



Teachers' Professional Lives

A View from Nine Industrialized Countries



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TWO DECADES OF ADVANCES IN
EDUCATION AND MEDICAL RESEARCH

Council for Basic Education 2002

Teachers' Professional Lives — A View from Nine Industrialized Countries

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FOREWORD

The United States is facing a crisis in both teacher quantity and quality. Research shows that the single-most important school-based factor for student success is having a talented teacher in the classroom, but the number of high quality teachers in America's classrooms is in decline. Over the next ten years, America's schools will need an estimated two million new teachers. Yet low pay, frustration, and a lack of respect for the profession are deterring young people from becoming teachers, and those who do enter the profession often quit after only a few years. In today's global market for human capital, skilled teachers are becoming a rare commodity.

Here in the United States, the Milken Family Foundation is working to reverse these trends through a number of initiatives that strengthen the teaching profession. Its National Educator Awards program draws attention to outstanding K-12 educators, offering them public recognition, financial rewards and opportunities for professional growth and policy engagement. The Teacher Advancement Program (TAP) is a research-based school improvement model to attract, retain and motivate the best talent to the teaching profession. By reorganizing schools in ways that provide new incentives and supports for teachers, the Teacher Advancement Program enhances the profession and improves student performance.

Recent cross-national studies of student achievement such as the Third International Mathematics and Science Study are also causing us to take a closer look at patterns of achievement abroad. Such research has stimulated a dialogue about variables in national educational systems—from curriculum to demographic disparities to technology access—that explain these international differences. Clearly, quality teaching is a key variable, and it serves us well to examine pre- and in-service teacher training programs, recruitment, and teaching career patterns abroad. This report, *Teachers' Professional Lives—A View from Nine Industrialized Countries*, by the Schools Around the World® program of the Council for Basic Education, compares the

credentialing practices, career paths, compensation and social world of teaching. Hopefully, its findings will enrich our efforts to frame policy and practices that advance teacher quality in the United States.

The Milken Family Foundation expresses its appreciation to the authors of this study for their positive contributions to the dialogue on teacher quality, and to the Council for Basic Education for its ongoing commitment to educational excellence.

Dr. Lewis C. Solmon
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PREFACE

Teachers are at the heart of U.S. education reform efforts, and yet we think too little about their professional lives and how they compare to those of teachers in other countries. This report, *Teachers' Professional Lives—A View from Nine Industrialized Countries*, grows from the work of CBE's Schools Around the World (SAW) program, a partnership of nine countries that uses student work to improve instruction in science and mathematics. Central to SAW is a process of reflecting on student work from teachers' own classrooms that asks if the work is good enough to meet standards or expectations in the district, state or nation.

When teachers look at student work and read other teachers' descriptions of lessons, including the assignment, instructional plan and assessment they often ask about the professional lives of the teachers in the other countries. They want to know about their training, whether they have university degrees in the fields of science and mathematics, how many hours they work, their salaries, how their performance is reviewed, their access to technology and so forth. It soon became apparent that this information would be very useful for SAW's participating teachers and for those who wished to think carefully about how teachers work and how their jobs are recognized and supported.

Often when we look at experiences outside of the familiar, we see important possibilities. International experiences offer the opportunity for these insights. This report is but the tip of the iceberg in using experiences and knowledge from other countries to help us expand our understanding of how to improve teaching and learning in the U.S. Our goal is to create an active conversation among teachers and policymakers around these issues. The U.S. is not alone in trying to improve its educational programs. We have a great deal to learn from each other.

The quality of teaching and learning in our schools is central to the mission of the Council for Basic Education. CBE's other programs that focus on teacher quality include the Standards-Based Teacher Education program that helps arts and science and education faculty work together to prepare future teachers to teach to K-12 academic standards, and the Mid-Atlantic Regional Teachers Project that looks at policy issues related to teacher supply and demand. CBE also provides professional development to teachers and principals.

We are grateful to the Milken Family Foundation for their support of this effort.

Buzz Bartlett,
President
Council for Basic Education

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The Schools Around the World National Coordinators and Senior Research Associates provided the data on which this report is based; without their willingness to answer a large array of survey questions and provide extensive information and references, this report could not have been realized. They are listed below:

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Vice President,
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INTRODUCTION

The professional life of schoolteachers—their preparation, induction, and roles and rewards—is a productive area to examine when seeking strategies for supporting education reform. Understanding how schools are staffed and how teachers are compensated can provide interesting insights into the longevity of teaching careers and student achievement. America’s vast educational policy-making structure, representing almost 15,000 independent school districts, suggest that every policy innovation and implementation strategy for addressing these issues has surely been tried somewhere, but the reality is otherwise. Systems across the United States are all quite similar.

The United States faces massive retirements and a shortage of public schoolteachers. In generating ideas to improve recruitment and retention, it is instructive to look at some of the strategies in other countries. As we seek new insights to support teacher quality reform, we have begun looking at policies and practices abroad. Are teachers abroad paid more for teaching subjects in which there is a shortage of qualified teachers? How prevalent is this practice? Is it easy to recruit and retain teachers, especially from among the country’s best and brightest? How competitive are the rewards of teaching to attract new entrants into the profession?

In this informal study by the Schools Around the World program (SAW)* of the Council for Basic Education, we surveyed eight member countries of SAW: Australia, the Czech Republic, France, Hong Kong SAR, Germany, Japan, Portugal and the United Kingdom. As part of the industrialized world, these countries offer a comparable educational milieu for U.S. policy makers and teachers to examine how critical issues in teachers’ lives are handled elsewhere. The study is intended to give an overview rather than a comparative country-by-country analysis, and to draw attention to policies and practices that may be worthy

of closer examination. Information is also provided about the U.S educational system to lend context to our findings.

The survey was funded by and developed in conjunction with the Milken Family Foundation. The Foundation’s interest in teacher quality helped define the field of questions for our research, which focused on how teachers are recruited to the profession, how they are retained and how they are rewarded.

These issues were elaborated in survey questions that addressed the following topics:

Teacher preparation and certification: What are the requirements for becoming a teacher?

Teacher pay and compensation: What are teachers paid, what variables determine teacher salaries, how do teacher salaries compare with other professions, and what augmentations are possible?

Teaching as a career: Is teaching competitive with other careers in terms of status and recognition? Does it attract and hold new entrants? Does it provide security and opportunities for professional development and advancement? What kind of professional development opportunities are provided?

Assessment and accountability: How are teachers reviewed, for what purposes and with what consequences?

Responsibilities: Do teachers generally teach in their fields of study? How prevalent is out-of field teaching? Do teachers have non-teaching duties? How long is their work year and how many hours a week are spent in instructional activities?

* SAW is an international community of teachers striving to improve science and mathematics instruction and student achievement by sharing student work and teacher commentary on the web and CD ROM and by collaborating across schools, districts, and nations.

Math and science instruction: Are specialists used, and at what levels? How much instructional time per day or per week is spent on these subjects?

Use and availability of technology: How common are computers in schools? How much technology access do students have and under what circumstances?

We conducted the survey among our project coordinators in the participating countries. Each national coordinator answered the same set of questions and supplied individual papers and, in some cases, national documentation. (The coordinators' names and affiliations can be found in the appendix.) Most respondents based their answers on established policies and practices as well as personal knowledge. However, due to the limited availability of information in some of the countries, answers may be incomplete.

The report summarizes the survey results and accompanying country materials. It also draws on information from other sources; most important among them are the reports of the Organisation for Economic Cooperation and Development and the Third International Mathematics and Science Study.

Conducted in the context of the SAW program, the study is also meant to shed light on professional circumstances that may help or hinder teacher success. In the SAW program, teachers evaluate student work resulting from their own teaching and from other countries. In this process, they are likely to consider the professional lives of fellow teachers as factors in their success or failure. We hope this study will help them to gain perspective on their own situation, and also to suggest ways that the system can be challenged to help teachers meet the new demands being placed upon them.

Survey Highlights

Among the findings that emerged in the study, the following carry special significance for the U.S.A.:

Importance of teacher preparation over performance in regard to accountability

The survey showed an emphasis on teacher qualifications, with rigorous requirements for years of study, content knowledge and certification, and less concern with teacher performance. Student achievement is rarely a factor in teacher pay and teachers are not held accountable, collectively or individually, for student achievement. Yet, as in the United States, there is a growing interest in linking rewards to student achievement and mastery teaching. Teacher assessment, where it occurs and involves classroom performance, usually serves as an advisory tool for professional development and sometimes for performance-based pay, bonuses or promotion. A teacher can be dismissed for legal infractions, but rarely for reasons of incompetence or for poor performance evaluations.

Teacher shortages

Of the countries surveyed, the United Kingdom, Australia, France and Germany face acute shortages of teachers or shortages in specific fields of instruction. Some also face a looming exodus of retiring teachers, but many of these teachers will not need to be replaced due to slowing birth rates. Although overall teacher attrition rates are low or negligible, the attrition rates among math and science teachers and in hard-to-staff schools have risen in France, the U.K. and Australia. However, most teachers expect to remain in the system until retirement. As in the United States, governments are proposing special recruitment incentives, such as extra pay for hard-to-staff subjects and schools, and are even recruiting overseas. Overall, however, adequate numbers of teachers suggest that teaching is still an attractive career option in the majority of the surveyed countries, and the profession draws enough new teachers to replace those leaving the system.

