidate recruitment cost was over USD 19 600 per year per person. Given that individual talent explains only a small portion of teacher effectiveness, Steele *et al.* (2009) suggest that systems explore combining recruitment programmes for highly-talented students with retention incentives based on classroom effectiveness measures.

Retention bonuses. A programme of incentives for teaching in hard-to-staff schools in **North Carolina**, known as the North Carolina Public Schools Bonus Program, was evaluated (Clotfelter *et al.*, 2008). It showed that the USD 1 800 annual incentive paid to experienced teachers of mathematics and science in hard-to-staff or low-performing schools reduced teacher turnover rates by over 10%. The retention programme was discontinued by an incoming governor before the study confirming its effectiveness was published.

Pay-for-performance programmes in Chile and Mexico. The performance bonus plan in **Chile**, the National System of Performance Assessment (*Sistema Nacional de Evaluación de Desempeño de los Establecimientos Educacionales*, SNED), has provided rewards biannually since 1997 to schools in each region whose performance on national examinations places them in the top 25% of performance in the region. Mizala and Romaguera (2005) report that the SNED is not an incentive for additional effort for those schools that always score in the top 25%, nor for those that have never scored in that range. However, for those schools that have a chance of success, it has had a positive effect on student achievement that is significant for individual cycles of the SNED awards and a positive cumulative effect of the different SNED applications over time. In addition, it has affected teachers' attitudes, making them more open to performance evaluation linked to incentive pay. It has also opened the door to greater salary variations in the collective bargaining agreement for 2006, through which the SNED awards double their previous monetary value to 8% of base salary, and the number of schools rewarded has increased to 35%. Even at this level, however, seniority and professional training still provide the greatest incentive for teachers.

A second programme in **Chile** (Manzi, 2008) provides individual teacher incentives based on the the teacher's performance evaluation. The system started with the development of national teaching standards, The Framework for Good Teaching (*El Marco para la Buena Enseñanza*), that outline the criteria for teacher evaluation. The evaluation is based on four components: self evaluation, weighted 10%; evaluation by supervisors, both principal and head of instruction, weighted 10%; a peer evaluation by a teacher from a different school, completing a structured interview based on the criteria of the teaching standards, weighted 20%; and a portfolio, that carries 60% of the evaluation weight. The portfolio gives the teacher the opportunity to showcase and reflect upon how he or she responded to learning goals in the curriculum and contains an hour-long videotape of a lesson that can be analysed by trained observers using a specified rubric based on the performance standards of the teaching framework. Teachers are rated as outstanding, competent, basic or unsatisfactory. The teachers in the top two categories can receive an incentive if they complete an examination of their subject area knowledge. The amounts of the stipend depend upon the score on the examination and range from 5-25% of basic salary. Teachers retain the stipend for up to four years and then must be re-evaluated. Manzi (2008) reports that 60% of the teachers take the test and about half of them receive an incentive award.

Teachers in the bottom two categories of the Chilean teacher evaluation system are offered training to improve their performance. The evaluation provides specific standards within the teaching framework and identifies where the teacher needs to improve so professional development can easily be tied to the specific needs of the individual teacher or of groups of teachers at the school or municipality level. The programme has been in place for six years and consistently evaluates about 60% of the teachers as competent or outstanding, 3% unsatisfactory, and the rest basic. Manzi (2008) suggests that the value of this system is its direct link to the specific criteria in the teaching framework that, if addressed through effective professional development, result

in the greatest impact on the quality of the teacher's performance. This differs from value-added analyses that suggest that the teacher did something to improve student performance, but do not enable the teacher to understand what that was. He cites an interview study by Taut *et al.* (2008) in which stakeholders agreed that the programme had helped to recognise teaching as a valued profession and contributed to a discussion of professional development as a way to improve practice. However, the judgements on the evaluation are strictly subjective despite the use of rubrics, and do not include any use of student performance measures. SIMCE, the national examination system, evaluated the impact of teachers with different evaluation ratings and found that students taught by teachers in the top two evaluation categories significantly outperform their peers who had teachers in the bottom two evaluation categories. Manzi (2008) reports that evaluations by Eisenberg (2008), Leon (2008) and Manzi *et al.* (2008) had findings consistent with these results.

Carrera Magisterial (CM), **Mexico**'s public school teacher incentive programme (Santibáñez *et al.*, 2007; McEwan and Santibáñez, 2005) was one of the earliest programmes to offer economic incentives for teaching performance, having started in 1993. The programme offers additional salary incentives to teachers with permanent contracts and union membership, who are willing to undergo annual evaluations conducted by their school peers, principal and a union representative; participate in professional development activities and be tested on their content; take a general test of subject area knowledge; and have their students tested on national examinations. In addition, teachers get points for seniority and highest degree earned. Teachers can receive a maximum of 100 points, with results of student examinations accounting for a maximum of 20 points. The programme has 5 levels, with teachers earning at least 70 points placed on Level A and earning a bonus of 20% of base salary while those on Level E receiving 150% of base salary. Most teachers eligible for the programme are currently on Level A. Once a teacher receives a salary incentive, it is continued for the rest of the teacher's career.

The evaluation of CM completed for the Mexican Ministry of Education (Santibáñez *et al.*, 2007; McEwan and Santibáñez, 2005) found that although the teacher tests were technically adequate, many items in the teacher content examinations were not cognitively challenging and that the same tests are used no matter how many times the teachers take them. Student examinations were determined to be less technically adequate than the teacher exams, and some examinations at the secondary level were at low levels of cognitive demand, while others were quite high. More to the point, the incentives had no impact on primary student test scores and a modestly positive effect on student test scores for secondary teachers. Once teachers received Level A incentives, there were modest negative effects on their students' test scores. It was also noted that the programme is only a real incentive to improve student performance if teachers have earned at least 50 but fewer than 70 points before student test results are considered. If below 50, the teachers cannot reach the 70 point cut-off and have no incentive to work harder to improve student performance, and if already at 70, there is no need to exert any additional effort. Given the role of educational degrees and seniority in both the base salary and the CM, teachers receive a double incentive for the factors that mean least for teacher effectiveness and student achievement.

