TEACHERS FOR TOMORROW'S SCHOOLS

SUMMARY

Schools are being asked to play a key role in helping OECD societies adapt to social and economic change; they will not be able to meet such challenges unless teachers are at the centre of the process. This chapter argues that attempts to transform teaching and learning must not neglect the teachers themselves, whose expertise, motivation and organisation needs to be brought to bear in support of change, rather than being neglected or, worse still, regarded as an obstacle.

The transformation of teaching is no easy task, given the size and diversity of the teaching force. Few generalisations can be made across all countries. School teachers compose from 2 to 4 per cent of OECD workforces. The majority are women, at the primary level, in most countries, but this varies across countries, and in secondary schools there are many men – who for example compose three-quarters of upper secondary German and Japanese teachers. Lower secondary teacher salaries vary from 0.8 time average national income per head to 2.9 times. A high proportion of teachers are in their 50s – this too varies widely, from 40 per cent in Sweden to 13 per cent in Austria.

Both younger and older teachers need to be involved in a renewal of skills and attitudes to create schools appropriate for the challenges ahead. Increasingly, professional development is being interpreted to mean more than upgrading the skills of individual teachers, with great stress put on learning that creates lasting improvements in the practices of schools. There are signs that there is still far too little investment in such development, although by its nature it can be hard to measure.

Professional development must be seen in conjunction with fundamental changes in the organisation and methods of schools. Some schools and classes have been transformed by practices such as team teaching, the imaginative use of technology and opening up teaching and learning more to families, communities, public organisations and private entities. There is not yet clear evidence that these are general practices, and indeed they remain patchy. Far from such developments representing alternatives that diminish the role of the teacher, they demand still greater professional skills.

Without change, there is a danger that technological and other developments will make schools and teachers seem increasingly irrelevant, especially to young people. Teacher professionalism should not obstruct change but be redefined to become part of it. The professionalism of the 21st century must include expertise, openness, use of technology and the capacity to adapt and collaborate continuously within schools and networks that are learning organisations.

1. INTRODUCTION

Schools are being charged with a growing range of responsibilities. Their role is seen as central in helping societies adapt to profound social, economic and cultural changes. Their capacity to fulfill these expectations, however, depends crucially on their own ability to manage change, and in particular on whether teachers are able to develop positive and effective strategies to meet the needs of tomorrow's schools.

This chapter considers the role of teachers in the transformation of schools, drawing on a range of recent OECD research and data on teachers today.[1] It starts, in Section 2, by emphasising the need to put teachers at the centre of strategies for lifelong learning, which will require major endeavours among large and diverse teaching forces. Section 3 looks at the characteristics of today's teachers, showing that even though the picture of an aged profession is an undue simplification, there is clearly a need for renewal of teacher knowledge and skills. As Section 4 sets out, professional development is most successful when it goes beyond the updating of knowledge, and aims to be the motor of educational innovation. Teacher involvement is a necessary, but not a sufficient condition for successful reform. Schools as organisations, and school systems, need to decide whether they are willing to consider radical changes to traditional structures. Section 5 explores the degree to which education systems are accepting a range of practices that depart from single teachers in classrooms, adopting conventional teaching methods. Fundamental change should not undermine teacher professionalism, but rather transform it. Section 6 concludes by discussing the role of the professional teacher in the changed environment of 21st century schools.

2. REFORM AND LIFELONG LEARNING – BRINGING TEACHERS BACK INTO THE PICTURE

A plethora of recent educational reforms across OECD countries (see eg. OECD, 1996a; Eurydice, 1996) has aimed to improve educational outcomes for young people. Central to the desired outcomes has been the objective, in theory at least, of making school education the foundation of lifelong learning. Schools are expected to develop an initial set of skills, motivation and culture that will serve on a lifetime basis – for all and not just the well-educated. This marks a significant change from a model that saw school education as a more self-contained process, and challenges education systems to consider more directly their impact on mature citizens' ability to continue learning and to adapt to life's challenges. But while the lifelong learning model may be accepted in principle, it is less clear in practice whether new expectations and aims have created a shared understanding of what it means for initial schooling to build the foundation of skills, motivation and culture that will serve all over their lifetimes.

How far schools are able to transform to become oriented towards lifelong learning will hinge to a large extent on the contribution of teachers. The quality of learning depends directly on the teacher in the classroom, and indirectly on the key part that teachers play in the organisation of schools and school systems. New curricula or assessment policies, or investment in new information and communication technologies, will only produce significant change if they are understood and applied by teachers.

One danger with debate on school improvement and reform is that the focus on what should occur in schools – such as high quality teaching and learning – can neglect the human beings who must make these things happen. A focus on "learning" is necessary, especially in emphasising outcomes of education for students, but risks playing down the importance of the teacher by regarding him or her as just one of many influences. Even a focus on "teaching" can overlook the importance of the expertise, motivation and organisation of the staff who carry it out. The delivery of good teaching by a particular corps of professionals needs to be recognised as central to learning outcomes.

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1. The chapter has been developed as part of the CERI project on "Schooling for Tomorrow". It remains the case, as emphasised in the 1990 OECD study *The Teacher Today*, that teachers in other settings, especially vocational education and training, but also higher and adult education, tend to be much neglected (compared with such matters as curricula, accreditation, student support, etc.).

