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**Journal of the Programme
on Institutional Management
in Higher Education**

**Higher Education
Management and Policy**

OECD 

Volume 16, No. 2

JOURNAL OF THE PROGRAMME
ON INSTITUTIONAL MANAGEMENT IN HIGHER EDUCATION

Higher Education Management and Policy

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Publié en français sous le titre :

Politiques et gestion de l'enseignement supérieur

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Higher Education Management and Policy

- A journal addressed to leaders, managers, researchers and policy makers in the field of higher education institutional management and policy.
- Covering practice and policy in the field of system and institutional management through articles and reports on research projects of wide international scope.
- First published in 1977 under the title *International Journal of Institutional Management in Higher Education*, then *Higher Education Management* from 1989 to 2001, it appears three times a year in English and French editions.

Information for authors wishing to submit articles for publication appears at the end of this issue. Articles and related correspondence should be sent directly to the Editor:

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2, rue André-Pascal
75775 Paris Cedex 16
France

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OECD Publications Service
2, rue André-Pascal, 75775 Paris Cedex 16, France

2004 subscription (3 issues):
€ 95 US\$100 £64 Y 12 100 MXN 1 040

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Teaching and Research: some Framework Issues

by

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This paper assesses some of the framework issues, of policy and provision, which affect the connections between teaching and research in higher education.

The presumption of an essential linkage between research and teaching has in recent years been eroded by the sheer quantities of the system. In spite of the enduring appeal of the Humboldtian model, it was not always assumed in the UK and is not assumed in many other systems.

The arguments for and against the connection are noted and assessed. The arguments in favour are mainly in terms of the advantages to research; and arguments from teaching are more difficult to specify. Both sets of considerations entail thought about the nature of knowledge as it is created and mediated through universities, and the corresponding identities and roles of university teachers.

A broadening of concept from research to that of disciplined enquiry enables the scope of university forms of enquiry to be widened to include applied research, research and development as well as scholarship. It is argued that all university teachers should be involved in one or other form of disciplined enquiry, even if only a minority can be involved in research in the traditional meanings of the word.

Teaching and research: some framework issues

In this paper I attempt to assess some of the framework issues, of policy and provision, that affect the connections between teaching and research in higher education. This should be taken in conjunction with Mary Henkel's paper which covers parallel themes but from the perspective of the intrinsic contents of higher education activity.

The relationship between teaching and research has been thrust into the policy arena, partly by the desire of ministers to proclaim their reformist credentials, but also by the evolving logic of change imposed by the actual and intended further massification of higher education in the UK.

The questioning of what has been, since the end of the first world war (when Treasury grants to UK universities first became available), a virtually uncontested characteristic of the system seems appropriate given where our system now is. One hundred and sixty nine institutions now have university or university college status. All are eligible to apply for research funding from the funding and research councils, and from private foundations. The amounts of research resources, however, that they receive from the HEFCs, and other sources vary enormously. In 1999/00 only 28 received over 20% of their total revenue from research grants and contracts, whilst 115 received less than 10% (Lewis, 2002). And there are recurrent reports of intentions to make the variations even steeper

There is already a duality in the total system. Of the approximately 105 thousand full-time teachers in the system, only 43% were entered for the RAE competition in 2001.

If we then turn to the recipients of teaching, there were 221 000 first year "young" UK entrants in 2000-2001. Leave aside doubts about the standards of qualifications, on which it seems difficult to get an objective evaluation, just over 100 thousand had over 19 points (i.e. 2Cs and one B). Only 68 000 – less than on third – had 2Bs and one C or better or an equivalent combination (HEFCE 2002). We must not make hasty assumptions about student potential and it is known that some students with a poor entry qualification do well at university. But it is fair to assume that many are unlikely to have expected or to receive the Humboldtian treatment of apprenticeship to a life of research and scholarship, the implicit assumption underlying honours degree curricula in the years before massification.

Thus the presumption of an essential or appropriate linkage between research and teaching has at least in recent years been eroded by the sheer quantities of the system.

Nevertheless, the connection has persisted as a comforting assumption at least until quite recent times. Wilhelm von Humboldt established as an enduring principle the encompassing idea of a unity of research, teaching, and study (Clark, 1991). The Humboldtian contribution and style have been brilliantly described more recently by Thorsten Nybom (2003). Those who taught at the most advanced levels of the educational system should be deeply involved in research. The research-centred professor should not only train students for research but should involve them in it. This “breathtaking principle” has dominated many systems and has been institutionalised in budgetary allocations that presuppose a substantial proportion of teaching staff time will be spent in research.

But this principle was not always followed in eastern and central Europe or in France or in Norway where powerful institutes and academies of science have housed the most important research. And, of course, it is no longer a universal enduring principle in British higher education, at least in its earlier form. The dominance of the teaching-research connection has been weakened, too, up by the elaboration of academic tasks as working with outside interests and institutions, and the work pressures induced by quality assurance requirements, compel faculty to go well beyond the original assumptions about academic work.

The arguments against separation have been made at varying levels of generality, as follows:

- Some (e.g. Council of Europe seminar, 1994) emphasise the importance of the link for the social, political and economic development of society, but these arguments tend to lack precision.
- It would be demoralising for staff in universities wishing to and qualified to undertake research if the best resources are allocated elsewhere. It might prevent some of the best people participating in the education of the ablest members of the next generation of researchers.
- Teaching is good particularly for young researchers because it keeps them in touch with the wider subject and reinforces their ability to expound and clarify their thinking. It might also provide contact with wider social groups than might be experienced in the often lonely career of those engaged wholly in research.
- Some countries are too small to provide for a dual system.

Roger Geiger (1985b) has extended the case as follows: there are manpower benefits that result from the combination. Teaching supplies

positions for scientists that are more numerous and dependable than those which pure research could ever supply. The teachers who are intermittently researchers as well greatly augment the potential size and diversity of a given scientific community (p. 55).

“The annual circulation of students is one dynamic factor in the lives of universities which should not be taken for granted. Compared with their mentors, students possess a different generational receptivity to new ideas. The ways in which they choose ideas has an immediate effect upon course offerings and a longer term impact on the reproduction of scholars.”

But these advantages are mainly to the benefit of research. The connection with teaching applies most strongly to that aimed at graduate or perhaps advanced undergraduate teaching, when the results of research flow back into the thinking of students, into the wider dissemination of knowledge and into innovation.

Barnett (1992a), arguing from an essential characteristic of teaching charted by Malcolm Frazer, maintains that it is essential for teachers in higher education to have time and resources to be engaged in research or some other professional or scholarly activity. “... Research activity is part of preparing for teaching.” But he makes no case for research as essential. He also argues (1992b) that, “in the institution which gives high marks for teaching, teaching can come to influence research.” and that “... staff might be encouraged to undertake research into their own teaching activities.” (p. 141).

The differences between the two are, however, noted (Barnett, 1990, p. 125): “Research is an attempt to produce objective knowledge, independent of personal viewpoint. ... a level of impersonal knowledge standing outside individuals. ... Higher education... is oriented differently. It is directly concerned with individuals, with their minds and with their own way of looking at things. ... It is shot through with subjectivity.”

Clark, too, (quoted by Geiger) notes how the dual characteristic creates a duality of structure within universities: “disciplines ... concentrate on research and scholarship (whilst) universities and colleges ... concentrate on teaching and dissemination. The research role of universities is thus a source of relative homogeneity in the system because it depends upon faculty acting in their professional capacities as chemists, etc. But each university combines its research role with a different combination of other institutional objectives and capacities. Teaching responsibilities, in particular, are largely defined by the number and types of students a university enrolls. This, then, is the principal source of heterogeneity or diversity.” (pp. 77-78)

Students are a distraction from intensive research activities, and “the inner logic of the research imperative contains a divisive tendency. The high

knowledge components of HE steadily become more esoteric.” Students need holistic and non-esoteric teaching which is better provided by those whose motivation is driven by teaching. Among the forces leading to division are the massification of higher education and “the growth in academic tribes that follow from the proliferation of academic territories.” Each discipline intensifies and diversifies itself and the knowledge components of higher education steadily become more esoteric. “It becomes difficult, if not impossible, to develop and maintain these necessary concentrations in the traditional locales of teaching and study. Hence the development of research devoted groups without teaching programmes and students” needs on their minds. In addition, research is extending itself outside the universities in centres financed by industry or government in which teaching has virtually no place.