Pay-for-performance programmes in U.S. states and school districts. There are a number of evaluations of state and local programmes in the **U.S.** that provide some evidence of positive impact, but suffer from uncertainties due to the design of the programme, the availability of data, or the design of the evaluation. The Teacher Advancement Program (TAP) described in Chapter 1 is used in 14 states in individual schools. It has been evaluated, (Solomon, White, Cohen and Woo, 2007) using William Sanders' SAS value-added method of analysis. The evaluation was funded by its parent organisation, the National Institute for Excellence in Teaching, and its executive director was the lead author. The results of the evaluation in six states found TAP to be effective in terms of TAP teachers outperforming control group teachers in 63% of the comparisons of student achievement growth. Fewer TAP teachers scored a "1" or "2", indicating lower levels of effectiveness

in raising student levels of achievement than the control group teachers. In addition, more TAP teachers scored a "3" or better than those in the control group, indicating that they were significantly more effective in raising the achievement scores of their students, and more TAP teachers had students making an average of one or more years of growth for a year of instruction. TAP is being evaluated by an external organisation, Mathematica, funded by an independent foundation. The first year report (Glazerman, McKie and Carey, 2009) of a random assignment programme did not find any impacts, but that is not surprising in the first year. The evaluation of the programme will continue and will provide more definitive results.

The State of **Arizona** has had a career ladder programme in place for over 20 years. Districts within the state create plans that include teacher performance and additional responsibilities and may include the use of student achievement in determining teacher pay. Under Arizona state guidelines, all new teachers in Career Ladder districts must be evaluated for placement on the Career Ladder. However, new teachers have the choice of whether to participate in the career ladder programme or remain on the district's traditional salary schedule. According to the information provided by the State Department of Education:

> The program supports and encourages collaboration and teamwork, and provides opportunities for leadership and professional growth, with Career Ladder teachers participating in higher-level instructional responsibilities within their districts. The program also allows districts to apply to implement an additional incentive program for other personnel at the school district level and provides awards based upon group, team, school or district.[19]

The **Arizona** Career Ladder programme (Dowling, Murphy and Wang, 2007) has been shown to have a significantly positive impact on student test scores in mathematics, reading and writing after adjusting for differences in students and schools. The effects were stronger for reading and mathematics. There are limitations, however, in the study. Since schools choose to participate in the Career Ladder programme, the differences between schools may not have been totally accounted for by the statistical analysis. In addition, the study did not attempt to provide evidence of what caused the positive impact.

The career ladder programme of the State of **Missouri** (Booker and Glazerman, 2008) uses a combination of teacher tenure, teacher performance and extra responsibilities taken on by teachers to determine salary supplements. While the programme is available to all districts, districts are not required to participate. Districts that have lower per capita income levels receive subsidies from the state so that they can provide the required matching funds. The career ladder has three steps, worth USD 1 500, USD 3 000 or USD 5 000 per year respectively. Moving to each stage requires reviews of the teacher's career ladder development plan and artifacts regarding performance, as well as scheduled and unscheduled observations by the district career ladder review committee. Teachers must participate in extra work with students and attend professional development activities, for at least an additional 60 to 120 hours outside of their regular responsibilities, depending on the stage. More than 25% of teachers from 64% of the districts in **Missouri** participated in the career ladder programme in 2005-06. Booker and Glazerman (2008) concluded that there is some evidence that the programme has a small positive effect on average mathematics achievement, especially in primary grades, but no significant effect on reading. The evaluation was complicated by the lack of experimental conditions, and, when limiting the review to districts that changed their participation status over time, they found no significant effects. Further analysis, using the more extensive test results recently available, is required before policy changes could be recommended.

North Carolina (Vigdor, 2008) has had a system of state testing since the mid 1990s and, since 1996 has awarded bonuses (USD 1 500 or USD 750) to teachers in schools that have either reached an exemplary or expected level of growth in student performance on the state examinations. This is the longest-running bonus programme in the U.S., and it remains popular in the state. While the statistical analyses are complex, schools understand that they have an incentive to increase the mean scores on reading and mathematics tests.

Vigdor notes that the programme's impact on student achievement has been mixed: achievement has improved on both the state exam and the low-stakes National Assessment of Educational Progress in mathematics, but only on the state exams in reading. He also found that the programme's statistical analyses place schools serving at-risk students at a disadvantage and that there has been a significant increase in the number of teachers transferring out of those schools.

South Carolina had a positively evaluated voluntary school and teacher incentive programme (Boozer, 1999) designed to improve student performance. However, the voluntary nature of the programme makes it unclear if the positive impact was due to the fact that the most effective schools and teachers volunteered to participate rather than to the incentive. The programme no longer exists.