This centrality of teachers is not always properly recognised, especially at the political level when the case is made for reform. A worldwide review of reform proposals (Villegas-Reimars and Reimers, 1996; see also UNESCO, 1998) describes the teacher as the "missing voice in educational reform":

> "...[in] calls for reform and in the options which are brought forth to change schools, there is surprisingly little attention to the role of teachers. Some of the proposals for change advocate 'teacher-proof' innovations, which can sustain the impetus for change in spite of the teachers. In some other cases, teachers are absent from the discourse about change. In yet other cases, the role of teachers is not central to the proposals for change." (p. 469)

In recognising the importance of teachers in implementing reform, it is not enough to regard teacher policy as a personnel issue. While pay, work conditions and qualifications matter acutely to teachers and influence quality by making the profession more or less attractive, teachers cannot be regarded as mere foot-soldiers implementing orders from above. They are at the heart of the process. Successful reform does not take place "despite" teachers, but rather ensures that their contribution is maximised.

3. MANY TEACHERS, DIVERSE PROFILES

Efforts to involve teachers in educational change need to be directed at an extremely large and by no means homogeneous group of people. The characteristics of teachers have to be taken into account when developing policies affecting in-service training, professional development and the conditions in which teachers operate, all of which can help equip schools to respond to new challenges.

It is difficult to generalise about the profile of teachers, especially internationally, since patterns vary from one country to another. Figure 2.1 shows, for a number of teacher characteristics, the distribution of country experiences. The precise numbers are given in the data appendix; these summary graphs suffice
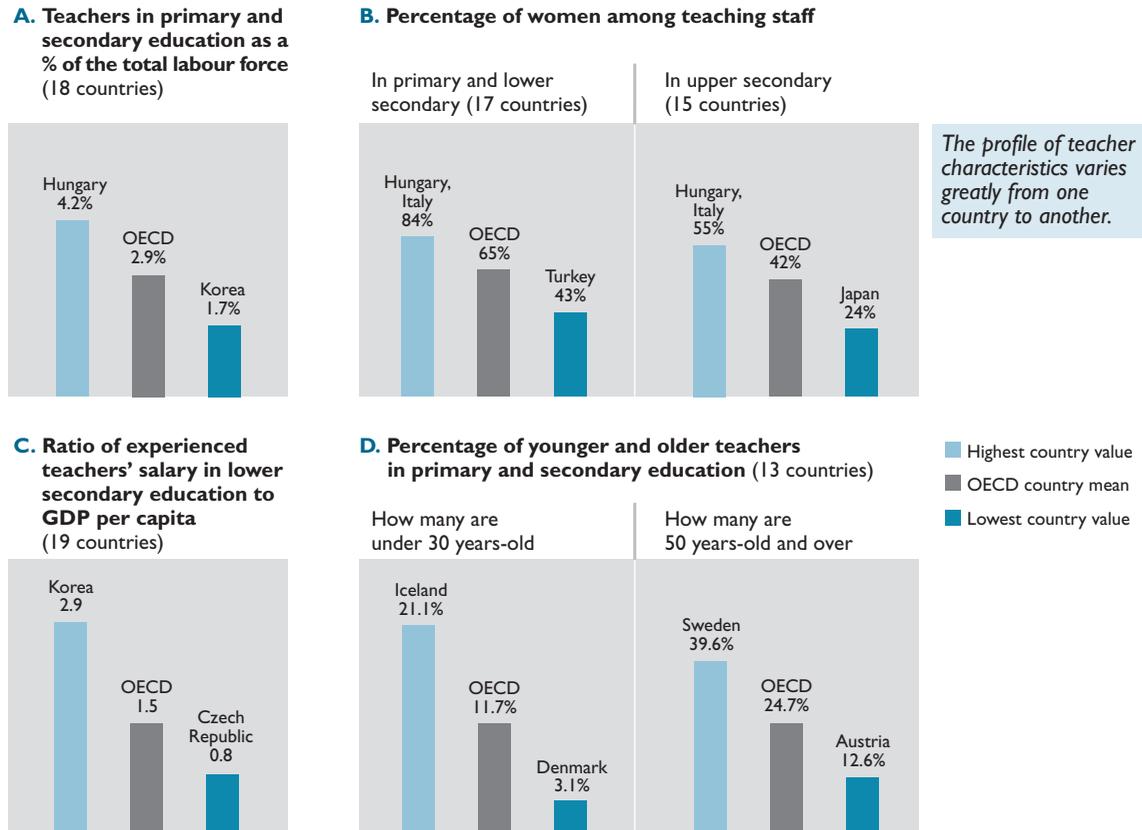
to show the *range* of teacher characteristics by country. The present picture confirms the findings of a 1990 review,[2] which warned against excessive generalisation about teachers and teaching. In particular, the idea that teacher numbers were in decline, that teaching was mainly feminised and that teaching was an ageing profession were found to be simplifications or exaggerations.

Today, as can be seen in Part A of Figure 2.1, school teachers do indeed constitute a substantial percentage of the total employed labour force, but this proportion varies greatly from under 2 to over 4 per cent. The size of the teaching force is a key factor in relation to a number of policy issues, including those of financial resources, since compensation to teachers accounts on average for about two-thirds of current expenditure on primary and secondary education in OECD countries. The cost of education reform is also bound to be influenced by the need to introduce change among a very large number of teachers. Moreover, in considering the size of the education sector it should be borne in mind that the 3 per cent average covers neither personnel outside the school sector nor non-teaching staff within it. Including these categories, an average of over 5 per cent of the employed population is engaged in education (in countries for which such data are available), making it one of the largest single "industrial" sectors.

Figure 2.1 confirms, secondly, a finding of the 1990 review that the level of "feminisation" of teaching varies greatly both by country and by level of education within countries. While many teachers are women, and they dominate the profession in pre-primary and primary schools – in some countries (such as Italy), overwhelmingly so – at secondary level the sexes are in fairly even balance, and in some cases women are the minority. For upper secondary teachers, alongside a small number of countries where women

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2. OECD(1990). Certain developments relating to teachers have been subject to OECD analysis over the intervening period (eg. OECD,1996*b* and 1997*b*). Comparable data remain limited, though in some areas, such as age of teachers, improvements are imminent.