Clark adds that separate institutions allow for concentrations of talent and resources; they more easily account for use of resources than when tasks are multiple; it is possible for separate institutions to collaborate; and some doctoral students can get access to the best of specialist resources, even when they are separate.

Massification lends speed to the argument that differentiation within systems and within universities is necessary. All systems that have expanded from the elite stage find themselves stratifying institutions according to their mix between teaching and research, although this is denied by some national authorities (e.g. Sweden). As institutions face the challenges of selectivity of funding and of the requirement to satisfy external markets so, perforce, they diversify the allocations of tasks within their faculties.

In the United Kingdom, the central authorities have come to the policy issue quite late in their progress from an elite to a mass system. Thus, the UFC declared itself in 1989 to be “uniquely concerned with the quality and strength of both teaching and research in universities. Although this does not mean that all university departments will be outstanding in research, the UFC might aim to ensure an effective distribution of research centres which strengthens teaching in the universities” (UFC, Circular Letter, 22/89, 1989). The notion of separate research, teaching and mixed research teaching universities was rejected by an elite group of policy makers in the 1990s (Kogan and Hanney, 2000). Now, however, the 2003 White Paper is fairly unequivocal in the official intention to go the way of RTX. There seems no doubt that the arguments will be resolved by the force majeure of student numbers and ministerial impatience with research other than that of instrumental usefulness or at the peaks of excellence. A group of elite universities will be allowed resourcing for the connection, but it will be an input particularly to graduate studies.

Already in the United Kingdom, as in the United States, implicit separation has not so much followed as has been confirmed by the massification of the system. The precise technical break came when the government ceased to include hypothecated resources (assumed to be about one third) in each full – time university teacher's salary. Many more teachers are now on part-time contracts which makes them unlikely to have time and other resources for research. The issue is not simply one of resources, though the stringency and selectivity of award are critical policy tools in pushing forward on a largely subterfugous policy. The critical and basic issue turns on the definition ascribed to the university. Is there a higher education "essentialism" prescribing irreducible and defining characteristics? And that definition largely turns on the quality of student admitted and the level of education that are offered. What is the difference between higher education and training? From there, the syllogism moves somewhat uneasily to ask whether student preparation need depend on active research by the teachers.

In answering this, we can dismiss any historical or comparative justification for that connection: the United Kingdom until the turn of the century, and possibly longer, did not assume research excellence in teachers for the inculcation of a liberal education. The elite liberal arts colleges in the United States and some other European systems (notably the French) did not either. Research in such systems was regarded a technical and vocational matter, to be pursued separately. (Wittrock, 1985)

This brings us, finally, to the nub questions: do all students need or want a research based education? Can one discern from the detailed intrinsics of the two activities essential connections and overlaps? If they exist do they depend on active participation of both or won't reading and scholarship do? This are questions which Mary Henkel tackles in her paper.

There are issues concerned with staffing and provision to be taken into account. These will make many institutions anxious not to give up the connection, quite apart from any loss of status that it might entail. There is a stock of faculty qualified and assumed to do both, as noted above. Many teachers in universities that might fall outside research funding have contracts implying the duty/right to pursue research.

Many undergraduate courses now culminate in a research exercise. How far their teachers need be active researchers to lead them in this is an open question. Almost all universities depend on masters courses to sustain their incomes and student numbers. Again this will be a matter of definition, but hitherto such courses have assumed acquaintance with research methods and teachers' leadership in formulating and conceptualising research questions. (See Mary Henkel, in this issue.)

The way forward

At this point, it is appropriate to take stock of where our argument is leading us. Given the massification of the system, it is clear that the Humboldtian notion of the research teaching unity, “the breath taking principle”, in Clark’s words, only might still hold good for a minority of students and their teachers and in a minority of elite institutions. Indeed, that principle has never been of universal application even for such groups. That being so, we have to search for some other construction more applicable to the generality of higher education in its expanded state.

To do so we are forced back to consider the nature of knowledge as it is created and mediated through universities, and the corresponding identities and roles of university teachers.

The nature of knowledge as it is created and mediated through universities

The classic forms of knowledge as developed in universities have sailed under the flags of research and scholarship. However, in considering the range of knowledge generation required in US educational research, two American scholars (Cronbach and Suppes, 1969) used the term disciplined inquiry. This would allow for different emphases on different types of knowledge in different subjects, which might also defer to different reference groups, including some outside academe.

Disciplined inquiry may take several forms:

- Research: the discovery and testing of new knowledge. It may range from highly technical laboratory science to research with the function of sustaining collective memories of a people’s culture and history. It allows for distinctions between disciplines, in which the starting point is existing, tested knowledge and which defers to the disciplinary reference groups. Inter and multi-disciplinary research defer to more than one discipline.
- Research and development (R&D): the systematic application and testing of knowledge for use. Whilst disciplinary formations may remain important in R&D, it may also find its home within domains, in which the knowledge seeker starts from a problem which may have a social or practical dimension and then raids the disciplines and the world of practical knowledge for concepts and information. The reference groups are equally multiple. There may be testing of and feedback to discipline based knowledge from domains.
- Scholarship: the reworking and redefinition of existing knowledge and concepts. This is an activity often associated with research, but in some subject areas may be a stand alone activity, for example in classics or philosophy or the humanities. In many areas scholarship would be prerequisite of research enquiry.

- Other forms of knowledge – may be different forms of R&D targeted on different purposes, such as curriculum development. They may contribute to the solutions of practical concerns by helping public authorities and industry to solve problems. They may be motivated by a belief in meeting the need for knowledge in social, political and economic construction as much as intellectual curiosity. But these knowledge seeking activities remain within the covenant of higher education only if they observe the criteria stated above in demonstrating the logic and evidence for conclusions reached.

What might unify these highly disparate forms of intellectual activity? Whilst the mandate for research is fairly rigorous and clear, the mandate for the wider disciplined enquiry is still to be stated. Whilst it may well in many areas refer to social utility and application, we have to look for some unifying principle to which all disciplined enquiry would defer. That essentialist position does not take up far away from traditional depictions. The principle might be:

Work undertaken within higher education is demonstrable and testable by a wider audience than one's own students and one's own immediate colleagues. It is based on, and is tested by, its deference to logic, evidence and demonstrability.

Some would give answers on a different dimension altogether, such as its applicability and usefulness in solving social problems. But many other forms of activity legitimately do that, for example, journalism, or preaching or political activity. Disciplined enquiry can reinforce those activities, but is separable from them.

We can then turn to the issue of what this potential range of enquiry says about the nature of the university teacher. On the assumption that there will not be enough resources for all to undertake research as defined above, or indeed that only a substantial minority will have the capacity for it, we have to make some assumptions about the essential components of a university education as it to be offered to students and match them to the disciplined enquiry spectrum. If we consider the characteristics necessary for research and teaching there is a great deal of overlap. Both require: mastery of substantive subject matter; an ability to conceptualise; to be conversant with main concepts and theories; the ability to present and disseminate research findings; to engage in collective administrative chores within basic unit; participation in disciplinary or subject area outside their own institution and country; ability to supervise and examine doctoral learning methods for varied groups and levels of students. There are tasks and skills that are specific to the two activities, however, such as, for researchers, creating research questions or seeking research funding and, for teachers, converting research findings into curriculum or developing pastoral methods. So both combination and separation are feasible.

Two broader gauged questions remain. First, if we accept that the wider concept of disciplined enquiry mandates a great deal of intellectual activity beyond the classic definitions of research, would we expect all university teachers to be engaged in one form or other of it? Secondly, are their forms and styles of intellectual activity beyond those explicit engagement in disciplined enquiry that are not only appropriate to the university teacher but will also enhance the teaching?

On the first question, the answer must be “yes”. Otherwise there is no difference from the work of further education or schools. Moreover students are likely to respect and perhaps emulate the behaviour of those who actively contribute, at one level or another, to their subject area

Secondly, universities have traditionally been the guardians of free enquiry and social critique. It may be that that avocation has been swamped by the press of student numbers and government demands for certain instrumental foci. It is essential, however, that academics will continue to take up the function of the critical intellectual, and to do that effectively must require the sustenance of expertise and involvement in their own subject areas. Within the range of disciplined enquiry is the potential for the broader critical intellectual function.