There have been evaluations of school-based incentive programmes in a number of school districts. Smith and Mickelson (2000) found positive impacts on student performance in the Charlotte-Mecklenberg County School District in **North Carolina**. However, because the programme was part of a comprehensive reform programme, it is difficult to attribute the positive effects on teacher motivation and student achievement to the incentive programme. This was not an experimental design with a control group, and it included all schools in the district. However, Smith and Mickelson did compare results to other urban districts in **North Carolina** and found greater improvement in Charlotte-Mecklenberg. In the State of **Texas,** the Dallas programme (Ladd, 1999) used a sophisticated regression analysis to account for differences in student backgrounds. While the study found that the district reasonably accomplished its goal of improved student achievement, teachers and the public did not understand how the programme made its decisions, and some suggested that the programme meant that the district expected less from students coming from disadvantaged economic backgrounds. Compared to other large districts in Texas, Dallas did see greater gains. However, the researchers found that this was true the year before the programme began as well, so it was difficult to attribute the improvement to the incentive programme. Dallas eliminated the programme when Texas initiated school and teacher recognition programmes.

Private foundations and the Little Rock School District, **Arkansas,** funded a pilot programme for teachers in five high poverty, low-achieving primary schools, paying bonuses to teachers if their students raised their test scores. The programme was phased in with the first school, providing bonuses based on the number of students achieving certain levels of growth on nationally standardised tests. Four schools that initiated the programme later received bonuses on the basis of gains in average class scores on the same tests. The payments were graduated, based on the size of the gain, and ranged from USD 50 per student for a 0-4 point gain to USD 400 per student for a gain greater than 15 points. The upper limits for a single teacher were about USD 11 000. Principals and aides were also eligible based on school-wide gains. Ritter *et al.* (2008) evaluated the programme by comparing the five schools to similar schools in Little Rock and found that students in the programme schools outperformed their peers in comparison schools by seven percentage points in mathematics, nine in language and six in reading. The attitudes of teachers regarding the programme were not positive at first, but improved. Teachers' attitudes were more positive about their own effectiveness than teachers in the comparison schools. The study did not meet the criteria for quality research of the What Works Clearinghouse in the U.S. Department of Education, because the schools in the two groups did not have an equivalent level of low-income students. In 2007-2008 the State of Arkansas created a pilot alternative compensation programme that could include incentives similar to this, and two districts are participating in the 2008-09 school year.

New York City, **New York,** initiated a group incentive programme in 2007 to reward teachers and union members in high-needs schools that reach 100% of their targets or reach 75% of their targets on the district's Progress Report Card. The targets include student attendance and student, parent and teacher responses to a survey on the school's learning environment; student performance on high-stakes state examinations in English language, arts and mathematics; and improvements in student test scores on the same examinations. Teachers and other

union members in schools that meet 100% of their targets receive USD 3 000, and in those meeting 75% of their targets, USD 1 500. Developed in collaboration with the United Federation of Teachers, the teachers' union in NYC, the programme is voluntary and requires the approval of 55% of the teachers in a school for it to be eligible. The programme evaluation study (Springer and Winters, 2009) uses a random assignment design, with all eligible schools assigned to either an experimental or control group. This methodology provides an opportunity to identify causal relationships between the incentive programme and Progress Report Card results. Since schools did not enter the programme until mid-year of the first year of implementation, one would not expect to see any gains in the first year. In fact, there were no significant differences between the experimental and control groups in the target areas. However, the opportunity to learn about the impact of the programme will come from evaluations of years two and three.

Figlio and Kenny (2007) used the National Education Longitudinal Survey (NELS), along with personnel practices surveys of 2000 schools within NELS to inquire about the use of incentive payments for teachers and to determine if there was a positive relationship between incentives and improvements in student achievement. While they found a positive association between individual teacher incentives and improvements in student achievement, they were unable to determine if the schools that chose to use incentive programmes differed in other important ways that made them more effective, or if it was the effect of the incentive programme. They did find that private, non-Catholic schools were more likely to use teacher incentives than public schools, and non-unionised schools were more than twice as likely to use teacher incentives than unionised schools. These studies point to the need to conduct carefully designed experiments with control groups if researchers are to be able to say with any surety that incentives are the source of improved student achievement. The next section describes experimental studies that had more definitive outcomes, although not all indicated a positive association with the desired outcomes.

Experimental studies of incentives

Randomised evaluation studies are considered the model most likely to establish a causal relationship between an intervention and the resulting change in behaviour. By establishing experimental and control groups from schools and teachers which have been matched on observable factors, the researchers hope to determine if the intervention applied makes a difference in the experimental group that is not seen in the control group. Much of the educational research in the past established correlations between an action and its results, but that basically means that both have been found, not what the relationship is between them. This section provides descriptions of experimental studies of incentives in education.

A series of experiments in India have demonstrated positive effects for incentives improving both teacher attendance and student achievement on external examinations. Duflo, Hanna and Ryan (2007) did a randomised evaluation of a programme to improve attendance in non-formal education centers in rural areas of **India**, where absenteeism of teachers was estimated at over 40%. By offering bonus funds to teachers whose attendance was verified through the use of camera photographs taken by children at the beginning and the end of each day, the programme decreased teacher absences by 19%. In addition, student test scores at the end of programme in those centers increased by 0.16 to 0.21 standard deviations in each subject tested, and 10% more students graduated to attend government education institutions.

Muralidharan and Sundararaman (2008) conducted a randomised evaluation of teacher incentives in rural government primary schools in **Andhra Pradesh**, **India**, which tested two approaches to improving education. The first group of experimental schools received either an additional paraprofessional teacher or a cash block grant to the schools to use for additional resources. The second group of experimental schools received either group performance bonuses for increased school test scores or individual teacher performance bonuses for increased test scores of their students. The four sets of experimental schools, that received the equivalent of

3% additional resources, were compared to similar schools acting as controls. They found that the schools receiving performance bonuses had significantly higher test scores than the control groups, equal to a mean treatment effect of 0.15 standard deviations. The incentive schools scored higher on questions of different levels of difficulty in all five grades in all five districts in which the experiment was conducted. Students also did better on tests of subjects that were not part of the incentive programme. There was no difference between group and individual incentives, but the schools had only three teachers each. The two sets of schools that received additional inputs performed significantly higher than the control groups, with student test scores 0.09 standard deviations above the control schools. Both the input programmes and the incentives were found to be five times as cost effective as the status quo, with the incentives achieving higher levels of achievement.