Figure 2.1
National variations in selected teacher characteristics, 1995

A. Teachers in primary and secondary education as a % of the total labour force (18 countries)

Hungary
4.2%

OECD
2.9%

Korea
1.7%

B. Percentage of women among teaching staff

In primary and lower secondary (17 countries)

Hungary, Italy
84%

OECD
65%

Turkey
43%

In upper secondary (15 countries)

Hungary, Italy
55%

OECD
42%

Japan
24%

The profile of teacher characteristics varies greatly from one country to another.

C. Ratio of experienced teachers' salary in lower secondary education to GDP per capita (19 countries)

Korea
2.9

OECD
1.5

Czech Republic
0.8

D. Percentage of younger and older teachers in primary and secondary education (13 countries)

How many are under 30 years-old

Iceland
21.1%

OECD
11.7%

Denmark
3.1%

How many are 50 years-old and over

Sweden
39.6%

OECD
24.7%

Austria
12.6%

- Highest country value
- OECD country mean
- Lowest country value

Sources: OECD Education Database and Eurydice (1997).
Data for Figure 2.1: page 77.

represent over half of the full-time teaching forces (Italy and Hungary), are those countries with reported data where the balance is either very even (New Zealand, Spain, Austria, United States) or where men well out-number women. In Japan, Germany and Korea, only a quarter of teachers at this level are women.[3]

A third type of teacher characteristic, about which the OECD has been gathering an increasing range of data through the INES project (on International Indicators of Education Systems), is the conditions under which they are employed. Figure 2.1 reports that experienced teachers' average salaries vary between 0.8 and 2.9 times average GDP per capita. Other data (OECD, 1996*a* and 1997*b*) show for example that:

- S*tudent-teacher ratios* vary, in primary schools, from 1:24 in Ireland, to 1:10 in Italy. Actual class sizes reported by fourth-grade mathematics teachers show that the most frequent range is 21-30 pupils. The exceptions are: Norway, where the majority are in classes of 20 or below; Ireland, New Zealand and Japan, where 31-40 is the most common size, and

3. The OECD data refer to full-time teachers only, hence some modification might be expected by including part-timers. In some countries, this is not significant: countries with sizeable numbers of part-time teachers tend to be either, such as Germany and the Netherlands, with relatively low rates of feminisation to start with, or else are the Scandanavian examples (Denmark and Sweden), where men as well as women work part-time in teaching (Eurydice, 1997, p.113). At the same time, norms of what constitutes "part-time" also vary significantly.

Korea, where over two thirds of students are in classes with over 40 children.

- The *amount of time* spent working inside and outside classrooms has been estimated at the lower-secondary level. Swedish teachers are contracted to spend 576 hours per year supplying instruction; in the Netherlands and the United States, teachers spend more than 900 hours in class. On top of this, survey data show that in any one week, mathematics teachers spend an average of between 10 and 17 hours on preparation, marking and other out-of-school activities.

- The *role of the principal* is interpreted very differently from one country to another. The position of the principal in the school has an important effect on the teacher's job, in terms of how he or she relates to management. Wide variations in school size means that the average number of teachers managed by a principal ranges, at primary level, from just eight in Norway to 100 in Portugal. Moreover, Portuguese principals spend two-thirds of their time teaching, whereas Norwegian ones spend three-quarters on non-teaching activity. In some countries such as Belgium and Italy, principals are primarily managers who spend little or no time teaching.

International indicators have yet to reveal any systematic relationship between teaching conditions and student achievement. This does not mean that such factors do not influence achievement, but rather that the relationships are complex, and can only be fully understood in terms of interactions at the national, sub-national and local levels. No single variable can be seen as the "key" that unlocks enhanced educational attainment. In general, therefore, the characteristics of teachers and their working conditions across OECD countries can help inform policies towards teachers, but only in tandem with knowledge about the particularities of each country. This is particularly true of the most frequently-cited generalisation about teachers: the "ageing" phenomenon.

EU data (Eurydice, 1997) show that in the majority of European region countries the age profile of teachers is skewed towards the older half of their

age range. But patterns vary greatly, as shown in Part D of Figure 2.1: the representation of the over-50s varies within Europe from 39.6 per cent of the teacher population in Sweden to 12.6 per cent in Austria; the under-30s vary in proportion from 21.1 per cent in Iceland to 3.1 per cent in Denmark. Within the older half of the population there is an important distinction between an over-representation of 40-50 year-olds, which exists in most countries, and a large number of over-50s, which is particularly marked in Germany, Italy, Sweden and Norway. The former case primarily raises issues of in-service training; the latter of replacing a large retiring cohort. The ageing phenomenon is especially marked in secondary compared with primary education: in the former, well over a quarter of teachers in the EU are aged 50 years and above (28 per cent), and over two-thirds are 40 or over.

The exact distribution of teacher ages needs to be understood in relation to a number of possible causal factors, including rates of early departures, inflow of young teachers, inflow of mid-career joiners or "returners" and outflows of experienced teachers into non-teaching posts or out of education altogether. But countries' underlying concern is related in large part to whether supply (and, in particular, supply of *good* teachers) can be maintained in the event of large numbers of older teachers reaching retirement age and leaving schools. The above figures do little to allay this concern, especially as regards secondary education. Yet it would be misleading to regard this issue merely as a crisis of recruitment. The "renewal" of teacher competence needs to be considered across the age-range. For teaching forces with large numbers aged in their forties, the issue is how to adapt to the attitudes and technologies of the 21st century. More broadly, there is an issue in societies with ageing populations about how to support and take advantage of maturity and professional experience, and to use them to foster greater stability.