Out-of-field teaching

Rigorous subject-matter focused undergraduate requirements generally prepare teachers to work in their fields, particularly at the middle- and secondary-school levels. Because science is taught as an integrated course of study in some of the countries surveyed, science teachers are not limited to a narrow concentration in their subject of study, but are broadly prepared to teach various aspects of science. The attendant flexibility in the system prevents out-of-field teaching from emerging as easily as in the U.S.

Teacher pay, special allowances and bonuses

Teacher compensation is a major consideration in all the countries except Japan and Germany. Even in countries where teacher salaries start out favorably, they generally decline over time in comparison to other professions offering more significant opportunities for salary advancement. Among additional factors that influence teacher pay and compensation, it is noteworthy that a teacher's basic pay can be increased by some or all of the following: teacher's age, marital and

family situation, extra pay for holidays and vacation, annual bonuses, and work location. Germany and Japan are the exception, and teacher salaries there are comparable to salaries of university professors.

Importance of professional development as a coherent, integrated system of teacher support

Japan commands attention for its systematic and comprehensive professional support for teachers. Among its outstanding features are the routine ways and special activities for teacher collaboration and communication. As a recognized "high performing country" in international assessments, Japan's experience carries important implications for how professional development opportunities could be conducted in the U.S.¹

New teacher induction

Some countries surveyed are facing teacher shortages and steep attrition rates. Good induction programs, like Germany's, support teachers as they ease into teaching and assure high quality teaching.

RECRUITMENT

Teacher Preparation and Certification

Teacher preparation is a critical leverage point in the development of quality teachers. The issue is particularly relevant today in the United States. Over two million teachers must be hired to replace those who are retiring and to meet the demand for smaller classes and a growing student population. A shortage of 870,000 teachers is projected, beyond the expected number of regular replacements.² These new teachers are expected to meet new and higher standards of instruction and to teach a student population that is more diverse than ever before.

As a result, requirements for teacher training and certification are undergoing close scrutiny and change. What requirements are in place abroad? What educational credentials are demanded? How are subject matter knowledge and knowledge of pedagogy accounted for? How rigorous are the demands?

Tables 1 and 2 (on the following pages) outline the pre-service requirements of elementary and secondary teachers in the surveyed countries and the U.S.A.

All eight countries surveyed require formal undergraduate or graduate training at the college, university or teacher training institute level, content and pedagogical knowledge, and experience in student teaching or practicums.

Germany's teacher pre-service program is unique in its rigor and differentiation. There are six types of teaching careers that vary by type of school and level of instruction, each with corresponding requirements for mandatory coursework and length of university study.³ Candidates must then complete two years of student teaching and pass two rigorous state certification exams. The first exam focuses on content-area academics and includes a written thesis. Teachers must complete two years of student teaching

and undergo a second exam that focuses on teaching ability and classroom performance.⁴

Teachers in France are also required to pass national exams. As in Germany, there are different exam levels for elementary, middle, and secondary schools. These competitive national exams are organized by the Ministry of Education, and exam results are used to certify candidates for elementary, secondary school, or upper secondary and post-secondary teaching posts.⁵ Each year the number of new positions is dictated by central financial decisions, and the number of positions in each track is determined by the Ministries of Finance and Education. Japan also requires prospective teachers to pass a highly competitive prefectural qualifying exam.

Induction

Novice teachers often receive little guidance or mentoring during their first year or two of teaching, making their adjustment to the profession challenging. An important way to support beginning teachers is through strong induction programs, which can help retain teachers, raise the quality of new recruits and broaden their areas of expertise.

The surveyed countries reported examples of formal as well as informal induction programs, national programs as well as individual school practices.

- Japan's mandatory year-long systematic induction program bolsters the qualifications of all new teachers with retraining in content knowledge, pedagogy and classroom teaching. The program consists of mentored school-based training for a minimum of 90 days, lectures, seminars, and practical training sessions for a minimum of 30 days, including a five-day workshop at the local education center and other institutions outside the school.⁶ In addition, teachers attend a nine-day training retreat at regional professional development

TABLE 1: *Elementary-level teacher pre-service requirements*

	<i>Australia</i>	<i>Czech Rep.</i>	<i>France</i>	<i>Germany</i>	<i>Hong Kong</i>	<i>Japan</i>	<i>Portugal</i>	<i>United Kingdom</i>	<i>United States</i>
<i>Academic qualifications</i>	Three-year diploma in teaching	University degree	University degree	University degree	University degree + Cert. in Education	Junior college or university degree	Three years of university degree	University degree	University degree & credential
<i>Course of study</i>	Integrated subject matter and pedagogy	Two subject areas and pedagogy	Three year degree in general studies, followed by 2 years at national teacher training institution	One or more subject areas, plus pedagogy and didactics	Basic studies and pedagogy	Subject matter knowledge and pedagogy	Culture, science and pedagogy	Math, English, technology and pedagogy	Basic studies and pedagogy
<i>Practice teaching</i>	Three in-school practicums	15 weeks	Some teaching duty during the second year at national teacher training institution	2 years	Field experience, including classroom teaching	3-4 weeks	Yes	Assessed classroom teaching	One semester
<i>Preservice exam</i>	No	No	Competitive national recruitment exam	Two state exams	No	Prefectural certification	No	No	State certification exam(s)
<i>Induction for elementary teachers</i>	No	No	New teachers monitored by senior teachers during their first 2 years	18-24 month introduction practice, including seminars	Organized by individual professional bodies	Compulsory one year for all new teachers	Mandated by law but no real work with teachers to support professional development	Individualized for new teachers based on government standards	New Teacher induction programs, including mentoring, in some districts and states

Source: Reports from SAW National Coordinators

- Most pre-school and elementary school teachers must have a minimum of three years of study with an emphasis on basic education and pedagogy. When three years is the accepted minimum, it is preceded by a rigorous secondary education program.
- Elementary school teachers in Portugal, Hong Kong SAR⁷ and Japan can also be graduates of teacher training institutes or a comparable tertiary institution.

TABLE 2: Secondary-level teacher pre-service requirements

	<i>Australia</i>	<i>Czech Rep.</i>	<i>France</i>	<i>Germany</i>	<i>Hong Kong</i>	<i>Japan</i>	<i>Portugal</i>	<i>United Kingdom</i>	<i>United States</i>
<i>Academic qualifications</i>	Four-year university degree	Masters degree	University degree	Graduate university degree	University degree + Cert. in Education	University degree (B.A., M.A.)	University degree	University degree	University degree & credential
<i>Course of study</i>	Major discipline and pedagogy	Two subject areas	Three-year focus on a discipline, followed by two-year subject area study at national teacher training institution	Two or more subject areas plus pedagogy and didactics	Subject specific and pedagogy	Subject specific and pedagogy	Two subject areas	Subject specific	Subject specific and pedagogy
<i>Practice teaching</i>	3 sessions of several weeks duration	15 weeks	Some teaching during second year at national teacher training institution	2 years	8 weeks	3-4 weeks ^s	490-750 hours	Assessed classroom teaching	One semester
<i>Preservice exam</i>	No	No	Competitive national exam on specific fields	Two state exams: one subject specific, one pedagogic	No	Prefectural exam	No	No	State certification exam(s)

Sources: Reports from the National Coordinators

- Secondary school teachers must have undergraduate or graduate degrees, subject-specific knowledge and pedagogy.
- Germany and Portugal require prospective secondary teachers to hold majors in at least two subject areas although in Portugal in some areas such as mathematics, teacher may hold only a major in that field.
- Subject matter knowledge and university credentials generally rank higher in importance than pedagogical training or classroom performance for secondary school teachers.

centers, or even an ocean cruise with colleagues from other schools and regions. Sponsored by the government, these activities promote communication and collegiality among teachers from different regions and types of schools.