Lavy (2002) reported on a rank-order tournament run by **Israel** in 1996 among teachers of 12th grade English, Hebrew and mathematics. The teachers received cash bonuses for improving the average number of credits earned by students, the share of students who received a matriculation diploma and the school dropout rate. Sixty-two schools were selected to participate and ranked on their annual improvement levels, with the top third of the schools receiving awards. USD 1.5 million rewards were allocated to schools based on their position in the rankings, with awards ranging from USD 105 000 to the top school to USD 13 250 to the last-ranked school that qualified. The awards were divided into 75% for individual teacher salary bonuses shared as a percent of gross salary by all teachers at the schools and 25% for faculty facilities. By surveying teachers in the experimental and non-experimental groups, Lavy was able to determine that the effects of the teachers in the experimental group were the result of changes in teaching strategies as well as additional effort to respond to individual student needs and offer after-school lessons. In a second experiment, Lavy (2004) compared students' scores on matriculation examinations in an individual teacher rank-order tournament programme conducted in experimental and control schools that provided bonuses up to USD 7 500 for a classroom teacher whose base salary was about USD 25 000. He found that student test scores increased significantly in the subjects that were part of the experiment for both the teachers who actually received the bonuses and those eligible teachers who did not receive them, as compared to a control group of teachers who did not participate. He also found that there were minor positive effects on subjects that were not included. In comparing the results on the two experiments, he concluded that the individual bonus programme was more cost effective than the group bonus programme.

Glewwe, Ilias and Kremer (2008) report on a group incentive programme offered to teachers in grades four and eight in randomly selected primary schools in **Kenya**. The prizes for top scoring and most improved schools ranged from 20 to 40% of a teacher's monthly salary. Since all students who started the programme were counted at the end, teachers were encouraged to reduce dropouts and discouraged from only testing the strongest students. While more students tested, the programme did not affect 8th grade graduation rates or dropout rates. Student test scores did increase during the programme, but the student test scores were not significantly different from those in the control schools once the programme ended. They conclude that the teachers focused on short-term gains to get the incentive payments, rather than long-term learning. For example, teacher absentee rates did not go down during the programme, nor did the quantity of homework assignments go up. The major change in teacher behaviour was the additional number of exam preparation sessions during vacations. Further evidence was that test scores did not improve on examinations that differed from the government examination in format and content and that were not included in the incentive programme.

Marsden and Belfield (2005) surveyed teachers in **England** before, during and after the move to performance pay based on movement to new upper salary scales based on teacher evaluations. Teachers were eligible to apply once they reached the top of the regular salary scale, which required at least eight years of experience. Over 80% of the eligible teachers applied and over 95% successfully crossed the threshold to the upper salary scales. The survey indicated that teachers grew less negative over time, though remained concerned that the

funding for the higher salary levels would not be permanently continued. Teachers saw the plan as promoting more effective co-ordination of school priorities, rather than a financial incentive to work harder. Surveys of head teachers indicated that they saw the plan as helping them identify ways the school could support teachers. The greatest benefit they saw was that the plan made teachers more aware of the school's objectives and helped them prioritise their work. However fewer than half of the head teachers thought that it gave teachers greater incentive to focus on student attainment. In schools where teachers perceived that the performance management system was working well, teachers were more likely to look at the education practices of those schools that ranked higher on league tables of student achievement, indicating that the process has made the teachers more interested in investigating ways to improve their practice.

An evaluation of **England**'s performance pay programme (Atkinson *et al.*, 2004) found that the eligible teachers did raise student performance on the General Certificate of Secondary Education (GCSE) by about half a grade in lower secondary schools, although not equally for all subject teachers, *e.g.* scores for teachers of mathematics did not improve. The authors provided two cautions: since the study applied to teachers with eight years or more of experience, the differences between eligible and ineligible teachers could have been a function of experience. The second caution is that the study was done in schools with good performance management and information technology systems, which were able to submit extensive data, and those schools may not be representative of all secondary schools. In addition, the change in value added for a given teacher over time periods was as great as the difference between teachers in value added within a single time period. This concern with stability of value-added scores will be discussed further in Chapter 5.

There is great variety in the programmes developed across the world to address the challenge of attracting and retaining highly effective teachers in schools serving all students. While there is little evaluation of programmes to attract and retain teachers in hard-to-staff schools and shortage subject areas, school systems must see some benefit in continuing the programmes. However, well-designed evaluation programmes that compare different options have the potential to provide insights on how to make incentive programmes more effective. The experimental programmes that were explicit in identifying key issues in their design provide guidance on both design and implementation of incentive programmes. The Teacher Incentive Fund in the **U.S.**, described in greater detail in Chapter 1, is a federal program that provides grants to states or school districts to develop innovative teacher compensation systems. The wide variety of programmes that will be evaluated through the TIF may expand our understanding of what components of an incentive system motivate teachers to work more effectively to raise student achievement. If those can be expanded to more schools, we may create a more effective teacher force by both motivation and selection, as Lazear (2003) suggested.

ANNEX 2A

INCENTIVES IN EDUCATION

A description of the different incentives that are used in the educational sectors of several countries is presented in this annex. International cases show that incentives can take many forms: financial incentives, knowledge and skills-based incentives, incentives for hard-to-staff schools, incentives for shortage fields, pay-for-performance incentives, and others, including models that use a combination of these. The annex ends with a discussion of teacher attitudes toward incentives based on a review of studies conducted in the **U.S.** and **Australia**.