4. THE ROLE OF TEACHER PROFESSIONAL DEVELOPMENT

The key role of training during teachers' service, beyond the initial preparation phase, has come to be widely acknowledged. The age profiles cited

above indicate that in most OECD countries the majority of teachers serving in 1998 are likely to have received their initial training before 1980. But this is not the only, nor even the main reason why continuing training and development is a high priority – the more compelling reasons apply equally to younger as to older staff.

In particular, the speed of reform and scale of the expectations for schooling continue to increase, placing new responsibilities on all teachers, and with it the requirement for on-going professional learning. As in other high-skill professional occupations, the pace of change means that continual updating of knowledge and skills is required. Relatedly, recognition of and opportunities for training are important means of enhancing professional status, which does not depend only on tangible benefits such as salary levels.[4] The need for updating is most obvious for those who come into teaching from other backgrounds or after a period out of the profession, and hence it is also an important aspect of enhancing the flexibility of the teaching force in OECD countries; but in fact it applies to all teachers. Equally, in line with other high-skill organisations, the role of professional learning is a key ingredient of the dynamism of schools.

Recognising the force of all these arguments, a recent CERI review of developments in eight countries[5] (OECD, 1998) adopts the concept of "professional development" to signify a broader set of activities than "in-service education and training" (INSET). Organised education and training activities constitute only one, albeit vital, form of professional development. In those schools that have become learning organisations, much development takes place informally with and through colleagues, in many forms. Policy strategies therefore need to look more widely than sending teachers on courses.

The CERI review mentioned above is critical of much of the professional development that in practice takes place, while noting some shift from individual career-oriented training towards whole school developmental activities:

> "There is, of course, no shortage of in-service training in many of the Member countries of the OECD. There is also some evidence of

an emerging paradigm shift from individual to whole school development, driven partly by decentralisation and by increased responsibility on schools to decide their own needs. However, much of what passes for professional development is fragmented and fleeting. All too often it is not focused sufficiently and is too 'top-down' to give teachers any real sense of ownership. It is rarely seen as a continuing enterprise for teachers and it is only occasionally truly *developmental*." (*op. cit.*, p. 17)

There are many examples of professional learning that is innovative and effective (see Box 2.1). But the finding in the eight countries studied, that too little in-service professional learning by teachers is experienced as a continuing developmental activity linked to broader strategies, puts a question-mark over the future of school reform. Efforts could well be jeopardised by underinvestment in the human skills and resources most central to the success of the learning enterprises of schools – those of the teachers.

This analysis is supported by European data from the earlier 1990s (Eurydice, 1995) showing how few resources out of the total education budget are spent on in-service training. In none of the European countries supplying data was the INSET share higher than 2 per cent – in Norway it stood at around this level – and in some cases it is a small fraction of 1 per cent.

These visible training costs are useful in suggesting that investment in serving staff does not yet enjoy high political priority. But figures on spending on formal courses need to be regarded with caution. Countries that succeed in integrating professional learning into the day-to-day life of schools will face lower visible costs in terms of course fees and substitution of teachers absent

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4. As underscored by the joint ILO/UNESCO experts on the status of teachers: "Whilst improved salaries, better physical facilities and lower class ratios have important impacts, the critical features required to raise the image and self-esteem of teachers in the immediate future include more relevant professional training for individual teachers and improved working conditions and work organisation in schools" (ILO/UNESCO, 1997, p. 10).

5. Germany, Ireland, Japan, Luxembourg, Sweden, Switzerland, United Kingdom, United States.

BOX 2.1 **PROFESSIONAL LEARNING OF TEACHERS**

Work experience for teachers in private companies in Japan

Keidanren, the Japanese employers' association, has produced an *Action Agenda for Reform in Education and Corporate Conduct* that is highly critical of the lack of individuality and creativity in Japanese education and society. A central feature is teacher development: *"If we are to facilitate the development of creative children it is essential that we first enhance the creativity of their teachers"*. With this aim in mind, Keidanren has expanded a programme, run jointly with the Japan Teacher Union, to give teachers experience in industry. Over 60 companies give three-day placements to over 500 teachers during the summer holidays.

Evaluation by the teachers and companies has produced positive responses, although both sides report a "culture shock", and many teachers ask to repeat the experience. Teachers and principals see the benefits as a broadening of teacher perspectives, and an increase in confidence in communication with parents and students. The teachers were particularly impressed by the focus on individual needs in company training systems and by the attention to customers' particular requirements. In retrospect, several were critical of aspects of their initial teacher training which they found by contrast too abstract and top-down.

Local District 2, New York City, United States

This school district is one of the few to create a concerted strategy for using professional development of teachers to bring about system-wide changes in instruction. A strong, determined superintendent appointed in 1987 created a common ethos among teachers and administrators, based around a set of organising principles for systemic change and a set of specific activities or models of staff development.

Professional development is based mainly in the classroom, on the principle that changes in instruction occur only when teachers receive more or less continuous supervision and support focused on the practical details of what it means to teach effectively. One feature is a system of "visiting teachers" with particular learning priorities spending time participating in the classroom of a designated "Resident" teacher. The district also invests in professional development consultants who work intensively with individuals and groups of teachers to tackle specified instructional problems. Peer networking and off-site training also play a role, but summer programmes without follow-up during the school year are not considered helpful.