- In the United Kingdom, individualized induction programs based on government standards are developed for each new teacher. Using an individualized “Career Entry Profile,” trainees work toward set objectives that are largely self-defined but build on their initial teacher training, and help develop particular skills relevant to the new school and classroom environment. Trainees receive mentoring and their progress is assessed. The induction process is monitored by an external authority, and candidates who fail to successfully complete their induction process have access to an Appeals Tribunal. The program is intended to help establish a tradition of continued professional and personal development.⁹
- Germany imposes a two- to three-year probationary period. Teachers who receive negative assessments during this period may have their induction phase extended to as long as five years before receiving tenure.¹⁰ During these apprenticeships, teachers receive a reduced class schedule, participate in

classroom observations and assisted teaching opportunities, and receive regular opportunities for professional development.¹¹

- Hong Kong SAR has no centrally organized or mandated induction program for new teachers. Instead, individual schools and professional organizations conduct their own programs, which usually last one to several days. While not standardized, induction programs cover topics such as orientation to the school, the work of a teacher, student guidance and counseling, handling disciplinary matters, assessment practices and issues in education reform. In addition, schools may have a mentor program in which a new teacher is paired up with a mentor teacher for one year.¹²
- All schools in Portugal must provide annual in-service professional development that may include new teacher support and induction. However, these annual training programs do not provide any specific structures for monitoring and assessing the novice teachers’ performance during the induction year.¹³
- In France, new teachers are paired for two years with a senior teacher.¹⁴

REWARD

Teacher Pay and Compensation

Teacher pay in the United States is determined by individual school districts according to level of academic preparation, years of experience, and to some degree, participation in various professional development activities. Teachers earn substantially less than other college graduates and that earnings gap continues through their careers. In 2000, the average annual salary for beginning teachers with a bachelor’s degree was \$27,989 in comparison to \$39,889, the

average salary offer to other new non-teacher college graduates. Among experienced teachers and non-teachers with graduate degrees, the average annual salaries were \$43,313 and \$75,824 respectively.¹⁵

Despite efforts to improve teacher compensation through state-wide increases in starting salaries, bonuses for achieving National Board for Professional Teaching Standards certification and various performance pay opportunities, teacher salaries, like most public sector salaries, have not kept pace with private sector market pay.¹⁶ Teaching still pays less

TABLE 3: *Teacher Pay and Compensation*
(in equivalent U.S. dollars)

	<i>Australia</i>	<i>Czech Rep.</i>	<i>France</i>	<i>Germany</i>	<i>Hong Kong</i>	<i>Japan</i>	<i>Portugal</i>	<i>United Kingdom</i>	<i>United States</i>
<i>Elementary level starting salary</i>	\$25,661	\$6,806	\$19,761	\$29,697	\$26,220	\$21,899	\$18,751	\$19,999	\$25,707
<i>Elementary level after 15 years</i>	\$36,971	\$9,032	\$26,599	\$36,046	\$47,520	\$41,201	\$27,465	\$33,540	\$34,705
<i>Upper secondary-level starting salary</i>	\$26,658	\$8,052	\$21,918	\$35,546	\$26,220	\$21,899	\$18,751	\$19,999	\$25,405
<i>Upper secondary-level after 15 years</i>	\$37,138	\$10,695	\$28,757	\$41,745	\$47,520	\$41,225	\$27,465	\$33,540	\$36,219

Source: OECD Education at a Glance 2001, Tables D1.1a and D.1.1c except Czech Republic, *Koncepce SIPVZ ve vzd_lávání (www.e-gram.cz/koncepce.asp)*, Japan, OECD Education at a Glance 2000, and Hong Kong, *PandaPlanet.com, 2000*

Figures are adjusted to take into account purchasing power.

than other professions. Moreover, the disparity between districts' salary scales influences who teaches in the more advantaged suburbs and who in the more challenging rural and urban schools.

Pay and compensation practices in the surveyed countries are somewhat different. Most countries have a national salary schedule, and those that do not, such as Japan and Australia, show much more salary conformity among and within their states and prefectures than does the U.S. Negotiations with teacher unions often help set salaries.

The key criteria used to determine teacher pay are teachers' educational qualifications-academic degrees and years of study-and teaching experience. Pay is only minimally differentiated by level of instruction: elementary and secondary schoolteachers share similar pay scales.

In France, teacher salaries are also based on a normative ranking system according to teachers' results on the national recruitment exam, as well as the number of hours or periods that a teacher teaches. Furthermore, test scores from the national exam can determine a teacher's position on the salary scale for his/her rank, and progress along the salary scale is also affected by the teacher's classroom performance ratings.

Student achievement and shortage fields

Student achievement and extra pay for shortage fields have emerged as prominent considerations in exploring new pay structures for U.S. public school teachers. Performance-based pay and bonuses are available or under discussion in some states as incentives for teachers to increase student achievement. Many teachers and policy makers are uncomfortable with this development, and it remains to be seen whether it will take hold in the United States.

Of the surveyed countries, only Great Britain has incentive programs that reward teachers who meet government targets for student achievement. Where performance-based pay supplements do exist, they reflect the teacher's classroom performance, not student achievement, and are used in determining promotions and special pay increases. England's Leadership category teachers, for instance, are eligible for pay increases beyond the standard pay scale depending upon their classroom work. In the Czech Republic, teacher classroom performance may influence compensation but this is decided by the school headmaster on a case-by-case basis.¹⁷

Programs offering additional pay for teaching in hard-to-staff fields and schools have recently emerged in the United Kingdom and France. French teachers who commit to five years at a so-called "priority zone of teaching" in the suburbs receive complementary fees and are guaranteed accelerated promotion.¹⁸ England offers recruits to high-need subjects training salaries, bonuses and loan forgiveness.¹⁹ In the Czech Republic, school principals may sometimes use extra pay to attract teachers to a shortage field, however, this at the principal's personal discretion and is not built into the system.²⁰

Additional salary enhancements

Several of the surveyed countries also offer enhancements to the basic teacher salary based on age, family and marital status, location, and for assuming additional responsibilities. Supplemental allowances were reported for the following reasons:

- Germany: teacher's age, family size, and marital status, committee and administrative work, annual vacation and Christmas bonuses;²¹
- Japan: family composition;²²
- United Kingdom: working in the London metropolitan area, management responsibilities; and qualified experienced professionals working with special needs populations;²³
- Portugal: extra teaching hours or supplementary duties as school principal or member of the executive board (a group of 3-5 elected teachers in charge of a school).

Salary competitiveness

In 1999-2000, the average beginning teacher salary in the U.S. was \$27,989, a full 30 percent lower than average starting salaries of all other college graduates.²⁴ That earnings gap widens over time: At \$41,820, the average teacher salary ranks last among seven white-collar occupations ranging from attorneys (average annual salary of \$77,150) to accountants whose annual earnings averaged \$52,323. Even among graduate degree holders, a substantial wage gap exists between teachers and those in other occupations. From 1994 to 1998, older teachers with masters' degrees increased their salaries only by about \$200, earning an average of \$17,000 less than their counterparts in other professions.²⁵

With the exception of Japan and Germany, where teacher pay is comparable to that of university professors and remains so over time, most of the surveyed countries reported that teacher salaries are lower than those of other professions, and tend to decline over time in comparison to other occupations.

- In Australia, the average annual salary of beginning teachers is \$29,000²⁶, comparable to that of accountants, economists, and business graduates. After five years, teacher pay rose by approximately 55 percent while the general increase for other professions is 100 percent or more.
- The United Kingdom reported that teachers' starting salaries of \$22,217 outside London, and \$25,422 in London were almost on par with starting salaries in other professions. However, within three to five years, significant differences emerged.
- In Hong Kong SAR, teachers' salaries can rise from \$26,220 to \$ 47,520 after 10 years. In comparison, an accountant's salary can increase from \$10,800 to \$81,600; a lawyer's from \$24,660 to \$123,360; and an engineer's from \$21,600 to \$74,040 over the same time period.

- The Czech Republic reports that teacher salaries are on a par with health workers and other public service employees and lower than private employees. An experienced elementary or secondary teacher earns approximately \$366 a month, compared to a business degree holder who earns about \$657-\$1052.²⁷ A teacher in a grammar or special professional school (grades 10-13) earns \$412 each month.

Clearly, teachers are not in teaching to become rich. However in Japan, where teacher salaries are comparable to those of university professors, student achievement, as measured by the TIMSS, is also on a high level.

RETENTION

Many talented young Americans enter teaching but soon leave for other careers. Approximately 30 percent of teachers nationally, and 50 percent of teachers in urban areas, leave the school system within five years. Compensation is a primary cause for this defection: U.S. teachers earn less than professionals in any other occupation.

Pay is not the only culprit, however. A dearth of opportunities for growth and advancement within the teaching profession also draws people away from the classroom. Other professions motivate and reward practitioners with opportunities for personal and professional growth, career advancement and mobility, improved working conditions, increased responsibility and increased pay. While education is considered one of the nation's most pressing and urgent concerns, national opinion polls also illustrate the low esteem and respect in which the American public holds teachers and the teaching profession.

With the exception of the United Kingdom, where 40 percent of teachers leave the profession within the first three years,²⁸ overall attrition rates in the surveyed countries are low to negligible:

- Germany: less than five percent;²⁹
- France: Insignificant.

- Hong Kong SAR: less than 10 percent;³⁰
- Australia: 18 percent of female teachers in the age group 25-29 years of age. No equivalent data exists for males, although the main exodus of males from the teaching profession occurs with the 35-49 years of age group.³¹
- Portugal: People who enter teaching normally do not leave for other professions. They have already spent time qualifying for a career in the classroom, and because the student population has decreased sharply, teaching jobs are at a premium. The Portuguese economy has not yet reached the point of absorbing the people qualified in these areas.³²

Retention rates like these should be informative to American education policymakers, as efforts to improve teacher quality by raising the bar effectively increase the requirements and costs of entering the teaching profession. In an era of expanded global opportunities for people with high human capital, how do other nations keep good teachers in the classrooms?