Financial incentives. In analysing financial incentives to attract and retain teachers, Hassel (2002) outlines four main bases for payment: knowledge and skills, the subject taught, the difficulty of the teaching assignment and school environment, and actual performance in the classroom. Determining the appropriate mix of payments to attract and retain teachers and to encourage their continuous improvement of knowledge and skills is the critical issue, and depends upon the conditions the school, school district or state/regional or national government is facing. While there have been evaluations of some programmes as the later chapters in this book will detail, there is no strong research base to guide the design of effective compensation systems.

Knowledge and skills-based incentives. Financial incentives to increase knowledge and skills, goes beyond traditional incentives of degrees and years of experience in the single salary schedule. Instead teachers have incentives to demonstrate their knowledge and skills either through external examinations or teacher evaluations based on a school system-selected model of teacher effectiveness. Knowledge and skills incentive programmes focus on the continuous improvement of teacher competencies likely to lead to improved student outcomes. In knowledge and skills programmes, teachers can receive additional compensation for a single year or multiple years before renewal is required, or for a lifetime, depending on the system.

Incentives for hard-to-staff schools. The third type of incentive is based on the "dismenities" of the school or its location. Providing incentives for teaching in schools that are hard-to-staff creates an opportunity to attract and retain teachers who otherwise might not have been willing to go to a particular school. Hard-to-staff schools include schools in remote areas, schools serving students from disadvantaged neighbourhoods, and schools serving a high proportion of minority or low-performing students. As noted earlier, it is these schools that have the most vacancies. Both new and experienced teachers assigned to the schools tend to leave as opportunities arise in schools with better leadership, greater resources, greater proximity to cities and services, or with students who are thought to be easier to teach. Continuing annual incentives will assist in recruiting and retaining teachers in these schools, but the size and type of the incentive will need to vary by the type and location of the school. In addition, school systems may offer housing assistance, moving expenses, recruitment and retention bonuses, and loan forgiveness.

Incentives for shortage fields. Another area of incentives is additional compensation for teaching certain subjects, often known as shortage subjects, such as foreign languages, mathematics, science, technology, or special education. This incentive is a response to the supply and demand problem in education. Fewer students majoring in technical areas have gone into teaching, in part because of the salary differentials between the public and private sectors. Therefore, shortage subject incentives are offered over and above the annual salary to teachers with special preparation and certification in the subjects needed. It makes sense to offer these incentives on an annual basis so that they can respond to the market, but it is not enough to offer them only as recruitment incentives: unless they are continued for as long as the shortage lasts, they will not continue to address the salary differentials that exist in the market. In addition to technical areas, special education presents a distinctive case because teachers must often earn both a teaching certification and special certification to meet the needs of students with disabilities. In addition, the intensive nature of the work and the amount of

paperwork involved for special education teachers, at least in **U.S.** schools, have led to shortages in teachers willing to teach in this area. Because the single-salary schedule does not recognise the additional time and effort required, some special education teachers move to classes serving students without disabilities. An incentive may draw them back. However, teachers do not support these incentives, as discussed later in this annex of on teacher attitudes toward incentives.

Non-financial incentives. Vegas and Umansky (2005) point out that incentives can range from non-financial – such as recognition and prestige, gratification of intrinsic motivation, job stability, working conditions with adequate resources and support – to financial incentives such as salary differentials and pensions. Clearly any of these may be more important to some teachers than others, especially at different stages of their careers. There is no definitive research on the effectiveness of non-financial incentives, but a study of prospective teachers looking at options for first job placements can provide insights about the relative importance of certain factors. Milanowski *et al*. (2007) found that prospective teachers are more concerned about the quality and supportiveness of the principal, the availability of an induction programme to support them in their first year of teaching, and curricular flexibility at the school than an increase in salary. Other issues that concern teachers about working conditions are the backgrounds and behaviour of students, co-operation from parents, availability of resources and support staff, and opportunities for collaboration and teamwork with other teachers. For teachers who are parents, opportunities to be at work the same hours their children are at school and to have summers free can be important incentives for entering and remaining in teaching.

Pay-for-performance incentives. The fourth type of financial incentive is known as pay for performance. This includes incentives based on a school's performance on specified indicators, such as test scores, improvements in test scores, student attendance, graduation or dropout rates. In the **U.S.**, the development of national and state examination systems, along with the database infrastructure to connect scores to schools, has made the use of test scores more popular as a basis for incentives. However, rewarding high test scores alone does not recognise the efforts of teachers as much as it rewards those schools that have high-achieving students. The question of how much of that achievement is based on teacher or school efforts as opposed to family background and prior education has led to the use of test score gains as an additional incentive metric. Otherwise a system creates another great disincentive to work at schools with lower-achieving students. While the use of test score gains requires sophisticated statistical analyses, known as the value-added model (VAM), to determine school effects as opposed to the effects of student background and experience, it is becoming an accepted practice (Chapter 5 discusses the issues regarding VAM). In school-based programmes, incentive pay can be distributed to teachers; teachers and principals; or teachers, principals and support staff depending on the design. Advocates of collaboration and teamwork at the schools favour such plans as everyone is able to benefit from the group's accomplishments. However, as mentioned earlier, such plans may encourage "free-riders" who do very little and reap the rewards of the hard work of their peers.