Source: OECD (1998).

for study. So other evidence, including on the ways in which teachers spend their time within schools, needs to be considered.[6]

As well as seeking to ensure that professional development is oriented to lasting improvements in the work of teachers and schools, policy makers need to consider how to balance potentially competing requirements of teacher learning. Some argue that constant reform diverts too many scarce resources into learning about new requirements or curricula rather than improving profes-

sional practice or raising teacher quality.[7] Must there be trade-offs between updating teachers to

6. For example some estimates suggest that professional development for teachers in Japan amounts to the equivalent of 8 per cent of the school year; a very large share of this time is devoted to on-site, collaborative development activities (Wagner, 1994).

7. "The bulk of INSET provision relates to priorities set nationally and keeps teachers updated about recent reforms, in particular in the curriculum. This has hindered personal development and the continuing development of teaching practices and strategies" (NCE, 1993, p. 219).

realise reform, providing education and training for individuals' career development, and facilitating learning activities organised among colleagues in individual schools or networks of schools? These three important objectives can potentially be complementary rather than mutually exclusive. Individual career enhancement, for instance, might be realised through the acquisition of skills relating to national reforms and through participation in school-level developmental policies. The New York district case example suggests such integrated strategies are possible, with in-service education and training providing a key element within a broader pursuit of improvement that seeks to involve all "players".

So the professional development of teachers will only be effective if it builds on classroom and school practices, which in turn relate closely to organisational and pedagogical strategies. Training is not a linear process of "topping teachers up" to meet their new responsibilities. Expectations relating to in-service training can be at once excessively ambitious and too limited: it is expecting too much of training by itself to enact genuine school improvement; it is expecting too little to use it for limited objectives that are not embedded in larger, dynamic change strategies. It is therefore important in any discussion of teacher roles to consider wider organisational changes that may be needed to create settings in which teacher development can be effective.

5. BREAKING THE CLASSROOM MOULD?

The common image of a teacher remains that of the individual professional in a classroom, teaching to her students. More flexible modes of school learning and open structures have often been advocated as the way ahead, necessarily with implications for the work, competences, and practice of teachers. To what extent are schools and school systems willing to break the traditional classroom mould?

There are numerous individual examples of innovative practice and active forms of teaching and learning (as reported in the OECD/Japan seminar held in Hiroshima in 1997, entitled "Schooling for Tomorrow"; see also OECD, 1994 and Stern and Huber, 1997). However, many educational

reforms may not foster more innovative practice; they can even inhibit it. Despite widespread decentralisation, and the removal of formal regulation from the centre, attempts to enforce reform with student assessment, accountability mechanisms, and the monitoring of standards may also remove incentives for some schools and teachers to innovate by pioneering new practices with uncertain outcomes.[8]

While the present state of data gives an unclear picture of the extent of change in classroom models, it is useful to identify ways in which variations are emerging. Three areas are of particular interest: the extent to which teaching takes place among collaborative teams rather than isolated individuals; the involvement in classrooms of adults other than teachers; and the degree to which information and communications technology have transformed classroom practice.

Team teaching

The prevalence of the single-teacher classroom situation is in some cases modified through the adoption of more complex, collaborative models of work by teachers in teams. Some caution is needed over the label "team teaching", which can mean anything from better communication among teachers of children in a year-group to the presence of multiple teachers in individual classrooms. Box 2.2 outlines examples of relevant experiences, at national and school levels so far identified by the OECD. For some schools, and indeed systems, forms of team teaching are now normal practice, and the examples presented are drawn from across the different levels of schooling. However, it is hard at this stage to gauge overall penetration of such practice, which could be a subject of future investigation.

More complex, collaborative models of teaching and the organisation of learning are in general more demanding professionally and call on a wider range of skills and competences than simpler models. With such demands, the room for

8. As expressed by Darling-Hammond (1997): "The concerns of the teachers in our study are precisely those that current reforms are seeking to address, yet many policies unwittingly set up greater prescriptions, which actually undermine the goals they seek" (p. 94).

BOX 2.2 **NATIONAL AND SCHOOL EXAMPLES OF TEAM TEACHING**

• New arrangements were introduced in *Italy* in 1990 as part of a large-scale reform process in primary schools: classes grouped together in twos or threes and taught by two or more teachers. The new system of teaching breaks the traditional "one teacher/one class" approach. In the current school year – 1997-1998 – the majority of pupils (85 per cent) are taught within this new framework.

Normally, a group of three teachers instruct pupils in two classes of the same age, although different age-groups may sometimes be combined in the same class, with teachers sharing responsibility for class work. Primary teachers no longer work as generalists. Subjects are grouped into three broad areas of learning: linguistic-expressive, scientific-logical-mathematical and historical-geographical-social. To assure consistency in teaching, teachers are expected to plan together: there are co-operative planning arrangements and a regular weekly time is scheduled for this purpose.

• In *Viborg Amtsgymnasium Upper Secondary School*, *Denmark*, tutorial teams of 3-4 teachers of one class cooperate in a particularly close network. The other teachers of the class are informed continuously about special matters pertinent to the class, individual students, pedagogical innovations, etc. These teachers are members of tutorial teams in other classes. All teachers are as a rule members of two tutorial teams in the school and more informally associated with the other classes they teach.

• At *Utase Elementary School*, *Japan*, teaching is not necessarily conducted on the basis of the single class unit of 30-40 pupils, but normally by means of team teaching combining two classes together. Team teaching makes it easier to adapt various teaching methods such as whole class teaching, individualized study, group learning, etc. to meet varied abilities, progress, needs and preferences of the pupils.