We thus need to both change and yet remain the same. We are the custodians of important continuities which include the perhaps slow growth and dissemination of wisdom. In this teaching and research are two sides of one coin. But increasingly they will be seen as two sides.

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Teaching and Research: the Idea of a Nexus

by

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The article explores whether the idea of a nexus between research and teaching is still influential, what meanings are attached to it and within what concepts of higher education. It draws on research into the perceptions of two groups of actors, academics and students, and some recent scholarly analyses of the issues.

It argues that the idea of the nexus is still important to academics and a range of students. It is embedded in a world in which academic definitions of knowledge and higher education remain largely dominant. The recent writings examined are attempts to tighten the conceptual connections between teaching and research but to relocate them in arguments centred on the needs of contemporary “knowledge societies” for systematic and reflexive learning and inquiry.

Introduction

This article is concerned with understandings of the teaching-research relationship, in terms of how two human activities, teaching and researching, are related to each other in the lives and work of academics and of their students. Its central interest is in examining the idea of the relationship as necessary, integral or, in Ruth Neumann's terms a "nexus" (Neumann, 1994). As is clear from Maurice Kogan's paper, the ideas that teaching and research *together* form the core of academic work and, further, that they are in some way intrinsically related to each other have come under strong pressure. The pressure has come, in part, from the drivers of higher education and science policies but also from sociological analysis of the internal as well as external forces pulling them apart (Clark 1991; 1997). It has been reinforced by substantial empirical research, which has concluded that there is no clear statistical correlation between academic performance in research and teaching (Ramsden and Moses 1992; Hattie and Marsh 1996; Lindsay *et al.* 2002). For good accounts of the shortcomings of much of that research, however, see Brew and Boud (1995) and Elton (2001), who themselves provide more creative approaches to understanding and evaluating the relationship.

It is perhaps not surprising that much contemporary discourse is informed by conceptualisations of research and teaching as activities that are not just distinct but incompatible in the working lives of today's academics.

Against this background, the paper will explore how far the idea of a nexus between research and teaching continues to have influence, what meanings are attached to it and within what normative contexts and concepts of higher education. It will do so, first, by drawing on research into the perceptions of two different groups of actors, academics and students, and, secondly, by considering some recent scholarly analyses of the issues.

The overall argument of the paper is that the idea of the nexus, as perceived by academics and students, is primarily one of the "functional interdependence" of two academic roles. It is embedded in a world in which academic definitions of knowledge and higher education remain largely dominant. The recent writings examined are attempts to tighten the "conceptual connections" between teaching and research and to relocate them in arguments centred on student roles in education and the needs of contemporary "knowledge societies".

The academic perspective

Academics are the strongest exponents of the argument that research and teaching are central to their work and its value. I will explore how they represent this view, mainly by reference to interviews in England for our research on academic identities, undertaken as part of a three-country study of higher education reforms in the last quarter of the 20th century (Henkel, 2000). The range of disciplined inquiry in the study included, broadly, basic and applied research in the sciences and the social sciences and research and scholarship in the humanities. The demarcations between these latter are not always easy to define when work includes not only re-interpretation and re-contextualisation but also finding new objects of inquiry and drawing on new sources, new methods of inquiry and new paradigms as disciplines evolve. I will, for the most part, use the term most often used by the academics themselves, research.

Not all academics, it must be said, regard the relationship between teaching and research as intrinsic, even if they see it as functionally complementary. Some regard themselves as essentially either researchers or teachers. Some describe the combination of research and teaching as important to them in bringing a balance to their role, in sustaining their morale or motivation and thus indirectly affecting the quality of their work. Scientists, who are most likely to see their identities as rooted in research, were unique in this study in seeing teaching as an ethical obligation or as a justification for public support for their research.

The pressures to separate research from teaching manifestly affected our scientist respondents. However, their belief in the need for what Clark (1995; 1997) calls the “research-teaching-study” nexus, in which engagement in research.... “is the means of teaching and the pathway offered for student learning” (1997, p. 243) was equally manifest. It was undoubtedly strongest in relation to postgraduate levels of study, as exemplified by the following excerpt from an interview with a young chemist in a pre-1992 university, most of whose research group were postgraduate students: “The research is an educational vehicle. It is easy to think of my students as instruments but they are not part of [my] research enterprise. They are here to develop as researchers. He drove his students hard: ‘they are here to do things’ [as members of his group, as well as as students] and would be judged by the same criteria as I am.”

However, interviews with scientists across a wide spectrum of universities also made it clear that exposure to active researchers and the involvement of students in projects generated from their research were still seen as basic features of undergraduate education. Undergraduates needed to experience research at first hand.

There were some differences between scientists in the importance they attached to the substance as well as the process of scientific inquiry. Some

certainly also emphasised that the rate at which science is changing means that teachers must be active researchers to give proper grounding in the concepts and theories as well as the methods of the discipline to students.

Academics in the humanities and the social sciences tended to describe the research-teaching relationship in more complex and varied terms, with differing emphases on what Neumann (1994) calls the “tangible” and the “intangible” aspects of the research-teaching relationship. The “tangible” aspects are those in which transmission of new knowledge and research skills or techniques occurs and the “intangible”, those in which transmission of understanding of and approaches and attitudes to knowledge takes place.

A specialist in American literature in a post-1992 university said, “There is no doubt at all that during that initial three or four year period [in teaching] ... when I wasn’t doing research, I didn’t get the experience of how doing research in the area can lift your ability to teach in that area ... when I did the research on Mark Twain, the reading... and the research I did into language and narrative structure gave me a ... deeper grasp on the topic that meant that when I was in seminars with the students I could draw them out in discussions because I had more to draw on, in order to build on what they were saying – so that they could build on that.”

Others might emphasise awareness of and being in tune with current conceptions of the subject, current debates or current methodologies. “I have a set of strong feelings about the relationship between teaching and research. ... My whole experience has been that my teaching is only any good when it is connected with research. It is axiomatic to me. ... It was not so much a matter of directly drawing on his own research because that’s often very difficult: the material is too obscure ... it is more about shaping the climate of ideas in which the course is being run.” (Mid-career English scholar.) Underlying such observations were beliefs about knowledge in a constant state of flux, to which academics themselves were contributing and about the importance of students learning within current epistemological configurations and trends.

A colleague of his in an old university English department found both teaching and research intellectually exciting and both to be integral to his academic life. It was clear from his narrative that his own intense interest in his period informed his teaching and fuelled his enthusiasm for it. The teaching, in turn, enabled him not just to sustain a broader engagement with his subject than was possible in his research but to gain directly from sharing it with students and collaborating with others in finding new ways in which to do so.

Excitement and enthusiasm were strong themes in discussions of the value of research for teaching. For a young physicist, excitement was an impetus to share his research findings with students and with the wider

public. His belief in the nature of the university was at one with how he felt about his own work. “I see myself as a researcher and a teacher. There is no point to having a university if you don’t pass on your knowledge to other people. If you are not telling people about how exciting astronomy is, as far as I am concerned there is not a lot of purpose in doing it. But equally, if you are not actively doing it, it is hard to be enthusiastic about it.” A lecturer in theatre expressed a passionate commitment to renewal, rethinking and encouraging the same attitudes in students: “if we didn’t do research as well as we do, we couldn’t teach as well as we do, I’m quite sure about that. Because there is a temptation for everyone under the sun, to go in on a wet Tuesday in November and churn out the mixture before and you mustn’t do it. And you don’t do it. ... If you did do it, you would be failing.”

Four general points might be highlighted from the material so far reported. The first is that belief in a research-teaching nexus is widely held, and can, in some respects, be seen to be extending. However, it is clear that it has multiple meanings.

The second and related point is to do with disciplinary differences. The research-teaching-study nexus, in which academics aimed to advance students’ learning by engaging them in research, featured explicitly and strongly in the narratives of scientists in contrast to those of other disciplines, where it was rare. It applied to scientists’ work with undergraduate as well as postgraduate students, although this was more evident in universities with a strong research tradition. The research-teaching nexus was important to the identities of academics in the humanities. Far more academics in the disciplines of English and history than social science or science saw their identity as bound up with research and teaching equally. They discussed this issue largely in connection with undergraduate teaching.

Whereas hardly any scientist talked about the influence of teaching on his or her research in the undergraduate context, this was often discussed by those in the humanities, and some in the social sciences. In other words, where teaching and learning were seen to depend upon vertical or hierarchical progression, academics were less likely to talk about reciprocity between research and teaching or between their students’ and their own benefits, at least at undergraduate level. Scientists and some economists saw their research and the knowledge required to engage with it as too distant from their students’ level of development at that stage.