Pay-for-performance incentives can also be directed to individual teachers based on test scores or improvement in test scores of their students. As with school-based incentives, teacher incentives can be based on actual test score levels or the gain in test scores identified as occurring because the student spent that year with the teacher, or both. The pay-for-performance incentive is probably the most controversial. As noted in the beginning of this chapter, there can be great differences in the effectiveness of individual teachers, and researchers have found that the within-school differences between teachers are even greater than the between-school differences. While some argue this is exactly the reason to provide performance-based incentives to individual teachers, others argue that establishing competition among individual teachers at the school is the wrong way to move all students forward. Others question whether the VAM are sufficiently sophisticated and stable to make the necessary discrimination. One response has been to require the use of multiple years of data to increase the number of students used in the analysis and to ensure that a teacher is not being unfairly evaluated because

of characteristics of one year's students or other factors the teacher cannot control. Chapter 5 discusses these challenges in greater detail.

A third variety of pay for performance is additional salary for additional responsibilities. In some systems, this has been a traditional part of compensation. Teachers receive stipends for assuming responsibilities for extracurricular activities, chairing a grade/year level or department of the school, or working with a student-teacher. In current pay-for-performance systems, these are still options, but there are also incentives for teachers to work on the school improvement plan, coach peers in specific areas, lead professional development sessions or mentor less experienced teachers. All of these are focused on the continuous improvement of the school, its teachers and students.

The two ideas of incentives for knowledge and skills and for additional responsibilities (Sclafani and Tucker, 2006) come together in the Advanced Skills Teacher designation in **Australia**, **England** and **Wales**, the Plus teachers in **the Netherlands** and the Specialist Teachers in **New Zealand**, where the teachers are assessed on their skills in curriculum development, improving student achievement, supporting teacher professional development and mentoring new teachers. In their new roles, they are responsible for assisting other teachers in their own schools or, in the case of **Australia**, spending a portion of their time assisting teachers in other schools as well. The additional responsibilities carry additional compensation, ranging from bonuses and reduced teaching loads in **Australia**, **the Netherlands** and **New Zealand** to a higher salary level in **England** and **Wales**. In **England** and **Wales**, an AST at the top of the AST salary scale earns 43% more than a senior teacher at the top of the salary schedule.

Additional areas of incentives. There are additional areas of incentives that do not fall easily into Hassel's schema. The first of these is the incentive to enter the profession. Many countries provide incentives to college students and career changers to attract them to education. Scholarships and loan-forgiveness programmes are used to attract students into teacher preparation programmes. The challenge with scholarships is that many young people who attend the preparation programmes do not enter the teaching profession, thus making the incentive costly and less productive. Loan-forgiveness programmes address this issue by requiring repayment of the loan unless the teacher spends a contracted number of years teaching, usually ranging from three to five years. While there are reports of such programmes, there are no strong studies of their effectiveness.

Flexibility in how teachers use their time is a major incentive for some teachers. For example deferred salary leave plans, available in **Canada** since the 1970s and more recently in some **U.S.** school districts, enable teachers to defer a portion of their salary each year to allow them to schedule a leave with pay at a later time (Jacobson, Hickcox and Stevenson, 1996). This leave can be used for further study or travel to learn about other educational systems. Singapore (Sclafani, 2008) allows teachers to accrue a month of full pay for half-time service or half pay for full-time study for each year of service, for up to 12 months. Teachers are able to use this time in any way that will benefit the Singapore education system. Examples of the activities undertaken include further study in Singapore or abroad, teaching in an independent or foreign school, or working in the private sector to learn more about applications of education knowledge and skills.

Another version of flexibility in the use of time is the opportunity for senior teachers to engage in an increased variety of tasks and to reduce their work schedule with or without a small reduction in salary (OECD, 2005). Some local districts in **Norway** allow senior teachers to reduce time in teaching and general duties to participate in professional development, mentor new teachers, develop curriculum and advise other schools. In **Germany**, Brandenburg allows teachers to reduce teaching time by 50% for a 20% reduction in salary, an opportunity accepted by about 10% of the teachers. **The Netherlands** offers teachers who are 52-55 years old the option to reduce their work schedule by 10% for a 2.5% reduction in salary and teachers 56 and older the opportunity to reduce their schedule by 20% for a 5% reduction in pay. These options may enable systems to retain highly effective teachers who no longer wish to work a full schedule.

Positive working conditions are a major incentive for many teachers. In looking at prospective teachers in the **U.S.**, Milanowski *et al.* (2007) found that the quality of the school leader and the amount of choice in how to implement the curriculum were more important than salary levels in choosing a job. Teachers in **England** and **Wales** (OECD, 2005) responded very favorably to the 2003 *Raising Standards and Tackling Workload*, a national agreement among local education authorities and unions. This agreement reduced the amount of administrative/clerical duties assigned to teachers by adding support staff and providing them with better training to assume those responsibilities. It also phased in guaranteed, additional planning, preparation and assessment time for teachers. Over 97% of teachers surveyed responded that teaching and learning had improved because of the agreement. Darling-Hammond (1997) found that teachers who planned to stay in the profession had more positive views of their support from school leaders, the resources available to them, and their opportunity to have a voice in the decision-making at their schools. This is an important reminder to those developing incentives to attract and retain teachers: the incentive may get the teachers to the school, but those who are effective will not remain without the working conditions that enable them to thrive.

Combination incentive models. In the **U.S.**, a number of school districts have experimented with establishing new compensation systems that combine a number of different incentives with modified or totally redesigned salary schedules. To encourage more innovation in this area in high-needs schools, the U.S. Department of Education created the Teacher Incentive Fund in 2006.[20]

In 2006 and again in 2008, USD 99 million was allocated to fund proposals from school districts and state departments of education, in collaboration with non-profit entities, to develop and implement performance-based teacher and principal compensation systems in high-needs schools. An additional USD 200 million was included in the State Fiscal Stimulus Funding for 2009-2010. The amount of the request from the current U.S. Administration for the 2010 budget is USD 517 million. The programmes must use gains in student test scores in addition to classroom evaluations administered multiple times during the school year, similar to the TAP programme described below. Programmes are also expected to provide incentives for teachers to assume additional responsibilities and leadership roles. Awards ranged from USD 14 million over three years for large school districts to less than USD 1 million for small ones. All grants are provided technical assistance and evaluation through the Center for Educator Compensation Reform, a partnership of educational organisations. The evaluations of the varied programmes should provide valuable information for those who are interested in designing incentive systems.