• At *Arnestad School*, *Norway*, a 1997 reform reorganised the school day and school year, and decentralised decisions about the timetable. So classes have lessons of varying length and breaks at different points of time during the day. The school year is divided into six terms, each with a teaching plan emphasizing different themes or subjects. The Norwegian school curriculum requires teachers to work in teams. At Arnestad a teacher team shares responsibility for the teaching and the follow-up work of pupils in parallel grades.

Source: OECD/Japan seminar held in Hiroshima, November 1997, entitled "Schooling for Tomorrow".

professional frustration can grow when these skills and competences are not exercised; at the same time, the potential for enhanced satisfaction and the removal of individual isolation can bear substantial results. To share the organisation and task of teaching is a more natural step when there is already extensive discussion and planning among teachers concerning other aspects of school life. In-service and initial training play a vital part in preparing teachers for these roles, as do professional development and wider support. If these are not provided or organised, more complex arrangements risk foundering. They may also be opposed by assumptions about the teacher as individual subject expert. Yet, as the Italian example shows, team-teaching, at least at the primary level, may be consistent with more subject specialisation rather than less. How well this holds at the secondary level, especially where traditions of academic specialisation are strong, is another matter.

Involvement of other adults in the classroom

A different set of issues are raised by another source of modification of the single-teacher in the classroom model: the introduction of parents and other adults into teaching situations. A recent CERI study examined the role of parents in schools (OECD, 1997*a*), and found that while there are numerous positive examples relating to consultative governance and active parental involvement in homework schemes, there is far less evidence of such involvement in school-based teaching and learning. Where it does occur, it is much more at the primary than secondary levels, and involves mainly mothers. It takes place as part of particular programmes to address disadvantage or to bridge school/community divides, and more generally in reading schemes. Such initiatives tend to complement rather than transform mainstream practice.

The issues raised are complex. On the one hand, the involvement of outsiders can open up the otherwise rigid mould of classroom practice. This may take place "from the inside" by accessing parental and other community resources as support in classrooms, or "from the outside" through community-initiated programmes in which learning is not primarily managed by teachers as such. The benefits realised by students participating in such initiatives require further evaluation.

But how far should such outside involvement lead to a redefinition of who can take on the role of teacher? There may well be value in promoting alternative routes into teaching. On the other hand, there is the important risk that the professionalism necessary for high quality teaching and learning will be undermined. Opening up classrooms could encourage the view, notwithstanding extensive contrary evidence, that teaching requires no specialised knowledge and training – the "bright person myth" (Darling-Hammond, 1997, p. 309; and Holmes Group, 1986). U.S. research suggests that "not only is teacher quality the single most important determinant of student performance, but low-income and minority students are least likely to receive instruction from well-qualified, highly effective teachers" (Darling-Hammond and Falk, 1997, p. 192). Key educational and equity principles are at issue.

So it is crucial to stress that opening up classrooms and teaching is not an alternative to professionalism, and should imply no sacrifice in quality (although "quality" may be defined in broad ways, based on teacher competence and enquiring abilities rather than just qualifications and knowledge). The CERI report on parents (OECD, 1997*a*) argues that well-planned initiatives can enhance teaching and learning resources and need not lead to de-professionalisation. No single model of outside involvement can be prescribed or avoided. Rather there is a need to identify conditions that promote teacher professionalism and the imperative of quality teaching alongside flexible arrangements that engage both students and the community. In so doing, equity questions need to be taken seriously: how far do innovative practices, involving a mix of more and less traditional teaching and learning resources, typify the high-income, affluent schools, risking simply to widen existing social divides?

ICT *and new learning models*

Perhaps the most commonly-cited factor heralding fundamental change in the structure and organisation of schooling, with profound implications for the teacher, is the spreading impact of information and communication technologies (ICT) on learning. The last full meeting of OECD Education Ministers in 1996 identified as a priority the need to analyse "schooling for tomorrow (…) in particular in the light of new technologies and advances in pedagogy" (OECD, 1996*a*, p. 24). How important are these developments for the question "who is the teacher?" What role do teachers have – is their importance being diminished by the fact that learning can take place and information accessed in many new ways outside the classroom and away from the direction of the teacher?

As shown in Figure 2.2, the number of computers in schools varies greatly among OECD countries. More important, however, is the fact that many countries are investing heavily to equip schools with computers, Internet connections, software and multi-media. Any static survey is almost instantly out of date: even from one year to another the ratio of students to computers often falls sharply. In the United States, for example, there are wide internal variations,