Third, almost all of the narratives reflect strong common assumptions about the actors and their responsibilities in the educational process at undergraduate level. Discussions tended to be teacher-centred, emphasising what the teacher brings to the educational process, including how that is influenced by being a researcher. Concepts of learning and learners were far

less evident. Where they were discussed, it was likely to be in the context of the relationship between teaching and learning rather than that between research and learning or the academic researcher and the student learner.

Thus the following two comments, in which such links are made are atypical in our study, (as I think they were not in Stephen Rowland's study of academic perceptions [Rowland, 1996]). A young medieval historian, highly motivated to encourage her students to engage with what might be an alien culture and a daunting area of study, wanted them to know that she was also a learner in the subject. It was a priority for her from the beginning to convey to them that you never stop learning. An experienced theoretical economist talked about how doing research could deepen understanding of the learning process and the demands upon students. "Doing research necessarily makes you struggle with new methods and concepts. This, in turn, makes you more sympathetic and understanding to students but also more demanding of high standards of achievement."

The fourth point concerns the strength of feeling with which many of the respondents expressed themselves about the meaning of research for them and about the research-teaching relationship. The view that research is the sole or even primary source of enthusiasm for the subject is, of course, highly contestable. However, the evidence from this and other studies echoes Polanyi's views about how deeply welded into one another passion and intellectual vibrancy can be (Polanyi, 1958). It also brings to mind Lewis Elton's observation that if there is a connection between good research and good teaching, that may be because there is a third factor that can be seen as generating both (Elton, 2001).

The student perspective

Research into student views of the research-teaching relationship is still relatively rare, although this is changing. I draw here on two sets of studies, the first by Ruth Neumann (1994) in Australian universities with a strong research tradition (in depth interviews with 28 students) and the second by Alan Jenkins, Rosanna Breen and Roger Lindsay at a post-1992 UK university (Breen and Lindsay, 1999; Lindsay *et al.* 2002). Both sets of studies included undergraduate and postgraduate students, although in the British study the latter were on taught Master's courses and in the Australian study they were doctoral students. The importance for (and of) student motivation of the research-teaching relationship is a strong theme in both these research studies.

Both studies also stress that while students express a variety of views, negative and positive, about the impacts of teacher involvement in research on their experience, there is substantial evidence that it can and does enhance many students' motivation to study their subject. Students made strong links

between this and the enthusiasm of their teachers, which they saw as a function of their involvement in research.

Overall, their comments reflect an understanding of the research-teaching relationship in both tangible and intangible terms. Students strongly appreciated those of their lecturers who passed on to them new knowledge from their research. Science students in the UK university saw it as essential to them that their courses introduced them to the “cutting edge” of their discipline. Science students in the Australian settings were particularly enthused when they had the opportunity not only to learn research skills and new techniques from their teachers’ own current work but also to undertake experiments themselves. They felt they were finding out about “what research is about”. This was reinforced when research active teachers gave them assignments requiring them to engage in forms of disciplined inquiry.

Particularly interesting in the Australian study was the extent to which students appreciated the intangible benefits. There was evidence in most interviews here of how direct exposure to contemporary research and the research process had enabled students at all levels to develop questioning and critical approaches to knowledge and to articulate a sense of knowledge as continually evolving and changing in both science and the humanities. Moreover, all except one of the academics cited by the students as particularly good teachers were active researchers. At the same time, they felt that some teachers’ research interests could bias the content of their courses to the detriment of the learning opportunities offered.

There were, however, significant influencing factors on student perceptions. Both studies identified a correlation between students’ ability and motivation for being in higher education and their responses to research-informed teaching. Those who felt positively were likely to have more intrinsic interest in their subjects and to demonstrate more “course competence” (Jenkins *et al.*, 2003). Those who were negative or indifferent or unaware of the research-teaching relationship were more likely to have predominantly extrinsic motivation for being in higher education.

However, the two studies differed on the importance of the stage students had reached in higher education. In the Australian study, which involved only universities with a strong research tradition, there were students at all levels, from first year undergraduate to doctoral studies, who appreciated the research-teaching relationship. In the British study, while both undergraduate and postgraduate students thought that lecturers who were active researchers were more enthusiastic and more credible, there was a clearer division of attitude between the two groups. Undergraduates were more passive and dependent and saw it as the teachers’ responsibility to capture their interest and to present them with current knowledge. Master’s

students tended to be more “inner directed” and had clearer goals. Many of them were seeking knowledge that they could use directly in different forms of professional practice. They were discriminating in what they wanted from their researcher-teachers and critical if the research base of their teaching did not meet their criteria. The research must be salient to their world.

Both studies commented on some disciplinary differences. Neumann found that the tangible dimension of the research-teaching connection was less evident in humanities subjects than in the sciences and social sciences. As indicated above, science students seemed most aware of being introduced to and involved in using research techniques and skills. Jenkins et al. found that students in hard-pure-life types of discipline had more positive attitudes to research than some (not all) applied disciplines. However, there might be reasons for this that had more to do with the teachers and/or their epistemic communities than the students: for example, limited traditions of research or, by contrast, inappropriately narrow or esoteric conceptions of what might constitute valuable forms of disciplined inquiry in the subject. This is an important area for further research, particularly in the light of shifts towards more instrumental programmes and curricula. What forms of disciplined inquiry are being developed in new areas of study that are domain-based, rooted in social or economic rather than academic conceptions of need? And what functions can or should they have in the learning and teaching process?

What conclusions can be drawn from these studies? They demonstrate that various aspects of the research-teaching nexus have meaning and value for students at different levels and in a variety of contexts. They suggest that academic concepts of knowledge and higher education continue to have influence and that a range of students have benefited from being part of academic cultures, including achieving high levels of epistemological sophistication. There is also evidence that some categories of student are articulating for themselves needs for access to research that may be different from what is offered by academics.

However, they also suggest caution about insisting on research-led teaching for all students in higher education. Such caution might be reinforced in a mass or universal system of higher education by Neumann's finding that a further factor determining whether or not students derived benefits from a research-teaching nexus is access to close and frequent contact with their teachers. It is also not altogether clear how far research-based teaching affects student motivation, as distinct from tuning into it.

Teaching-research relationship and conceptions of higher education

It is still possible to characterise the picture that emerges from these studies as one in which a research-teaching nexus is a hallmark of a relatively

elite, closed and stratified system of higher education, in which academic norms, values and epistemologies are broadly uncontested. Teaching is informed by peer-legitimated research and scholarship, as distinct from other wider definitions of “disciplined inquiry”. The studies do not, however, support the most conservative conclusion: that in the context of mass or universal access, the traditional meaning of higher education can only be realised at the postgraduate level and that is where the research-teaching relationship and certainly the research-teaching-study nexus should find its place. (Thorsten Nybom, for one, has no doubts that that, indeed, is where Humboldt, albeit in a different era, intended it to be [Nybom, 2003]).

They are, however, compatible with a stratified system in which a line is drawn between the levels where students experience research-based teaching and learning and those where “teaching and learning are centred on codified material, lacking an inquiring attitude.” (Clark, 1997, p. 252). In such a system, some but by no means all undergraduates need the former.

Clark himself posits a different conception of educational systems, invoking the idea of an “inquiring society”. This, he argues, requires an extension and an embedding of an inquiry-based model of education, in which the research-teaching-study nexus would be a key component. Although in the end he is equivocal about how extensively such a model can be generally realised at undergraduate level or below, he does contend that contemporary societies need graduates with “habits of mind” through which they can engage in “informed and disciplined problem solving” (*ibid.*)

The concept of inquiry figures strongly in the project of Jenkins *et al.* (2003) to reshape teaching in higher education by strengthening the links between teaching and research. They also believe in the possibility of achieving this within a wide range of institutions and their emphasis is slightly different from that of Clark’s concern with discipline or rigour.