Teaching as a Career

Teaching has declined as a job of first choice for new entrants to the U.S. labor market. The availability of many other options, the attractiveness of other careers,

and low esteem for the teaching profession drives candidates away from classrooms. Not surprisingly, few highly talented students are attracted to the field: Research shows that those who study to be teachers and actually assume teaching jobs tend to score at the bottom of high stakes exams.³³

Several of the surveyed countries also report similar declines in the status of teachers and the profession's lack of appeal to young people. In Portugal, teaching ranks in fifth or sixth place behind other careers, and in Germany, "people occupied by questions of career and position" rarely choose a teaching career.³⁴ In the United Kingdom's 2001 Census, the teaching profession, which previously had been grouped with law and medicine as a "higher profession," was re-classified as a "lower profession" alongside journalism and social work—a clear reflection of its decline in attractiveness and prestige.³⁵

Australia and Japan suggest a more selective environment for teaching. In Japan, teachers are traditionally esteemed and are expected to serve as role models and "not simply as purveyors of knowledge."³⁶ To support this and to ensure that teaching will attract the country's best and brightest, Japanese law requires compensation standards for teachers to be generally *higher* than the standards set for other public servants with comparable academic backgrounds. High teacher quality and status are also reinforced by a highly selective process for candidates: Japan's teachers are among the top five percent of high school graduates who successfully pass the country's national university entrance exams, as well as a highly competitive pre-service exam.

Australia seeks to guarantee that its teacher graduates are qualified and talented by requiring a percentile ranking for admission into university teacher training programs. However, this score is the lowest among other professions like the arts, commerce, computer science, engineering, law and science. Additionally, Australia is witnessing a steep drop in both the number of teacher applicants and the quality of those candidates, even as it faces a critical and worsening shortage of teachers.

Part of teaching's low status, in the U.S. as well as abroad, may be due to its perception as a predominantly female occupation, particularly at the elementary level. For example, in Hong Kong SAR, 80 percent of elementary school teachers and 60-70 percent of secondary school teachers are women.³⁷ In Germany, women comprise 84 percent of elementary teachers, and 65 percent secondary level teachers.³⁸ In Australia, women make up 74 percent of elementary school teachers and about 50 percent of secondary school teachers. Even in Japan, where many secondary school teachers, particularly in the fields of science and mathematics, are men, elementary school teachers are mainly women.

Professional longevity and career mobility

In the surveyed countries, teachers are generally tenured and permanently employed after a probationary period of one to three years, with a low risk of dismissal for incompetence or poor performance reviews. As a result, teaching is most often seen as a life-long career. France may be representative: with the exception of vocation-technical teachers, who are required to have previous experience in their fields, 95 percent of France's teachers enter the profession as a life-long occupation.

Elementary level

Most elementary-level teachers report teaching as their first job. A high number of new recruits to elementary schools come directly from college or university, indicating the appeal of teaching for those just entering the labor market.

- In Australia, elementary school teaching is the first job for 83 percent of teacher graduates.³⁹
- In Hong Kong SAR, 75.4 percent of teacher graduates go into elementary school instruction.⁴⁰
- In France, 94 percent come directly to teaching.⁴¹

Secondary level

Many secondary school teachers enter the field with other professional experience or postgraduate degrees.

- Of Australian secondary school teachers with post-graduate education degrees, 42 percent held other jobs prior to teaching while 53 percent entered teaching right after receiving their first degrees.⁴²
- In Hong Kong SAR, 85 percent of secondary school teachers with graduate education certificates are reported to have worked in other jobs.⁴³

Hong Kong SAR suggests that, although teaching is attractive at the entry level, limited prospects for advancement and the heavy workload imposed on teachers tend to turn away good candidates from the profession. Hong Kong SAR's government is now considering new career paths with few administrative duties so that teachers who love teaching can concentrate on instruction.

Differentiated staffing and career development

Our survey showed that opportunities for advancement are available to teachers, particularly to secondary school teachers holding university degrees.

In several countries, teachers are differentiated into ranks, usually by level of instruction or responsibility, with a corresponding salary scale for each rank. Classifications are based largely on educational degrees, years of study, and teaching experience, but may also be merit-based, reflecting leadership considerations. These rankings determine a teacher's career path, the scope and pace for advancement, and changes in position and responsibilities.

- France uses the results of its national recruitment exam to rank newly recruited teachers. These serve as the basis for the marks they will receive throughout their professional careers and for their salaries.⁴⁴

- The United Kingdom has established leadership ranks to which teachers are appointed by merit. Advanced Skills Teacher disseminate best practices with colleagues, Leadership Teachers play a “strategic role” in the school, and a new “fast track” career path is being implemented for all teachers that will provide opportunities for identifying and retaining future teacher leaders.
- Australia also has merit-based teacher leadership ranks.
- In Germany, where teachers are classified into six different ranks, each related to a specific teaching career, opportunities for promotion to head teacher and headmaster vary among the classifications.⁴⁵
- Hong Kong offers different career paths and opportunities for teachers with a university degree and for those without. Promotion from rank to rank within each career stream is based on required in-service courses, academic qualifications and work performance. Those holding a university degree and teaching in secondary schools can advance to the level of principal.

Our survey shows some notable differences in pay and career advancement possibilities among teacher ranks. For example, in Germany, a teacher at a comprehensive school (*Realschule*), 50 years old, married with one child can earn approximately \$40,000, while a teacher at an academic school (*Gymnasium*) of comparable age and circumstances earns \$47,000. Similarly, some teacher ranks have broader promotional possibilities than do others. In Australia, teachers appointed to the rank of Leading Teacher Level 2 or Level 3 are eligible for performance payments of up to 10 percent of their salaries.⁴⁶ The UK's new “fast track” for future teacher leaders enables teachers to advance along the standard salary scale by double annual increments, and Advanced Skills Teachers and Leadership Teachers are eligible for higher pay scales and additional progression based on performance.

QUALITY OF TEACHERS' PROFESSIONAL LIVES

For teaching to become a learning profession that prepares youngsters for productive lives in the new economy, it must employ the latest technologies and research-based practices. Providing teachers with adequate planning and professional growth time is also an important motivational aspect of the profession. Teachers need the time and opportunities to expand their professional knowledge base and be rewarded for their classroom achievements. This is of particular relevance in hard-to-staff fields such as math and science, where teachers may be teaching out-of-field and receive little professional support. Ongoing applied professional development programs that are tied to learning objectives and regular assessments that measure teachers' progress towards these goals are key to developing a highly qualified teaching corps.

The following section examines some of the factors that influence teachers' work lives: the hours they work, the match between their qualifications and teaching assignments, professional growth opportunities and accountability systems.

Professional Development

The influx of new teachers—many teaching on emergency licenses, others out-of-field—in the U.S. education system has made quality professional development of major consequence. Currently, teachers in the U.S. spend only a limited amount of time on professional development activities: a majority of U.S. teachers spend less than eight hours per year in professional development.⁴⁷ Typically, these programs address the needs of specialized student populations, focus on technology integration, or are tied to implementing state and district standards. However there is no professional development system that supports continuous improvement throughout a teacher's career, nor is there a consensus on how to improve the entire system, either at the state or national level.

For individual teachers, however, the National Board for Professional Teaching Standards offers a compelling goal and several states offer incentives to obtain National Board certification. These may include subsidies to candidates to support certification costs, continuing technical assistance and support networks, and annual bonuses, combined with additional awards or salary increases from local school districts, to board certified teachers. Although almost 10,000 U.S. teachers have achieved National Board certification, it is still too early to assess the actual long-term impact of these teachers on student achievement and the status of the teaching profession.

Among the surveyed countries there is an overarching reliance on the quality of pre-service preparation that a teacher has received. Still, professional development programs are commonly offered to boost teacher qualifications and provide career support. Typical professional development opportunities include seminars, workshops, lectures, course offerings and work toward a university degree or a qualifying exam. Most are optional and taken on a teacher's own time. Compulsory professional development activities are generally encouraged with appropriate financial subsidies and/or release time.

- Teachers in Hong Kong SAR attend compulsory and optional in-service programs. Seminars, and presentations by the Education Department as well as certain courses required for promotion are compulsory. These activities are usually conducted during school hours and are subsidized. Optional activities, which include continuing education courses, may also be subsidized up to 50 percent of the cost. To encourage non-graduate elementary school teachers to get a Bachelor of Education degree, paid study leaves are provided by the school.⁴⁸
- Japan is required by law to provide in-service training for school teachers. Professional development activities occur year-round, both

during and after school hours. Depending upon the prefecture, some of the training may be compulsory. For example, the prefecture of Shizuoka requires all teachers to receive in-service training after five years, and again after 10 years of teaching. Teachers are not paid for participating; however, scholarships are available on a limited basis for teachers to work toward a master's degree. One professional development activity of particular interest to U.S. educators is Japan's "lesson study" system, where teachers work together to solve a particular instructional problem, try the revised lesson, evaluate it, and revise the lesson until the desired learning results are achieved. This methodology promotes regular teacher collaboration and collegiality.

- Teachers in the United Kingdom also have a broad range of opportunities for professional development. All are voluntary and teachers generally do not receive extra pay for participation. Recently, however, the government introduced a National Professional Qualification for Headship which is expected to impose training obligations on teachers who are following this career path.⁴⁹
- Portugal provides seminars, workshops and higher education courses for its teachers through nationwide, short-term courses of a minimum of 15 hours. Although optional, participation in such programs is factored into decisions about promotion and advancement.⁵⁰
- In Germany, professional development activities are optional, and may take place during regular school hours.⁵¹

Accountability and Assessment

A persistent question in the United States is how to make the education system more accountable. In response, attention has shifted to the assessment of teachers' effectiveness—a thorny topic in all countries. Some states and districts in the U.S. are holding their teachers accountable for student achievement. For example, in Kentucky and North Carolina, school-wide

bonuses are determined by increases in student achievement. In states where teachers have union contracts, this connection has not yet been negotiated although there are strong interests moving in this direction. In Iowa, for example, union leaders are members of task forces that have proposed giving teachers salary-based bonuses for their students' gains on standardized tests.