Figure 2.2
Computers in schools

Average number of students per computer
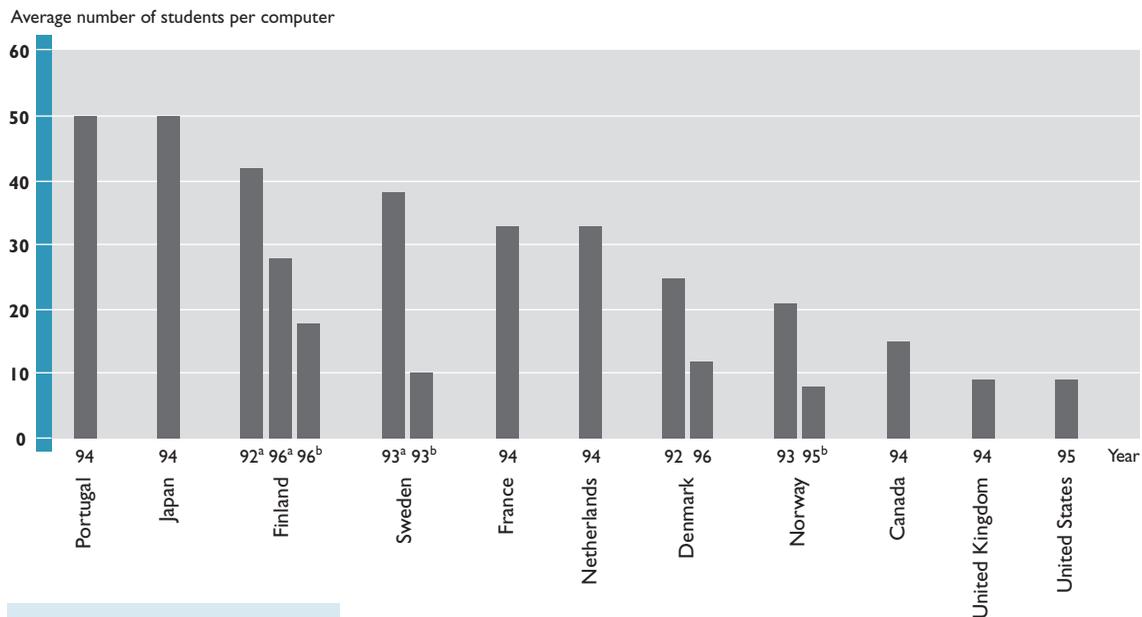
By the mid-1990s, an average of between eight and 50 students had to share each computer in different countries.

a. Primary and lower secondary schools.
b. Upper secondary schools.
Source: OECD (1997*d*).
Data for Figure 2.2: page 77.

from fewer than six students per computer in Florida and Wyoming, to 16 in Louisiana and about 10 nationally in 1995-96 (Coley, 1997, pp. 10-13). Such ratios do not of course tell whether equipment is up-to-date, relevant or well-used. So the same US report estimated that there was only one multi-media computers with CD-Rom capacity for every 25 students.

More fundamental than hardware investment is the manner in which computers are used and the difference this can and does make to the teaching and learning experience. There are many claims made regarding teaching and learning methods that exploit information and communication technologies in schools, yet surprisingly little firm evidence and evaluation is available to support high expectations. Moreover, too little is known about the consequences of computer

use in education. The lack of good, relevant educational software and multi-media is itself a disincentive for use, since teachers, parents and others hesitate to buy software which is of questionable quality, or which does not correspond to the taught curriculum. This in turn inhibits the development of a market for high quality educational software and multi-media, creating a vicious circle.[9]

But it does seem clear that the essential professional support for teachers in making best use of new technologies remains under-developed and under-resourced. The OECD 1997 *Information*

9. Such questions are now being analysed in a new project on "New Developments in Educational Software and Multimedia" as part of the CERI work on "Schooling for Tomorrow."

Technology Outlook summarised evidence from policy reports and research across a range of countries to conclude:

> "Successful deployment and use of ICTs in the classroom still largely depends on highly motivated, pioneering principals and teachers. Although the lack of appropriate teacher training and experience was identified at the beginning of the decade as a major problem for effective use of IT in education, most policy discussions and technology initiatives in the area of IT and education have tended to focus on hardware and software acquisition and students' access to technology (...). Computer literacy is still generally low among educators: the majority lack the necessary training, some lack an appreciation of ICTs and their classroom potential." (OECD, 1997*d*, p. 135)

It is not just a matter of developing appropriate knowledge and skill but of changing attitudes. The teacher is commonly identified as much as a barrier as a key medium, too often defensive and ill-equipped compared with students comfortable with computer applications. One danger is that ICTs are seen as replacing rather than aiding good teaching. IEA (International Association for the Evaluation of Educational Achievement) studies (Plomp *et al.*, 1997) have described not only resistance but the predominantly traditional use of ICT in the classroom as a substitute for conventional pedagogic approaches. The large majority of Swedish school principals, surveyed in 1995, believed the impact of ICTs on students to be significant in relation to such matters as ability to work independently, solve problems, and prepare for working life; fewer than half thought they would have any significant impact on teaching (cited in OECD, 1997*c*, p. 121). Still more clearcut, a 1996 survey of English secondary school heads of subject departments found that, in most subjects, very few believed that ICT was exercising a "substantial" impact on teaching and learning in their schools and departments (although about half thought that it had "some" impact).

A pessimistic scenario might be that technological gulfs too large to be bridged have been created and with far-reaching implications for the relevance of school curricula. The much greater access by the young to complex technologies, whether through networking, electronic games, or multi-media, has, on this view, created wide cognitive and cultural rifts between children and teachers. Others are more sanguine and see this as part of the perennial differences between generations, and between the worlds of the school and peer culture, that need not give rise to alarm, nor undermine the fundamental aims of education.

Whichever scenario turns out to be the more accurate, a key conclusion to underline is that, far from ICT representing an *alternative* to the teacher, its imaginative use is highly demanding of teachers and staff. This is illustrated by case observations reported to the Hiroshima OECD/Japan seminar on "Schooling for Tomorrow", two of which are referred to in Box 2.3. To facilitate active learning is not the same as handing over professional expertise to hardware and software. Rather than diminishing the role of the teacher, ICTs have the potential to enhance it, making possible a more diverse curriculum and a more demanding repertoire for teacher skills and organisation.

6. THE TEACHING PROFESSIONAL IN THE SCHOOL OF TOMORROW

The future role of teachers depends not just on the specifics of how instruction is organised, but on the future position of the school itself. Will it remain a key social institution, or is it set to decline?

Arguments positing a declining role for schools and teachers today and tomorrow prominently include the following inter-related sets of observations:

- The growth of *alternative* sources of information and knowledge means the rapid decline of the monopoly of schools over information and knowledge. The burgeoning of new forms of influence, via media, peer and youth cultures, it is argued, further reduces the impact of what schools have to offer.