Their argument centres on the need for students to develop critical and sophisticated conceptions of knowledge (and truth) in order to cope with a changing knowledge environment. They see academic commitment to and involvement in research as the key to designing and implementing teaching strategies through which students can appreciate that knowledge is contextually defined and contested. It is constructed within epistemic communities or networks with their own goals, histories, presuppositions, epistemic rules and conceptual frameworks. They draw on recent research (Baxter Magolda, 1999) to support empirically the view that students can be helped to move from a naïve stance towards existing knowledge and its creation to an informed ability to criticise and analyse it by understanding how it is developed within their own chosen discipline or field. They learn within a model strongly influenced by ideas of active inquiry. It entails, for example, participation in

the research process as well as being given opportunities to demonstrate that they have grasped a range of research structures, methods and approaches.

If these approaches to reinforcing the link between research, teaching and study are to reconceptualise education in terms of inquiry, Brew and Boud's approach (1995) to the conceptual links centres on learning. They suggest that research can be understood as new collective or public learning, learning that is new to everyone, while students can be seen to engage in new individual or private learning, learning that is new to them. Learning thus becomes "the vital link between research and teaching" (p. 268). Brew and Boud are at pains to emphasise that research cannot be reduced to learning alone and also that teaching consists of more than enabling students to learn. They do, however, begin to articulate some cognitive processes, which they see as common to research and learning. Both are "informed by the tradition and forms of inquiry characteristic of the discipline", both involve critical engagement with existing knowledge and yet seek to go beyond it, "both involve the human act of making meaning, making sense of phenomena" (p. 267). Some of the comparisons they draw may be contestable but, as Elton (2001) points out, what is significant about this approach is that it is grounded in a student-centred rather than a teacher-centred model of education. Interest is transferred to the activities of the learner rather than of the teacher and the affinities between students' learning and teachers researching.

Barnett (2000) also focuses on the importance of developing such affinities. The issue for him is whether lecturers will "adopt teaching approaches that are likely to foster student experiences that mirror their lecturers' experiences as researchers" (p. 163). His central concern is with the context in which this matters. Like Jenkins *et al.*, he depicts a world of uncertainty but he focuses most strongly on its complexity. It is a world, he argues, in which there are multiple and competing frameworks for understanding and problem-solving that not only change but also are not necessarily commensurable. This implies changing conceptions of academic work. In their research function, academics become responsible for "contributing to the supercomplexity of the life-world", creating new conceptual and epistemological frameworks but also promoting public understanding of and engagement with this notion of the world. In their teaching function, they will be helping their students to manage, but also prepare themselves to contribute to, an ever-evolving supercomplexity.

Conclusions

There may be different conceptions of the researching-teaching nexus but academics and students from a relatively wide range of institutions testify

to what it means for them and why they value it. Recent literature tends towards the idea of a research-teaching-study nexus.

Research-informed teaching and learning are seen as important for:

- a) the acquisition and critical appreciation of substantive knowledge in the context of assumptions that that knowledge is partial and in process of development and revision within a regulated environment;
- b) understanding of the processes through which that knowledge is acquired;
- c) learning the skills to practice “disciplined inquiry” sanctioned by an epistemic community or institution.

The studies in themselves leave open the question of whether research-based learning is for everyone in higher education.

Two main views of the aims, value and context of research-informed teaching and learning have been depicted. The first remains rooted in academic activities, identities, cultures and institutions. Students are inducted into and can benefit from learning within them and, indeed, take those benefits away with them. There is an underlying assumption of an accepted hierarchical ordering of knowledge and that lies in academic hands.

A more extensive view is that the aims and value of research-informed teaching and learning should be defined by reference to the changed societies in which they are now located. Recently a number of higher education scholars have sought to justify them in these terms, either analytically or by reference to empirical study.

They suggest two ways of thinking about the nexus between research, teaching and learning in contemporary “knowledge” societies.

- a) Knowledge societies are understood as depending upon continuing systematic or disciplined inquiry to drive them economically and socially and to solve their problems. The value of research-informed teaching and learning is primarily that students learn attitudes, techniques and skills that enable them to adopt the appropriate roles and provide as robust forms of knowledge as possible in a context where knowledge generates demand for further inquiry and problem-solving.
- b) nature of knowledge. The value of research-informed teaching and learning (or the research-teaching-study nexus) is that students learn from their teachers how to manage that complexity but also to contribute new frameworks in which it can be understood.

In many ways these approaches re-state long held values. However, there is a shift of emphasis from substance to process, as well as from academic teaching to student learning. The shifts are important and valuable but they risk overstating the importance of modes of knowledge acquisition and underestimating the importance of substantive knowledge in the process of and

as a purpose of learning. Substantive knowledge is not only itself a resource for different ways of seeing, understanding and solving problems but also a source of pleasure, memory, imagination, human consciousness and human values.

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Information and Communication Technologies: a Tool Empowering and Developing the Horizon of the Learner

by

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In this article, we focus on the implementation and development of ICT in the education sector, challenging and developing the traditional learning environment whilst introducing new educational tools including e-learning. The paper investigates ICT as a tool empowering and developing learners lifelong learning opportunities. It defines a model of ICT development and identifies three core development stages through which basic skills, ICT skills, and lifelong learning skills are acquired. The paper further gives a description of the ICT impact on labour and education markets, the current state of development of ICT at school in EU and the needs for further investment in this area. The findings of this paper suggest that such investment is likely to have positive effects when geared towards blended learning approaches built on comprehensive policy and strategies to cover all stages, as well as all agents in its interesting but complex development.

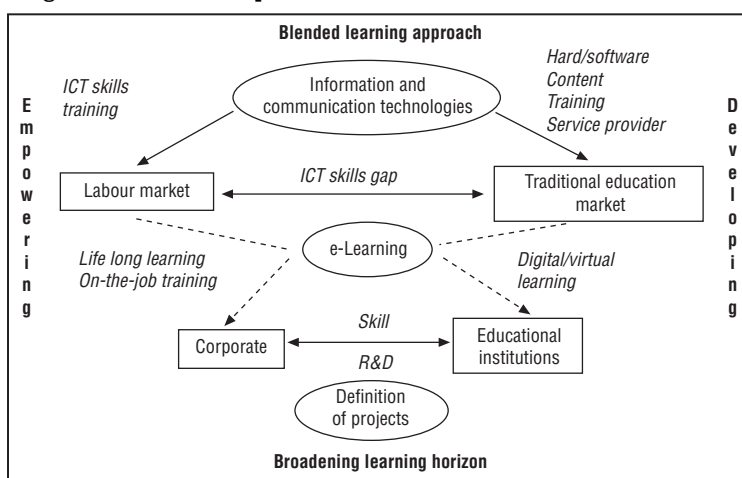
* The views expressed in this paper are solely those of the authors, and do not necessarily reflect the position of the European Investment Bank.

Introduction

The information-based economy underlines the importance of knowledge, i.e. human capital, as a key input in the production/service process. A core tool in this process are the advances in information and communication technologies (ICT), which are transforming most modern economies while presenting new challenges to labour markets, the traditional learning environment and everyday life in industrialized and developing countries.

ICT is a combination of manufacturing and services industries, which capture, transmit and display data and information by electronic means.¹ The definition of ICT adheres to “industries that capture, transmit and display data and information by electronic means”, these industries and the new associated markets increasingly are creating challenges and opportunities both in terms of their technical advancement and their socio-economic impact; but also in terms of finding adequate financial instruments to deal with the challenges they offer. Meanwhile ICT has pervasive effects affecting the evolution of both labour and education markets, generating new needs and challenges in each of them while at the same time furthering the interaction between these two markets, as described in Figure 1. The introduction of ICT technologies presents tremendous opportunity in the traditional education market.

Figure 1. **The ICT impact on the labour and education markets**



Source: Author.

Figure 1 should be seen in a dynamic way reflecting the convergence between the introduction of ICT at school, workplace and home. Over time there will be larger coherence on the development and use of hardware/software (content) in these three spaces to make products and services available, accessible and transferable between these spaces.

Clearly, globalisation, the rate with which organisational changes take place and new technologies develop have led to an increased demand for human capital to promote the knowledge society in which the development, application of information and communication technology and continuous training to producers and consumers is crucial. Emerging dynamic labour markets offer an increasing supply of jobs with normally abstract tasks, requiring significant training and skills. There is subsequent pressure on the education market to deliver the appropriate knowledge base. Learning and training in a lifelong learning context are key to work life, growth and social cohesion. EU policies and guidelines strive towards an enhancement of the role of ICT-tools in schools so as to provide an up to date learning environment.