In the countries we surveyed, teacher assessment is commonly conducted, in some instances on an annual or routine basis. The results are used for special pay increases, promotions or professional development purposes.

Teacher assessment is conducted regularly in Hong Kong SAR,⁵² France and Australia. Teachers receive pay increases and move up the salary scale through reviews and ratings that include a teacher's classroom performance.

- Hong Kong SAR conducts assessments several times a year and uses the results for advisory purposes related to the teacher's professional development. In addition to evaluating classroom performance, the assessments examine how teachers mark student work, how they communicate with parents and students, and include reviews from senior colleagues about the teacher's working attitudes.
- In France, inspectors visit classes and evaluate teachers. The region's elementary inspector conducts these assessments at the elementary level, and the subject matter inspector conducts them at the secondary level.
- In Australia, teachers are assessed through the annual performance review process. As a consequence of this review, teachers either move up the salary scale, or after examining factors related to this review, steps may be taken to improve the teacher's performance.

Assessment may also take place on a discretionary basis, as in Germany and the Czech Republic.

- In Germany, assessment is conducted at the request of a teacher who wishes a promotion or a change in position and responsibilities.⁵³
- In the Czech Republic, teacher assessment is conducted solely at the discretion of the headmaster, who decides which teacher and what aspects of teacher performance to assess. The results of these assessments are used more for management purposes rather than as an advisory tool for promotion or professional development, and are not always made available to the teacher.⁵⁴

In the United Kingdom there has been a sharp change toward strict accountability. A national curriculum has been created, and schools are judged against ambitious annual national targets in literacy and mathematics. In conjunction with these developments, the Office for Standards in Education (OFSTED) was created to inspect schools and focus on teacher quality. Its inspectors visit schools spend a week at each school at least once every four years, examine instruction and lessons, and report on problems that may be preventing each school from meeting its targets. Quality teaching is one of the issues they consider, including whether the teachers are qualified in the fields in which they are teaching.⁵⁵

In an effort to keep senior teachers in the classroom, the United Kingdom has introduced a pay incentive for teachers who are at the top of the pay scale. Eligible teachers must demonstrate their abilities in such areas as lesson planning, setting student objectives, effective use of student assessments, as well as student achievement gains.⁵⁶

In some quarters, there is concern that the focus on targets and accountability is driving teachers out of teaching and that the growing number of vacancies is seriously hampering the reform agenda.

Japan does not have an assessment program but is scheduled to implement one soon. The results are expected to be used for performance-based pay increases.

Teaching Assignments

Out-of-field teaching is of increasing concern in the U.S. In public schools, and more so in high poverty schools where math, English, history and physical science classes are often taught by teachers who do not hold educational qualifications in these subjects, approximately 31.4 percent of math, 24.1 percent of English, 53.1 percent of history and 56.9 percent of physical science teachers are teaching out-of-field.⁵⁷

Similarly, over 5,000 math teaching positions in Britain are being covered by teachers not qualified to teach the subject, and out-of-field teaching is increasing in other high-need subject areas - sciences, technology, English and foreign languages.⁵⁸

Most of the other participating countries report that teachers generally teach in their fields of study at the secondary level; and to a limited extent, also in upper middle schools. Australia, France, Hong Kong SAR, Portugal and Japan all provide examples.

- Among 12th grade teachers in Australia: 70 percent of mathematics teachers, 81 percent of biological sciences teachers, and 80 percent of physical science teachers had highest qualifications in third year or honors programs.⁵⁹
- In France, 100 percent of 12th grade teachers have university preparation or graduate degrees in their field of teaching.
- The Portuguese Ministry of Education mandates that teachers with the highest qualifications be responsible for instruction for the last year of secondary school.

In-field teaching or the use of subject specialists is common for math and science instruction at all levels. At the elementary level, teachers with math and science qualifications may serve as classroom teachers, providing instruction in other subjects as well; or they may serve as subject specialists who coordinate instruction in these areas, as in UK elementary schools. In the Czech Republic, all teachers—elementary and

secondary—are certified for general education, but both mathematics and science teachers study in faculties of mathematics, physics, or natural sciences. Pre-service teachers study an average of six to ten subject matter courses in each of two chosen fields. In all science specializations, emphasis is put on laboratory work.⁶⁰

In Germany, out-of-field teaching can be a deliberate effort by the teacher to expand one's scope of expertise or enhance one's career by assuming broader responsibilities. Teachers in elementary schools and non-academic secondary schools may elect to teach courses other than their field of study in order to increase their periods of instruction, or to take on a subject of interest to them.⁶¹

Teaching Math and Science

A shortage of teachers in math and science has been behind some of the reform efforts in U.S. public education. Despite the funds and programs committed to improving their preparation, competition from industry for the small number of math and science graduates has made it difficult to attract enough teachers in these fields.

Several of the countries we surveyed reported no special recruitment programs for math and science teachers, which may indicate adequate numbers of teachers in these fields. However, Australia's teacher crisis is most acute in math and science, and in France, teaching applications have fallen by nearly a third in the past decade, particularly in fields with high private-sector demand such as math and science. The government of France is currently developing initiatives to draw qualified people to the field.⁶²

Britain's teacher shortage is particularly chronic in mathematics. Since 1998, the vacancy rate for math teachers has doubled, and the two to three percent of math majors who do enter postgraduate teacher training programs are rarely high-achieving graduates of good universities. According to one study, after three years, only two-thirds of those math teacher candidates are still teaching in the state school system, while the rest have been lured by careers in the private sector.⁶³

The government in Britain has launched a comprehensive recruit, retain and reward strategy which includes training salaries, bonuses and loan forgiveness to recruit teachers to high-need subject areas like math and sciences, plus further incentives to fill positions in state schools. At the elementary level, math specialists serve as coordinators for instruction.

The surveyed countries report that science is generally taught as an integrated subject through the middle-school level. In Australia, a recent study in one large state reported that in elementary schools, 20 percent of instructional time was used for mathematics, and five per cent for science.⁶⁴ In Japan, where there are a variety of different types of high schools, instructional time for math and science varies among school types. However, the average instructional time for math in elementary grades is estimated to be 15 percent of total hours of instruction; for science, 9 percent. At the high school level, direct instructional time for math is estimated at 10.7 percent of total instructional time; and for science, almost 10 percent.⁶⁵

Several countries require math and science through the high school level. French students take both subjects through the 11th grade, and high school students in Japan must take an integrated science course and three math courses for a total of 10 credits.⁶⁶ However student participation rates in math and science courses are also high in Australia, where they are electives. A 1998 national study in Australia showed that 85 percent of Grade 12 students studied math, and 69 percent chose one or more science courses. At the secondary school level, and to some extent in middle schools, specialists usually teach these and related courses. For example, in Hong Kong SAR, a high school physics teacher may also teach math courses.⁶⁷ In the Czech Republic, teachers trained in these subjects routinely teach the courses from 6th grade onward. Similarly, high school math and science in Portugal are taught by those trained in these fields of study.

Teachers' Working Hours

The average school year in the United States is 184 days with a summer holiday from June to August. The workday is organized into direct instructional time and related duties such as lesson-planning, parent-teacher conferences and committee service, with a high proportion of that time dedicated to instruction. At all levels of schooling, teachers in the United States have very little control of their time and think in terms of days spent at school rather than instructional hours.

	<i>Length of school year</i>	<i>Instructional hours/year</i>	<i>Work week</i>	<i>Instructional hours/week (elementary level)</i>	<i>Instructional hours/week (secondary level)</i>
<i>Australia</i>	200 days	832 hours	38 hours	25 hours	27.5 hours
<i>Czech Republic</i>	200 days	695 hours	42.5 hours		
<i>France</i>	144-180 days	713 hours	35-45 hours	27 hours	18.4 hours
<i>Germany</i>	Between 190 and 220 days	734 hours	41-43 hours (38.5 hours customary for civil servants)	41 hours	43 hours
<i>Japan*</i>	220 days	850 hours	42.5 hours	27 hours	18 hours
<i>Portugal</i>	180 days	664 hours	35 hours	28 hours	14-22 hours
<i>England</i>	190 days	785 hours	33.3 hours		
<i>United States</i>	184 days	955 hours	33.6 hours	27.5 hours	30 hours

Sources: Organisation for Economic Co-operation and Development *Education at a Glance: OECD Indicator 2000*, (Paris: 2000) pp. 229-237; Survey results from SAW Coordinators (2001); Robitaille, *National Contexts* (1997)

Teachers overseas have more flexibility in their work schedules and school site obligations, although variations in the structure of their working time complicates comparisons:

- In Portugal, instructional hours may be reduced for service as a department head, for extracurricular duties, as a function of the teacher's seniority, (e.g., teaching hours may be reduced by eight hours after 27 years in the profession), and as a function of the teacher's age. In the last instance, secondary school teachers age 40 or younger must teach at least 22 hours, while teachers age 50 to 55 are committed to 14 hours of teaching time.
- In Germany, teachers' working hours are comparable to those of other civil servants, but are defined by the number of periods. Generally, part of their instructional time is spent with students and the remainder is spent without students in teaching-related activities such as lesson preparation.
- In Australia and England, teachers are required to be at the school site for a mandatory number of hours per week.
- Teachers in France, Portugal and Germany are only required to be at the school site for their specified instructional hours, with no requirement for non-teaching activities.
- In the Czech Republic, teachers are required to work a specified amount of time, at school or elsewhere, in order to receive a full time salary.