The Teacher Advancement Program (TAP) is a **U.S.** programme that builds on knowledge and skills incentives with pay for performance to identify, develop, and reward highly effective teachers. It began as a privately-funded programme of the Milken Family Foundation in the 1990s and is now run through the non-profit National Institute for Effectiveness in Teaching (NIET) (The System for Teacher and Student Advancement, 2009). Schools that wish to implement TAP must show that 75% of the teachers approve participation. The programme has four components: multiple career paths, embedded professional development, multiple evaluations of teacher practice, and analysis of student performance. TAP establishes three levels of teacher career positions, starting with career teachers and moving to mentor and master teacher, according to a teacher's interests and accomplishments. As teachers move to higher levels, their compensation increases. The programme provides time during the weekly schedule for teachers to study and collaborate so they are working continuously to improve their practice, and using data and student work to guide their work. What distinguishes the TAP from other programmes is its focus on comprehensive teacher assessment and improving teacher practice. Multiple trained assessors observe teachers four to six times a year and analyse teacher performance using the research-based TAP Teaching Skills, Knowledge and Responsibilities Performance Standards. There are pre- and post-conferences to ensure that teachers are provided feedback that will help them improve their practice. Finally, the evaluation includes an analysis of the test scores of students in the individual teacher's classroom as well as of

students in the school as a whole. The determination of incentives added to the teacher salary are based first on the teacher's position on the career levels, with mentor and master teachers receiving additional compensation for the additional responsibilities they have assumed. In addition, all teachers are eligible for incentive pay, 50% of which is based on the teacher evaluations, 30% on individual classroom achievement growth, and 20% on school-wide achievement growth. A small number of top teachers are selected nationwide each year to receive USD 25 000 awards through the incentive programme. For the most part, teachers in TAP earn incentives in amounts between USD 1 000 and 3 000 annually at the school level. TAP is operational in 14 states, with some districts implementing it district-wide, but many allowing individual schools to opt into participation. It is used in charter schools in three cities. TAP is one of the teacher incentive models being used in some grant programmes designed under the U.S. Department of Education's Teacher Incentive Fund.

Teacher attitudes toward incentives

It is important to know how teachers respond to the new focus on incentives, although there is limited research in this area. In a Public Agenda survey of **U.S.** teachers (Farkas, Johnson and Duffett, 2003), a majority of teachers were in favour of administrators having some discretion in rewarding outstanding teachers. In addition, 70%, supported financial incentives for teachers in low-income neighbourhoods with low-performing schools, 67% supported paying more to teachers who consistently expend more time and effort at school, and 57% supported incentives for National Board Certified teachers. On the other hand, most teachers did not support paying teachers of shortage subjects, such as mathematics or science, more than other teachers, nor did they support paying more to teachers whose students score high on examinations. Additional pay for improving student achievement was supported by about half of the teachers, although the majority of teachers worried that financial incentives in this area would reduce collaboration and positive school cultures. In a later survey of teachers in the State of **Washington**, DeArmond and Goldhaber (2008) found very similar results: 72% were in favour of additional pay for teaching in high-needs schools, but only 41% were in favour of financial incentives for shortage-subject areas. Overall, 82% opposed merit pay, but younger teachers were more supportive than their experienced colleagues, and upper-secondary school teachers were more supportive of both merit- and shortage-subject-area pay than were primary school teachers.

Opinions in the abstract, however, are different from those given when faced with an actual incentive system. Lewis and Springer (2008) surveyed attitudes of teachers and administrators who chose not to participate in the **Texas** Educator Excellence Grant programme, which provides school-wide awards to schools that are in the top half of schools in percentages of disadvantaged students and that have demonstrated academic success or successful improvement on the state examinations. Although 95% of the eligible schools chose to participate, the remaining 5% – a total of 51 schools across the state – did not. Lewis and Springer found their reasons for not participating were based more on the process than on opposition to incentive policies *per se*. Teachers did not think that the process of selecting schools was fair. One group felt that an individual school should not receive the award without acknowledging and sharing the award with feeder or pipeline schools that contributed to the students' achievement. In another case, a school indicated that another school in the district had outperformed them and yet received nothing. Accepting the money might cause conflicts with that school. Teachers were also concerned that decisions about how to allocate the money would be unfair and would cause dissension among their ranks. Finally, particularly in small schools, teachers did not feel the amount of money was worth the time and effort required to implement the programme. Reactions to the system improved after the state revised its procedures and provided greater time for schools to develop their implementation plans.