In this article, we will primarily focus on the implementation and development of ICT in the education sector, challenging and developing the traditional learning environment whilst introducing new educational tools including e-Learning. In the OECD terminology,² the notion of e-Learning refers to the impacts of new ICT on education and training, involving new mechanisms for communication such as computer networks, multimedia technologies, electronic libraries, distance learning and web-enabled classrooms. It encompasses three different strands which have to be integrated into a comprehensive policy: i) infrastructure and equipment; ii) educational multimedia resources and training services; and iii) training facilities for teachers and for lifelong learning. The nature of the e-Learning assets are characterised by i) the level of asset specificity (i.e. transactions requiring intangible or tangible capital assets that are “specific” and exclusive to them) and complementarity between the different stages required to ensure the appropriate delivery of the services (i.e. infrastructure/connectivity, content and teachers’ training); ii) the wide range of useful life of the different blended assets (30 months to 30 years); and iii) the uncertainty and rapid technical change requiring to integrate the rate of obsolescence linked to asset life in the terms of the contract.

The inclusion of ICT in education is related to four main rationales: i) social based on the recognition of the role played by technology in society, the need for education to reflect the concerns of society, to demystify technology for pupils/students and to provide the basic competences or understanding of ICT to ensure participation in society and to foster social cohesion; ii) economic or vocational driven by the requisite of ensuring that the system is preparing students for jobs which require skills in technology;

iii) pedagogical linked to the fact that technology will assist the teaching learning process through better communications and higher quality pedagogical materials and hence enhance the teaching of traditional subjects in the curriculum; and iv) catalytic through external effects on society by improving the cost-effectiveness of the delivery of educational services; on the education system by reshaping the power relationships between teachers and learners and by facilitating the transmission of knowledge and the acquisition of skills for disadvantaged communities.

Figure 1 summarizes some of these interactions by focusing on the impact of the inclusion of ICT on the education and labour markets, where eLearning is a core element of ICT in these markets. The eLearning concept in a wider sense refers to the use of network technologies to create, deliver, and facilitate learning anytime anyway! This means that the core of e-Learning is the learning as such: often referring to computer-based training, web-based training, on-line training and just-in-time training.

Experience so far has shown that the eLearning should come in a “blended learning approach” delivery. This means that there is a need of designing and delivering the right content, in the right format, with the right media often providing a mix of the different tools normally “just in time”. Hence the new learning vision bears in large on “learning” development allowing innovative tools empowered by ICT technology. This learning refers to a life skill developing and broadening the horizon of school.

In the recent years boosted by the development of the ICT, a largely uncritical consensus emerged among policy-makers about the potential benefits of new information and communication instruments in education. As an illustration of this trend, in the US a web-based education commission³ emphasised the awe-inspiring power of the Internet to transform the educational experience and to meet the education challenges of the information age. In the European Union, in addition to the various national policies supporting the introduction of ICT into the educational system, the European Commission⁴ was implementing different measures to accelerate the changes in the education and training systems for the move to a knowledge based economy in parallel to various policies concerning the telecommunication industry, the labour market. The potentialities of the ICT in education have been also considered for developing countries through various initiatives supported by the UNESCO and the World Bank.⁵

However despite the different initiatives supported at the national or European level, the dissemination of ICT into the educational systems essentially focused on the provision of infrastructure and equipment to schools and higher education institutions but with a lack of effort to develop in parallel the appropriate learning materials and to train the teachers to

make an efficient use of this new instrument. In other words, the process has been driven by technology rather than by pupils, teachers and wider community need. In addition, very few papers trying to assess the potential of ICT to transform the learning process in a sustainable and viable way are available given the novelty of the process.

The paper uses a wide e-Learning concept underlining that eLearning simply serves a way of learning where to be a successful tool the focus needs to be on the learning part rather than on the e. The main result of our paper stresses the importance of a blended educational learning approach, which deals with the ICT challenges facing the development of the education system particularly at the school level.

We opt at identifying the current state of ICT, needs and possible education effects so far. The developing market of e-Learning and its links to the corporate world is briefly assessed. The study discusses potential investment opportunities, including the development of public private partnerships, to achieve national and European targets of ICT/e-learning. The starting point will be the different stages of development, referring to *Connectivity*, *Integration*, and *Deployment* – what they have in common and how to identify the next stage and subsequent needs in EU countries. We suggest that the next stage is to develop a balanced *ICT Blended Learning Strategy Approach*.

In the second section we review the current development of ICT in education in Europe. The third section presents the cost of ICT. The fourth section discusses the current policies implemented across Europe. Investment needs are presented in the fifth section. Concluding remarks feature in the last section.

ICT State in Europe

The ICT penetration in Europe

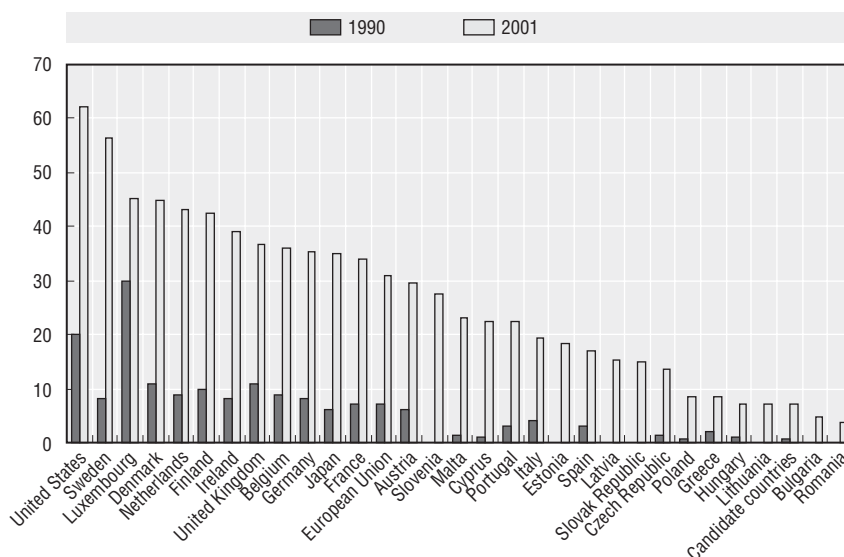
The diffusion of ICT has been very important over the last years. The rate of penetration of ICT equipments has been different in the workplaces, at home, at schools and in community places like the libraries. Indeed, ICT contributes to economic growth by facilitating the adoption of innovations and organisations changes in the enterprises and by increasing in some markets the level of competition. The growth of the ICT sector has also a direct impact on the economic growth. The share of ICT expenditure in the European Union is increasing. In 2001, this share was 4.2% of the GDP, up from 3.6% in 1991. In comparison with the United States, there is a clear catching-up process of Europe: the corresponding estimated GDP share was 5.3% in 2001, a decrease compared to the level of 5.7% reached in 1991. Among the European countries, Sweden, the United Kingdom and Luxembourg are investing more ICT than the United States in 2001, with a respective share of ICT expenditure

in GDP equal to 6.8%, 5.6% and 5.4%. There is an important disparity between the North and the South of Europe: in Greece, they are only investing 1.2% of GDP in ICT; and Italy, they reached 2.5% of GDP in 2001.

Considering the number of PC base (see Figure 2), a sharp increase was observed between 1990 and 2001, with an average number of PCs installed per 100 inhabitants in the European Union rising from 7 to 31, corresponding to an increase of 16% *p.a.* Although the annual average increase is higher in the EU, the gap with respect to the US still remained important where the number of per inhabitant increases from 20 to 62.3. No EU countries outperform the United States, even if Scandinavian countries are converging to the United States level of PC equipment. Among the European Union, some clustering appears between countries. The Nordic countries, the Benelux, Ireland, the United Kingdom and Germany have a high level of PC penetration, while Southern and Candidate countries are lagging behind. For example, in 1999, Greece had 8.5 PCs per 100 inhabitants while Sweden had 56.3, which corresponds to 6.6 times more computers in per capita terms.