These averages show that secondary-level teachers in the United States carry a teaching load that is at least 30 percent heavier all their foreign counterparts except those in Germany. In addition, U.S. teachers have little time for professional development, planning or evaluation.

*As of 2002, Japan introduces a 5-day school week, with an abbreviated school year of 190-200 days (782 hours).

School-based Technology Use

Recent statistics show that computers and Internet use are widespread in the U.S. Elementary schools have an average student-to-computer ratio of 7:1; in secondary schools the average ratio is 5:1.⁶⁸ In 2000, the number of students per Internet-connected computer dropped to 7.9, making the Internet very accessible to U.S. K-12 students.⁶⁹

According to our survey, computers are widely available in several of the countries, and on a very limited basis in others. While schools may have Internet capacity, we found little or no information on whether the computers are connected and whether teachers are commonly supported by the use of information technology.

Most of the surveyed countries are embarked on major national initiatives to improve computer and Internet access in schools. Typically, computers are located in labs, and, to a very limited extent, in classrooms.

- In the U.K., technology represents the largest and a growing area of curriculum investment, generating government grants, local funding and sponsorships to schools, permitting computers to be located in both classrooms and labs. Under a government initiative, the National Grid for Learning, all schools are expected to be connected to the Grid, providing 75 percent of schoolteachers and 50 percent of students with e-mail by 2002.
- Hong Kong's five-year strategy on Information Technology Learning has established a Quality Education Fund, and has begun equipping schools with IT infrastructure to improve Intra and Internet access. In some cases, teachers have received free

e-mail accounts. There is an average of 40 computers per elementary school, and 82 computers per secondary school.⁷⁰

- In Japan, computers are used rarely in elementary classes. At the lower and upper secondary levels in science, however, they are being used effectively. In mathematics, effective usage is lagging, but there are enormous efforts underway to change this.⁷¹
- In France, computers are available on a shared basis in secondary school labs and libraries and in special locations in town for elementary school use, and the trend is to equip schools with one or two multimedia computers. The student-to-computer ratio 31:1 in elementary school, 14:1 in lower secondary school and to 6:1 in upper secondary schools.⁷²
- In Australia, where the ratio of lab-located computers to classroom computers is close, most of the fast computers tend to be in computer labs. Seventy-one percent of the schools have a student to computer ratio of 15:1.
- Few schools in the Czech Republic have computers for students. When available, they are located in computer labs or in the office of school officials, such as the headmaster or accountant. All senior high schools in the Czech Republic have Internet connectivity, however student access is very limited.

The use of information and communications technology is growing in importance in all the nations represented in the survey. However, universally, teacher use is still limited, and most often found among the younger and scientifically oriented teachers—the early adapters. As technology offers more immediate classroom benefits, it will become more widely used.

CONCLUSION

Despite many similarities, there are distinctive differences between the professional situation of teachers abroad and teachers in the United States.

Generally, a different professional environment prevails for teachers in the eight countries we surveyed. Unlike the decentralized U.S. educational model, with its 15,000 independent school districts and multiple sources of authority, the surveyed education systems are national or strong state-like systems. Consequently, teachers operate in less complex circumstances than in the U.S. Professional requirements and expectations are more coherent, consistent and less open to crosscutting demands and pressures.

Only in the United States must teachers work from standards to curriculum to teaching. The eight countries we surveyed each have national or state curriculum that guides teaching and dictates what must be covered in each class. While this simplifies teachers' lives and allows them to concentrate on teaching and learning, curriculum and planning directives from the central education authority may also reduce their autonomy and feelings of professionalism.

In a notable difference from developments facing teachers in the United States, teachers in most of the countries we studied are rarely held accountable for student achievement, (although England recently introduced a performance-related pay structure). Nor are teachers abroad caught in the difficulties generated by the emergence of student achievement as a political issue. Teachers are not confronted by demands for assessment as part of teacher accountability to determine rewards and penalties. Instead, the emphasis remains on teacher training and support. Teachers are required to know more and to be well qualified. In turn, this emphasis may be a reason for stronger student achievement and less public concern with teacher effectiveness.

In England, student achievement targets by class, student and subject are also having an enormous impact on the lives of teachers. Inspectors visit schools and examine results according to targets, provide professional development according to the target results, and monitor schools closely.

Although teaching has long been a respected and attractive occupation abroad, its status is being threatened by private sector competition, difficult working conditions and a myriad of social problems. France, the United Kingdom and Australia report teacher shortages similar to the increasingly urgent situation in the United States. Britain's dynamic recruiting efforts, better incentives, and restructured teaching profession are positive pro-active steps to alleviating the problem. In the case of Australia, where the government denies the very existence of a teacher shortage, no new programs have been enacted to attract teachers.⁷³ In Portugal, data indicate that after five years of teaching, teachers do not seem inclined to leave the profession even though the career has lost some of its social importance.⁷⁴

A number of factors are worth considering. It is probable that classroom realities, which have driven good teachers out of the system in the U.S., are substantially different here than they are abroad. U.S. classrooms, with their complex student populations and needs, may impose substantially greater burdens and more difficult issues and challenges than those faced by teachers abroad. This is rapidly changing, however, as the non-native populations speakers of these nations increase.

Traditional views about teaching may also influence an interest in teaching as a career: for example, Japan's high regard for teachers as role models and France's view of the teaching profession as being highly competitive. Traditionally, teachers come from the top five percent of high school graduates. High unemployment rates may be another factor: as civil

servants or as tenured professionals, teachers have job security in economies with limited job options and job growth.

For several reasons, we found the professional circumstances of Japanese teachers to be particularly notable, and different in important respects from the situation of teachers here. Teaching is highly regarded in Japan and teachers are paid much like university professors. There is a culture of coherent professional support for teachers, and institutional practices to facilitate collegiality, communication and shared-learning. A sense of professional cohesion and responsibility seems evident among Japanese teachers: They work an uncommonly long school year, routinely working weekends and often holidays, together with colleagues. There is much to consider in Japan's

experience about ways that teachers can be professionally supported, motivated and compensated.

By gathering information and examples elsewhere about practices that characterize teachers' professional lives, we hope to contribute to a broader understanding of approaches here for improving education. We believe that there is a wealth of information to be gleaned from other countries that can inform our discussions about education change and ultimately benefit teachers. However, a focus on policies and practices alone can provide only a partial view of the critical issues in teachers' lives and how they are handled. To gain a fuller understanding, we need also to look at the other side of the situation: how teachers abroad view their own professional circumstances.

ENDNOTES

- ¹ Kazuo Ishizaka, SAW National Coordinator, Japan (unpublished survey results, 2001b) also Ministry of Education, Science, Sports and Culture, *Education in Japan 2000: A Graphic Presentation* (Japan: Gyosei Corporation, 2000).
- ² Lowell Milken, *A Matter of Quality*. (Santa Monica, CA: Milken Family Foundation, 1999).
- ³ Standing Conference of the Ministers of Education and Cultural Affairs of the Lander in the Federal Republic of Germany. *The Education System in the Federal Republic of Germany* (Bonn, 1998), p. 198ff.
- ⁴ *Ibid.*, p. 202.
- ⁵ Robitaille, *National Contexts*, (1997) p. 133.
- ⁶ National Research Council, *Global Perspectives for Local Action*, (1999) p. 72.
- ⁷ Education and Manpower Bureau, *Teacher Education*. (Hong Kong: The Printing Department, 2000), also Education and Manpower Bureau, Hong Kong: *The Facts - Education* (Hong Kong: The Printing Department, 2001a).
- ⁸ National Research Council, *Global Perspectives for Local Action: Using TIMSS to Improve U.S. Mathematics and Science Education* (Washington, D.C.: National Academy Press, 1999), p. 71.
- ⁹ Keith Anderson, SAW National Coordinator, United Kingdom (unpublished survey results, 2001).
- ¹⁰ Standing Conference of the Ministers of Education, *Education System in the Federal Republic of Germany* (1998) p. 205.
- ¹¹ Marianne Perie, Joel D. Sherman, Gabriele Phillips, and Matthew Riggan, *Elementary and Secondary Education: An International Perspective* (Washington, D.C.: National Center for Education, 2000), p. 17.
- ¹² Interviews with headmasters and principals of HK/SAR elementary and secondary schools (2001).
- ¹³ Gertrudes Amaro, SAW National Coordinator, Portugal (unpublished survey results, 2001).
- ¹⁴ Antoine Bodin, SAW National Coordinator France (unpublished survey results, 2001).
- ¹⁵ American Federation of Teachers, *Survey and Analysis of Teacher Salary Trends, 2000*. (Washington, D.C.: AFT, 2000) Table III-2
- ¹⁶ Federation of Public Employees and American Federation of Teachers, *FPE/AFT Compensation Survey 2001 (2001); FPE/AFT Recruitment and Retention Task Force, The Quiet Crisis: Recruitment and Retention in the Public Sector* (2002), pp. 7-8.
- ¹⁷ Ondrej Hausenblas, SAW National Coordinator, Czech Republic (unpublished survey results, 2001).
- ¹⁸ Bodin (2001).
- ¹⁹ Anderson (2001).
- ²⁰ Hausenblas (2001).
- ²¹ Standing Conference of the Ministers of Education, *Education System in the Federal Republic of Germany* (1998) pp. 205-209
- ²² Ishizaka (2001b).
- ²³ Anderson (2001).
- ²⁴ American Federation of Teachers, *Teacher Salary Trends, 2000*.
- ²⁵ Lowell Milken, *Teaching as the Opportunity*. (Santa Monica, CA: Milken Family Foundation, 2000).
- ²⁶ Organisation for Economic Co-operation and Development, *Education at a Glance 2001* (Paris: OECD, 2001).