- *Globalisation* – economic, political and cultural – is said by some to render obsolete the locally-based, culturally-bounded institution called "school" (and with it the "teacher").

BOX 2.3 DEMANDING ROLES FOR TEACHERS WITH ICT USE

"A major lesson learned in this context is that the introduction of the 'study house'* should be extremely well prepared. The teaching methods used in the model require further consideration. There is a strong need for the further development of methods that are appropriate for this new educational concept. This goes particularly for the use of information and communication technologies, including the Internet."

Carolus College, Netherlands

"The innovations at Monkseaton are based on the premise that schools must become learning organizations that will equip students to live and learn in an information society (…). Part of this is the rigorous evaluation of improvements in student attitudes and achievement. To do this, Monkseaton is creating a new learning environment that combines the best of traditional teaching and learning with:

– Lifelong learning skills and attitudes;
– Appropriate technology, especially communications and information technologies;
– Access to the new learning environment in school and at home;
– Partnerships with industry, the community, and students themselves."

Monkseaton Community High School, England

* A model of independent learning being introduced in some schools in the Netherlands through national policy.

• Even within schools, the greater *individualisation* of modes of learning – flexible, demand-driven – might be seen as displacing cumbersome, supply-dominated models. This heralds the corresponding decline of teachers, further signalled by the growth of alternative sources of learning, including through ICT and through human resources other than teachers.

But must these influences weaken schools and teachers? Not necessarily. It would be a great over-simplification to regard schools as being exclusively about the transmission of knowledge and conclude that this task can now simply be transferred to computers. Schools have always had wider roles, including social functions, which are now likely to become more rather than less important. With the weakening of institutions such as the family and the local community, for example, the socialisation of young people becomes simultaneously more important and more difficult: some would like to see the school as a social linchpin of otherwise fragmented, individualised societies (Carnoy and

Castells, 1997). Similarly, they may provide a local locus in a confusingly globalised world. It would also be wrong to exaggerate the degree to which schools in the past have had a monopoly of knowledge: families, churches, and communities have always played a role, if anything more strongly before than now; broadcasting has been influential for over half a century.

In some respects, therefore, the assumed tasks of the school have been extended, perhaps unrealistically, rather than superceded. Whether schools can start to meet these expectations will depend to a high degree on their ability to develop a central position in society, as more "open" organisations serving a wide range of interests and clientele.

There is thus no inevitability about a weakening role for schools in the light of some of the major changes taking place that impact on them, and they may on the contrary lead to a reinvigorated and still stronger institution. These same trends could well, however, be creating tensions that are

extremely hard to accommodate within existing systems. Which way it turns out is crucially dependent on what teachers do collectively, and how they are permitted to develop their schools, separately and across systems. It also depends on whether they can define a new type of professionalism that is central, rather than supplementary, to the ways in which learning takes place.

This new professionalism will need to draw from both old and new models of what it means to be a good teacher. Most importantly it will require:

- **Expertise**. This traditional characteristic of the good teacher will not be the only attribute needed, but its importance should not therefore be under-estimated. It has been demonstrated that a good teacher needs to be an important source of knowledge and understanding. However, the way in which teachers themselves access knowledge needs to change: there should be less reliance on initial training and more on continuous updating.

- **Pedagogical know-how** also continues to be essential, but again in a changing context. In a framework of lifelong learning, teachers have to become competent at transmitting a range of high-level skills including motivation to learn, creativity and co-operation, rather than placing too high a premium on information recall or performance in tests.

- **Understanding of technology** is a new key feature of teacher professionalism. Most important is an understanding of its pedagogical potential, and an ability to integrate it into teaching strategies rather than leaving students to learn from self-contained programmes as a separate process.

- **Organisational competence and collaboration.** Teacher professionalism can no longer be seen simply as an individualised competence, but rather must incorporate the ability to function as part of a "learning organisation". The ability and willingness to learn from and to teach other teachers is perhaps the most important aspect of this attribute.

- **Flexibility** is an attribute of teacher professionalism which perhaps conflicts most directly with traditional notions. Teachers have to accept that professional requirements may change several times in the course of their careers, and not interpret professionalism as an excuse to resist change.

- **Mobility** is desirable for some if not all teachers: the capacity and willingness to move in and out of other careers and experiences that will enrich their abilities as teachers.

- **Openness** is another skill for many teachers to learn: being able to work with parents and other non-teachers in ways that complement rather than subvert other aspects of the teacher's professional role is perhaps the most challenging way in which notions of professionalism can be adapted.

7. CONCLUSIONS

In short, this new type of professionalism challenges teachers to function in learning organisations committed to laying the foundations of lifelong learning. The above list of characteristics is not a "static" description of who can be recognised as a professional teacher, but a set of attributes that need to be developed in a continued learning process.

So it is not just inputs, in terms of numbers and qualifications of teachers, nor outcomes in terms of measurable student achievement, that make good schools. Giving attention to the *processes* of teaching and learning brings human and professional endeavours to the fore. A focus on process may appear inward-looking, but can potentially raise challenging and uncomfortable questions about what happens in many schools. Classroom doors will be opened to scrutiny, rather than letting teachers "get on with" a business that only they know best. An intense attention to process may well expose precisely how prevalent "industrial" input-output models of the learning process remain in some schools in OECD countries, and bring pressure for improvement.

The new teacher professionalism will be highly demanding, supplementing traditional requirements with new ones. It remains to be seen how far the relevant stakeholders – including governments, parents, the general public and teachers themselves – are ready to invest in and embrace such professionalism. ■

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