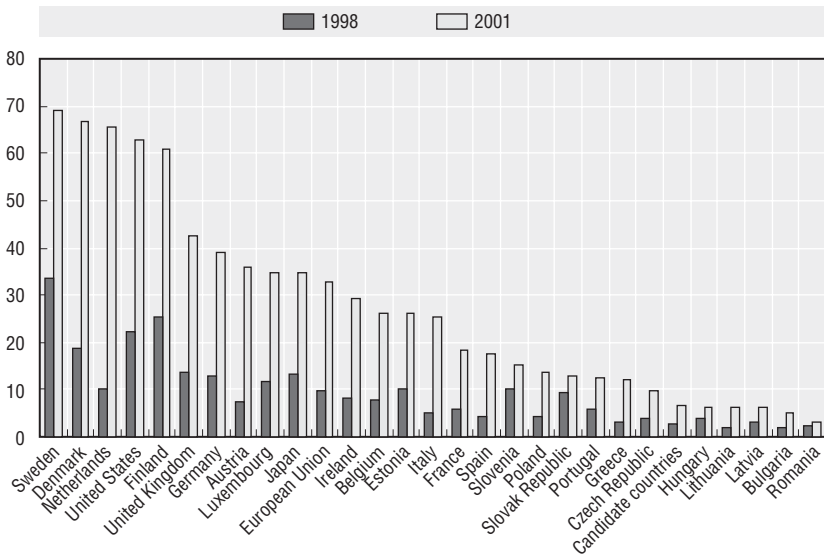
“The Internet is perhaps the most transformative technology in history, reshaping business, media, entertainment, and society in astonishing ways. But for all its power, it is just now being tapped to transform education” (Kerrey report, 2000).

Figure 2. **Average PCs installed per 100 inhabitants in Europe, United States and Japan**



Source: Eurostat (2002), NewCronos database.

Figure 3. **Internet users per 100 inhabitants in Europe, United States and Japan**



Source: Eurostat (2002), NewCronos database.

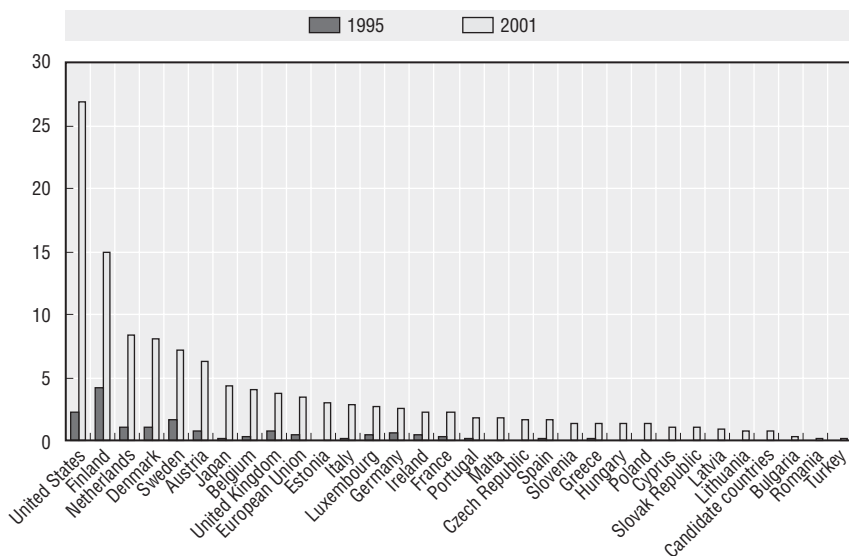
Considering another indicator reflecting the rate of penetration of ICT, i.e. the number of Internet users per 100 inhabitants, the difference between the Nordic countries plus the Netherlands; and the rest of the European Union is even more striking as described in Figure 3. In this case, Sweden, Denmark and the Netherlands are outperforming the United States in 2001, reflecting a strong growth over the last year. The discrepancy between the United States and the European Union still remained in 2001 denoting an increase in the disparity between EU countries.

The last indicator reflecting the penetration or diffusion of ICT is the average number of Internet hosts per 100 inhabitants. The leadership of the United States in 2001 is obvious as described in Figure 4, while the same difference in terms of Internet hosts per capita among European countries prevails.

This analysis of the global diffusion of ICT in the different European countries allows to rank the countries in function of their responsiveness to the introduction of the information technologies.

Extending the discussion to the education sector, we could infer that there is great variation in the deployment of ICT. It is also plausible that the countries, which have come furthest in terms of development of ICT are the most likely to be the adopters of e-Learning.

Figure 4. **Average number of Internet hosts per 100 inhabitants in Europe, United States and Japan**



Source: Eurostat (2002), NewCronos database.

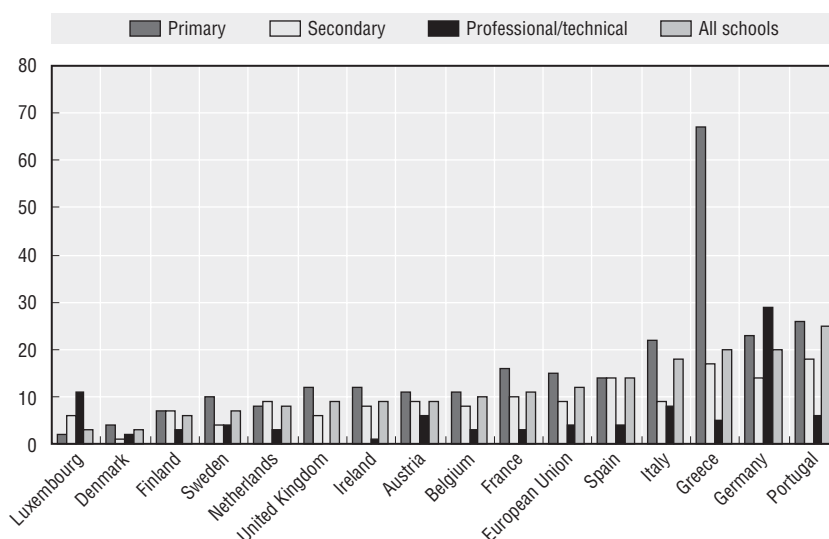
ICT in schools at a glance⁶

The development of ICT in schools in the European Union reflects to some extent the pace of diffusion of ICT at a more global level and has been supported by the implementation of national policies in all European countries. The objectives at the national level generally cover the equipment, the acquisition and development of software, the skills of teachers and pupils and the use of Internet. Two recent Eurobarometer studies⁷ showed that the level of uptake of new technologies in Europe's schools has been picking up, and that it goes beyond mere equipment levels, meaning that the level of training, the attitude of teachers and usage patterns are also important.

These two studies, performed by means of interviews with principals in 2001,⁸ show that there are 12 pupils per computer in European Union schools on average, with large discrepancies between countries as described in Figure 5. Denmark, Finland, Luxembourg and Sweden, present low numbers of pupils per computers, while Greece and Portugal present high numbers. Important differences also exist between levels of education, secondary schools being in general better equipped with computer facilities.

With regard to discrepancies to computers connected to the Internet (i.e. on-line computers), the EU average more than doubles at 24 pupils per on-line computer with figures ranging from 5 to 75. The difference between the ratios

Figure 5. **Percentage of pupils per computer (off-line computers) in 2001 in the European Union**



Source: Eurobarometer survey Flash 101 "Head teachers – June 2001".

is higher for the primary schools reflecting the fact that Internet connections are less used for educational purposes at this level than at the secondary level.

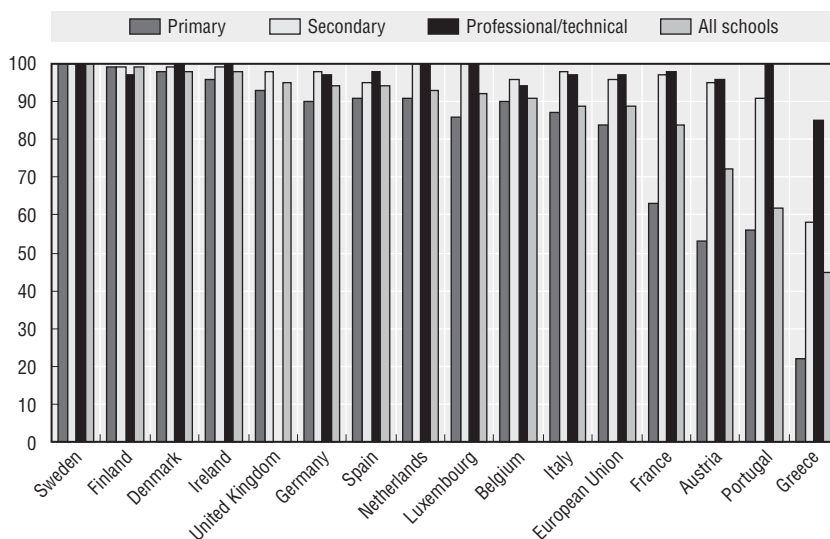
In terms of number of schools connected to the Internet, the European Union were close to reach the target of having an access for all schools by the end of 2001 (see Figure 6). Most European countries achieved a level of Internet access higher than 80%, except Austria, Portugal and Greece. The level of connection differs between the type of education, less schools being connected at the primary level compared to secondary and professional/technical education.