- ²⁷ Hausenblas (2001).
- ²⁸ BBC News, "Teacher Shortages Worst for Decades," (28 August, 2001) (news.bbc.co.uk/hi/english/education/newsid_1512000/1512590.stm)
- ²⁹ Interview with teacher staff administration at the Ministry of Education, Schleswig-Holstein (2001).
- ³⁰ Hong Kong Institute of Education, *Facts & Figures*, (Hong Kong: HKIE, 1999).
- ³¹ C. Shah, "Teachers: Older, Wiser and Needed," *EQ Australia* (Autumn 1999): pp. 10-12.
- ³² Amaro (2001).
- ³³ Milken (1999).
- ³⁴ Statement of the Ministry of Education, Schleswig-Holstein.
- ³⁵ Anderson (2001).
- ³⁶ Ishizaka, *School Education in Japan*.
- ³⁷ Education Department, *Teacher Survey 1999* (Hong Kong: 2000b) (www.ed.gov.hk).
- ³⁸ Statistisches Bundesamt Hrsg., Bildung und Kultur, Fachserie 11, Reihe 1, *Allgemein bildende Schulen, Schuljahr 1999/2000* (Wiesbaden: 2000). *Statistisches Bundesamt, Schuljahr 1999/2000*
- ³⁹ John Ainley, SAW National Coordinator, Australia (unpublished survey results, 2001).
- ⁴⁰ Hong Kong Institute of Education (1999).
- ⁴¹ Bodin (2001)
- ⁴² Ainley (2001).
- ⁴³ Hong Kong Institute of Education (1999).
- ⁴⁴ Bodin (2001)
- ⁴⁵ Doris Koester-Bunselmeyer, SAW National Coordinator, Germany (unpublished survey results, 2001).
- ⁴⁶ Ainley (2001).
- ⁴⁷ National Center for Education Statistics, *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers* (Washington, D.C.: NCES, 1999) p. V
- ⁴⁸ Education Department, *Code of Aid for Primary Schools* (Hong Kong: 1994a) (ed.gov.hk/ednewhp/resource/edu); Education Department, *Code of Aid for Secondary Schools* (Hong Kong: 1994b) (www.ed.gov.hk/ednewhp/resource/edu); Education and Manpower Bureau, *Papers to the Legislative Council: Respective numbers and percentages of teachers in kindergartens, primary and secondary schools who have been professionally trained and are degree holders* (Hong Kong: 1998b) (www.info.gov.hk/emb/eng/paper/index.html)
- ⁴⁹ Anderson (2001).
- ⁵⁰ Amaro (2001).
- ⁵¹ Standing Conference of the Ministers of Education, *Education System in the Federal Republic of Germany* (1998) p. 217.
- ⁵² Interviews with headmasters/principals of HKSAR elementary and secondary schools.
- ⁵³ Standing Conference of the Ministers of Education, *Education System in the Federal Republic of Germany* (1998) p. 206.
- ⁵⁴ Hausenblas (2001)
- ⁵⁵ Mike Baker, "Accountability vs. Autonomy," *Education Week*, (October 31, 2001)
- ⁵⁶ Jeff Archer, "Pay Scheme Tempest Blows Over Britain," *Education Week*, (November 22, 2000)
- ⁵⁷ Milken (1999)
- ⁵⁸ Chris Brown, "Graduate Careers: Teaching's Not All Bad, You Know," *The Independent* (London: April 26, 2001).
- ⁵⁹ Ainley (2001).
- ⁶⁰ Robitaille, *National Contexts* (1997) p. 101.

- ⁶¹ Statement of the Ministry of Education, Schleswig-Holstein.
- ⁶² Jon Henley, "France struggles to stop teacher exodus," *The Guardian*, Foreign Pages (May 21, 2001)
- ⁶³ Geraldine Hackett and John Elliott, "Unruly kids, times poor pay, plus difficult subject, divided by city salaries, equals no maths teachers," *Sunday Times* (London: May 6, 2001)
- ⁶⁴ Ainley (2001).
- ⁶⁵ Ishizaka, *School Education in Japan* (2001a) p. 33.
- ⁶⁶ Ishizaka (2001)
- ⁶⁷ Linda Darling-Hammond and Velma Cobb (Eds.), *Teacher preparation and professional development in APEC members: A comparative study* (Washington, D.C.: U.S. Department of Education, 1995)
- ⁶⁸ Maryland State Department of Education, "Where We Stand in 2001" Technology Inventory Summary, (MSDE: 2001) (Msde.aws.com/freq.asp)
- ⁶⁹ Education Week, *Technology Counts 2001: The New Divides* (Education Week Special Reports, May 2001) p. 51.
- ⁷⁰ Education and Manpower Bureau, *Information Technology for Learning in a New Era—Five-Year Strategy 1998/99 to 2000/03*, (Hong Kong: The Printing Department, 1998a).
- ⁷¹ Robitaille, *National Contexts*, (1997) pp. 220-224.
- ⁷² Ministère de l'Éducation National, de la Recherche et de la Technologie, *Repères et références statistiques sur les enseignements, la formation et la recherche* (Paris: 2000) p. 31; <http://www.educnet.education.fr/primaire/orientations.htm#equip>.
- ⁷³ Patrick Lawnman, "Teacher Shortage Bites in Schools," *The Australian* (February 3, 2001)
- ⁷⁴ Amaro (2001).

REFERENCES

- Ainley, J., SAW National Coordinator, Australia. (Unpublished survey results). 2001.
- Ainley, J., Robinson, L., Harvey-Beavis, A., Elsworth, G. and Fleming, M. *Subject Choice in Years 11 and 12*. Australia: Australian Council for Educational Research, 1994.
- Amaro, G. *Teaching Mathematics and Science in Portugal*. (Unpublished paper) 2000.
- Amaro, G., SAW National Coordinator, Portugal. (Unpublished survey results) 2001.
- American Federation of Teachers. *Survey and Analysis of Teacher Salary Trends, 2000*. Washington, D.C.: AFT, 2000.
- Anderson, K. SAW National Coordinator, United Kingdom. (Unpublished survey results). 2001.
- Archer, J. "Pay Scheme Tempest Blows Over Britain," *Education Week*, November 22, 2000.
- Assembleia de Republica. *Lei de bases do sistema educativo*. Portugal: AR, 1998.
- Australian Bureau of Statistics. *Child Care, Australia* (4402.0). Australia: ABS, 1996.
- . *Expenditure on Education, Australia* (5510.0). Australia: ABS, 1998a.
- . *Schools Australia 1997* (4221.0). Australia: ABS, 1998b.
- Aviso No. 1132-B/2000 (2a serie) de 21 de Janeiro. *Concurso para colocacao nas escolas e nos quadros de Zona pedagogica de professores dos Ensinos Basico e Secundario*. Portugal: Diario de Republica, 2000.
- Baker, M. "Accountability vs. Autonomy," *Education Week*, October 31, 2001.
- Bodin, A. SAW National Coordinator, France. (Unpublished survey results). 2001.
- British Broadcasting Corporation. BBC News, "Teacher Shortages Worst for Decades," 28 August, 2001.
- news.bbc.co.uk/hi/english/education/newsid_1512000/1512590.stm
- Brown, C. "Graduate Careers: Teaching's Not All Bad, You Know," *The Independent* (London), April 26, 2001.
- Bureau for European Affairs and International Relations. *The Portuguese Education System: The System Today and Plans for the Future*. Portugal: Ministerio da Educacao, 1999.
- Campos, B.P. *Formacao de professores em Portugal*. Portugal: IIE, 1995.
- Campos, B.P. *Teacher Education Policies in Portugal*. Portugal: INAFOP, 2000. (Unpublished paper)
- Committee on Science Education K-12 and Mathematical Sciences Education Board, National Research Council. *Global Perspectives for Local Action: Using TIMSS to Improve U.S. Mathematics and Science Education*. Washington, D.C.: National Academy Press, 1999.
- Darling-Hammond, L. & Cobb, V. L. (Eds.). *Teacher preparation and professional development in APEC members: A comparative study*. Washington, DC: U.S. Department of Education, 1995.
- DeLemos, M. *Schooling for Students with Disabilities*. Australia: Australian Government Publishing Service, 1994.
- Department for Education and Employment. *A Fast Track for Teachers*. United Kingdom: DEE, 1999.
- . *Career Options for Teachers*. United Kingdom: DEE, 2000.
- . *Leadership Programme for Serving Headteachers*. United Kingdom: DEE, 2000.
- . *Schoolteachers Pay and Conditions Document*. United Kingdom: DEE, 2000.
- . *Teachers - Meeting the Challenge of Change*. United Kingdom: DEE, 1998.
- . *Teacher Supply and Demand Modelling*. United Kingdom: DEE, 1997.