Ballou and Podgursky (1993) looked at survey data using a limited number of questions on teacher attitudes toward merit pay from the 1987-88 Schools and Staffing Surveys and found that teachers were not negative about merit pay in their districts, even if they did not receive additional funds. In addition, teachers of disadvantaged

students and low-achieving students were generally supportive. This may be the result of their concluding that they had a harder job and deserved additional compensation. Jacob and Springer (2008) surveyed teachers in Hillsborough County, **Florida** about their attitudes toward the Florida incentive programme as well as their general attitudes toward incentives. While over 85% of those surveyed indicated that school districts should place more emphasis on increasing the base salary than on performance incentives, they were more negative about school-wide and group-based incentives than about individual teacher incentives – 59%, 74% and 48% respectively. They were concerned about the impact of incentives on the collaborative culture of teaching. Only about a third of the teachers thought incentives would cause teachers to work harder. When asked on what basis incentives should be rewarded, teachers strongly backed criteria related to additional degrees and years of experience, as well as time spent on professional development. Other areas that over 60% of the teachers agreed were important were: collaboration with peers, efforts to involve parents in their child's education, teaching in hard-to-staff schools or shortage subjects, and the results of independent evaluations of portfolios of teachers' or students' work. Over 50% of the teachers surveyed agreed that National Board Certification and performance evaluations by peers were important. Incentives for student gains and high test scores were supported by 46% and 36% of the teachers respectively – so claims that there is no support for financial incentives based on test scores are exaggerated.

Jacob and Springer (2008) were able to correlate survey responses on incentives to teacher demographics. Again, the younger teachers were more positive about financial incentives than their more experienced peers. Teachers in secondary schools and schools with higher proportions of minority students were more supportive. Three other findings were also important: teachers who believed their principals were good leaders were more positive about incentives, as were teachers with high self-efficacy measures and those who were characterised as risk takers. A survey of teachers in **Australia** in their first ten years of experience found that these younger teachers were more interested in performance-based pay than were more experienced teachers (Skillbeck and Connell, 2004). In a 2006 survey of sophomores and juniors at a large midwestern U.S. university who planned to be classroom teachers, Milanowski (2006) asked the students to rate and then rank four pay scenarios, a) pay for individual performance based on objective measures, such as student achievement; b) pay for developing knowledge and skills, assessed by the principal; c) pay for group performance based on test scores; and d) pay increases for remaining as a teacher with passable performance. The students preferred the first two methods of determining pay, and they responded to the last two in very similar ways, with pay for group performance favoured by only a small percentage of the students. Studies indicating differences in teacher attitudes between less and more experienced teachers could indicate that the financial incentives will become a more accepted practice as more experienced teachers retire.

As discussed earlier, many of the programmes in schools and districts, such as the Vaughn Next Century Learning Center (Kellor, 2005) and the **Denver** Public Schools (Koppich, 2008) required the move to performance-based pay for new teachers, and made it optional for teachers already in the system. This enabled the programmes to offer incentives without fighting a sceptical group of current teachers. Kellor reported that annual attitude surveys at Vaughn showed more positive reactions to the performance pay systems over time, with new teachers expressing more positive agreement than other teachers that the system encouraged them to focus on improving instruction and student achievement and helping one another improve. From a recruitment and retention perspective, 79% of new teachers agreed that the system made Vaughn a more attractive choice, but only 34% agreed that it was an important reason they chose to teach there. Only 49% of more experienced teachers agreed that it made Vaughn a more attractive choice. In Denver, current teachers could use a web-based calculator to determine which salary system is in their best interests and could opt in for up to seven years from the commencement of the programme. About half of the Denver teachers were in the programme during the 2007-2008 school year.

Springer *et al.* (2007) completed an evaluation of the first year implementation of the Governor's Educator Excellence Grant (GEEG) programme in **Texas**. They looked at teacher attitudes toward the programme and various criteria used to identify award recipients. The programme made three-year grants to eligible schools in the top third of those schools serving a larger proportion of disadvantaged students and which had earned an exemplary or recognised rating in the Texas accountability system. Ninety-nine schools developed their plans with the input and approval of their teachers and administrators according to criteria set by the state: 75% of the funds had to go to teachers based on student performance and teacher collaboration, with three other subjective criteria optional. The other 25% could be used for professional development or allocated to bonuses for staff other than teachers. Teachers had generally positive attitudes about the programme, although the authors suggest that may have been in part because of their participation in its development. In attitudes toward objective versus subjective measures, teachers were more positive about the objective measures. Although all schools used the required subjective criterion of collaboration, only half used the optional measure of teacher initiative and commitment, and 15 schools included teaching in hard-to-staff or high-turnover positions as criteria for awards. Teachers did not believe that the programme diminished collaboration among teachers and indicated that they had changed their practice to include more practices believed to positively affect student achievement. However, some teachers noted in their survey responses that they would have changed their practice as a function of their growth and improvement as teachers, even without the GEEG.

Springer *et al.* (2008) evaluated the second and third components of the **Texas** performance-based pay programme, the Texas Teacher Educator Excellence Program (TEEG) and the District Awards for Teacher Excellence (DATE). TEEG provides opportunities for schools in the top half of Texas schools based on the proportion of disadvantaged students enrolled and with high scores or high improvement levels on the Texas state accountability exams. Over 1 000 schools participate in TEEG, although the specific schools eligible changes each year, based in part on the volatility of the Comparable Improvement rankings in the accountability system and the availability of state budget funds. DATE is open to all districts on a voluntary basis and 243 districts participated in the programme in its first year. The evaluators found positive attitudes toward the programmes, especially among the inexperienced staff and those who received awards.

Notes

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5. Halász *et. al.* (2004), p. 22.

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15. New Zealand Secondary Teacher Collective Agreement.

16. Meesters, M. (2003), pp. 63-64.

17. The Teacher Advancement Program is fully described in Chapter 1.

18. Minnesota Guidelines for Q Comp Applications found at *http://education.state.mn.us/mdeprod/groups/QComp/documents/Form/032806.pdf.*

19. Guidelines for Arizona's Career Ladder Program found at *http://www.ade.state.az.us/asd/CareerLadder/.*

20. U.S. Department of Education Teacher Incentive Fund Website: *http://www.ed.gov/programmes/teacherincentive/index.html.*

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