- Department of Employment, Education, Training and Youth Affairs. *Selected Higher Education Student Statistics, 1997*. Australia: DEETYA, 1997.
- . *Literacy for All: The Challenge for Australian Schools*. Australia: Australian Government Publishing Service, 1998.
- . *Education Participation Rates, Australia - 1997*. Australia: DETYA, 1999.
- Education and Manpower Bureau. *Information Technology for Learning in a New Era-Five-Year Strategy 1998/99 to 2000/03*. Hong Kong: The Printing Department, 1998a.
- . *Papers to the Legislative Council: Respective numbers and percentages of teachers in kindergartens, primary and secondary schools who have been professionally trained and are degree holders*. Hong Kong: 1998b. www.info.gov.hk/emb/eng/paper/index.html
- . *Teacher Education*. Hong Kong: 2000. www.ed.gov.hk/emb/eng/public/index.html
- . *Hong Kong: The Facts-Education*. Hong Kong: 2001a. www.info.gov.hk/emb/eng/public/index.html
- Education and Manpower Bureau. *Papers to the Legislative Council: Refresher courses for serving teachers*. Hong Kong: 2001b. www.info.gov.hk/emb/eng/paper/index.html
- Education Commission. *Reform Proposals for the Education System in Hong Kong*. Hong Kong: EC, 2000.
- Education Department. *Code of Aid for Primary Schools* (September 1994). Hong Kong: 1994a. www.ed.gov.hk/ednewhp/resource/edu
- . *Code of Aid for Secondary Schools* (September 1994). Hong Kong: 1994b. www.ed.gov.hk/ednewhp/resource/edu
- . *Implementation of Revised Starting Salaries for Staff in Aided Schools*. Hong Kong: 2000a. www.ed.gov.hk/ednewhp/school/sbm/main/sag/eng/download/section7.pdf
- . *Teacher Survey 1999*. Hong Kong: Education Department, 2000b.
- . *School Administrative Guide*. Hong Kong: www.ed.gov.hk/ednewhp/school/sbm/main/sag/front.htm
- Education Week. *Technology Counts 2001: The New Divides*. Education Week Special Reports, May 2001.
- Fullarton, S. 2000. *National Systems of Education: Australia*. (Unpublished paper).
- Graduate Careers Council of Australia. *Survey of Graduate Starting Salaries*. Australia: GCCA, 2001.
- Hackett, G. and Elliott, J. "Unruly kids, times poor pay, plus difficult subject, divided by city salaries, equals no maths teachers," *Sunday Times* (London), May 6, 2001.
- Hausenblas, O. SAW National Coordinator, Czech Republic. (Unpublished survey results) 2001.
- Henley, J. "France struggles to stop teacher exodus," *The Guardian*, Foreign Pages, May 21, 2001.
- Hong Kong Institute of Education. *Facts & Figures*. Hong Kong: HKIE, 1999
- Hong Kong Professional Teacher's Union. *Pay Scale of Teachers in Government and Aided Schools*. Hong Kong: 1999. www.hkptu.org.hk/right/payscale.htm
- . *Primary and Secondary Schools Teachers' Promotion Prospects*. Hong Kong: 2000. www.hkptu.org.
- Ishizaka, K. *School Education in Japan*. Tokyo: International Society for Educational Information, 2000.
- Ishizaka, K., SAW National Coordinator, Japan. (Unpublished survey results) 2001.
- Institut Universitaire de Formation des Maitres. IUFM, www.iufm.education.fr/f_qu-iufm.htm
- Koncepce SIPVZ ve vzd_lávání (State Institute for Information in Education, Czech Republic) www.e-gram.cz/koncepce.asp
- Lawnman, P. "Teacher Shortage Bites in Schools," *The Australian*, February 3, 2001.
- Long, M., Carpenter, P. and Hayden, M. *Participation in Education*. Australia: Australian Council for Educational Research, 1999
- Maryland State Department of Education. "Where We Stand in 2001" Technology Inventory Summary. (MSDE: 2001) (Msde.aws.com/freq.asp)

- Masters, G. and Forster, M. *Mapping Literacy Achievement: Results of the 1996 National School English Literacy Survey*. Australia: J.S. McMillan, 1997.
- Meredyith, D., Russell, N., Blackwood, L., Thomas, J. and Wise, P. *Real Time: Computers, Change and Schooling*. Australia: J.S. McMillan, 1999.
- Milken, L. *A Matter of Quality*. Santa Monica, CA: Milken Family Foundation, 1999.
- Milken, L. *Teaching as the Opportunity*. Santa Monica, CA: Milken Family Foundation, 2000.
- Ministère de l'Éducation Nationale, Ministère de la Recherche. *Chiffres de l'Éducation, 2000*. France: MEN, 2000.
- Ministère de l'Éducation Nationale. *Devenir Enseignant* (brochure d'information). France: MEN, 2001.
- . *Note d'information 00.49*. France: MEN, 2000.
- . *Note d'information 01.04*. France: MEN, 2001.
- Ministere de l'Education National, de la Recherche et de la Technologie. *Reperes et references statistiques sur les enseignements, la formation et la recherché*. Edition annuelle. France: MEN, 2000.
- Ministere de l'Education Nationale. www.education.gouv.fr/
- Ministerial Council on Education Employment Training and Youth Affairs. *National Report on Schooling in Australia: 1997*. Australia: Curriculum Corporation, 1997.
- . *National Report on Schooling in Australia: 1993. Statistical Annex*. Australia: Curriculum Corporation, 1994.
- Ministry of Education, Science, Sports and Culture. *Education in Japan 2000: A Graphic Presentation*. Japan: Gyosei Corporation, 2000.
- . *Japanese Government Policies in Education, Science, Sports and Culture 1998: Mental, Physical Health and Sports*. Tokyo, Japan: Printing Bureau, Ministry of Finance, 1999.
- . *Japanese Government Policies in Education, Science, Sports and Culture, 1999*. Japan: Printing Bureau, Ministry of Finance, 1999.
- . *Statistical Abstract of Education, Science, Sports and Culture: Fiscal Year 2000*. Japan: Printing Bureau, Ministry of Finance, 2000.
- . *International comparison of Education Indicators: 1999*. Japan: Printing Bureau, Ministry of Finance, 2000.
- National Center for Education Statistics. *A Report on the Preparation and Qualifications of Public School Teachers*. Washington, D.C: NCES, 1999.
- . *Life After College: A Descriptive Summary of 1992-93 Bachelor's Degree Recipients in 1997*. Washington, DC: NCES, 1999.
- National Centre for Vocational Educational Research. *Australian VET: TAFE Graduate Destination Survey 1997- National Report*. Australia: NCVER, 1998.
- Organisation for Economic Co-operation and Development. *Education at a Glance 2001*. Paris: OECD, 2001.
- . *Education at a Glance 2000*. Paris: OECD, 2000.
- . *Thematic Review of the Transition from Initial Education to Working Life: Interim Comparative Report*. Paris: OECD, 1998.
- PandaPlanet.com (2000). Salary Index: db.pandaplanet.com/salaryindex/FMPro
- Perie, M., Sherman, J., Phillips, G. and Riggan, M. *Elementary and Secondary Education: An International Perspective*. Washington, D.C.: National Center for Education Statistics, 2000.
- Robitaille, D. *National Contexts for Mathematics and Science Education: An Encyclopedia of the Education Systems Participating in TIMSS*. Vancouver: Pacific Educational Press, 1997.
- Shah, C. "Teachers: Older, Wiser and Needed," *EQ Australia*. Autumn 1999.
- Shimizu, K., Ed. '98-'99 *Kyoiku Data Land* (A Databook of Educational Statistics). Japan: Jiji Tsuusin Sha, 1998.
- Standing Conference of the Ministers of Education and Cultural Affairs of the Lander in the Federal Republic of Germany. *The Education System in the Federal Republic of Germany*. Germany: Bonn, 1998.

Statistisches Bundesamt Hrsg., Bildung und Kultur, Fachserie 11, Reihe 1, *Allgemein bildende Schulen, Schuljahr 1999/2000*. Germany: Wiesbaden, 2000.

Stevenson, H., and Nerison-Low, R. *To Sum It Up, TIMSS Case Studies of Education in Germany, Japan and the United States*. Philadelphia, PA: Mid-Atlantic Eisenhower Consortium for Mathematics and Science Education, 2000.

Teacher Training Agency. *Evidence to Teachers Pay Review Body*. United Kingdom: TTA, 1999.

—. *National Professional Qualification for Headship*. United Kingdom: TTA, 1998.

—. *Supporting Induction for Newly Qualified Teachers*. United Kingdom: TTA, 1999.

—. *Teacher Supply and Recruitment* (miscellaneous papers). United Kingdom: TTA, 1999-2000

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