The preceding indicator has to be compared with the proportion of pupils that could really use the connection to Internet in the schools. The EU average shifted from 89% to 80%, the discrepancy between the number of schools connected and the ones in which pupils have access to the Internet being particularly for the primary education.

Although the ranking between the countries remains similar, the Internet offer is substantially reduced in Germany, Spain and Luxembourg when considering the percentage of schools in which pupils have an Internet access.

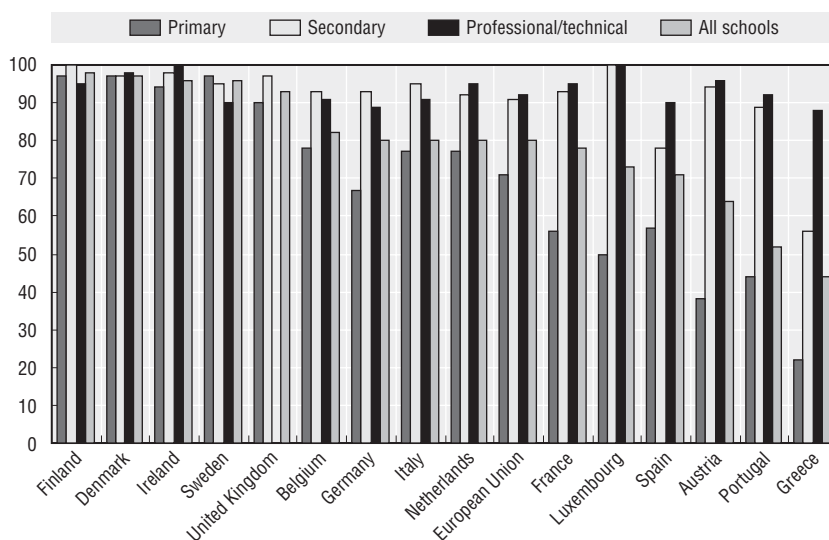
Most of the computers used in EU schools are rather recent, mostly less than three years old. In addition, countries that recently have started to equip their schools with computers have the most updated ones. Further, 76% of EU

Figure 6. **Percentage of schools connected to the Internet in 2001 in the European Union**



Source: Eurobarometer survey Flash 101 "Head teachers – June 2001".

Figure 7. **Percentage of pupils having access to the Internet in 2001 in the European Union**



Source: Eurobarometer survey Flash 101 "Head teachers – June 2001".

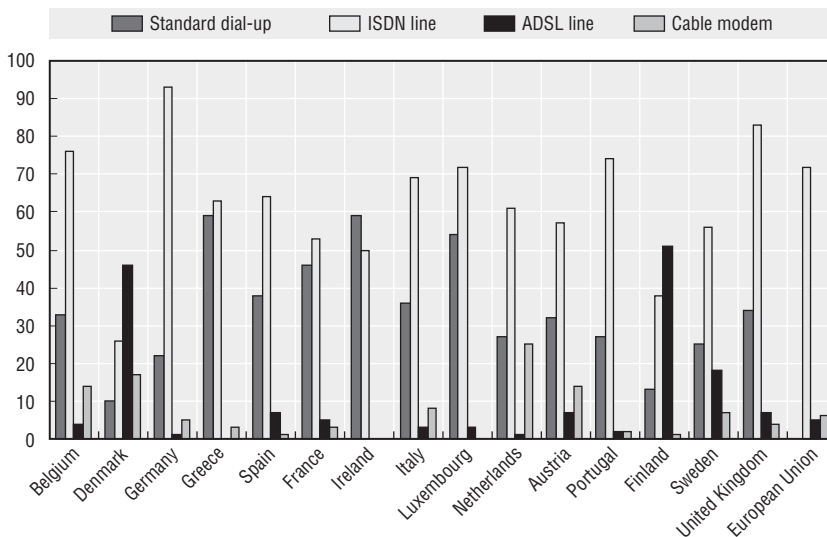
schools have a computer laboratory, while more than half of EU schools have classrooms fitted with computers, a third of the schools have equipped the school's library with computers, while about 11% of EU schools are equipped by laptops.⁹

One important feature of Internet connectivity for schools is the type of connection. The European landscape is dominated by the ISDN (72% of school connections) and standard dial-up (33%). Broadband connection is progressing, depending on the technologies available in each country. Geographical factors, i.e. urban versus rural, and the types of education, i.e. professional/technical, secondary and primary, are at the origin of important differences. Broadband technologies are more developed in densely populated areas and the need for bandwidth is higher in professional/technical and secondary educations.

Reviewing the use of off-line computers used by teachers, Figures 9a and 9b demonstrates the wide use of computers in the education process, with an indicative strong correlation between level of equipment and frequency of usage..

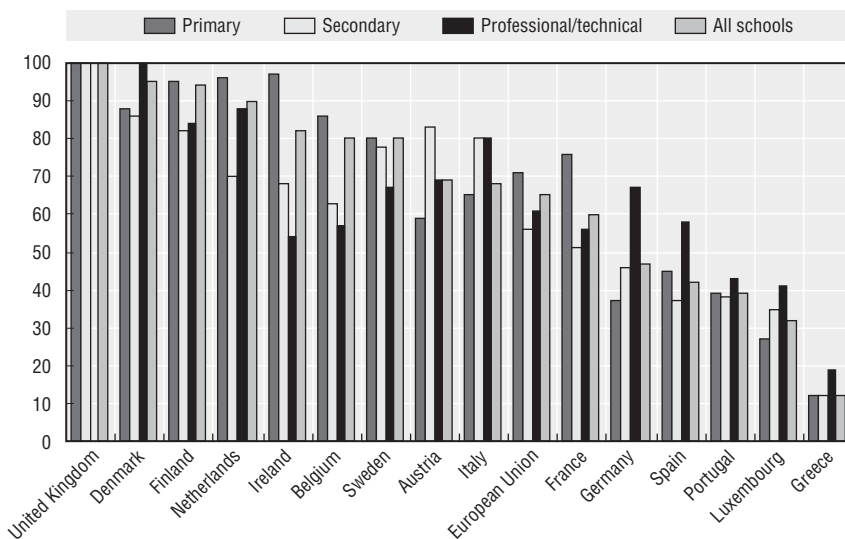
The same applies to the use of Internet. Two other factors that seem to affect the usage are firstly, the type and level of education (usage level is lowest in primary education) and secondly the gender of teachers (males are more frequent users of computers and ICT in education). So far concerning the types of

Figure 8. **Type of Internet connections in schools in 2001**



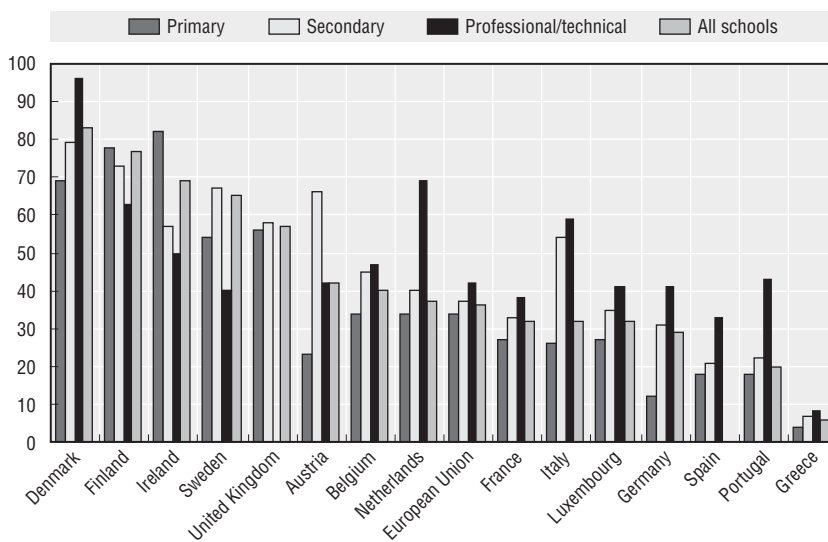
Source: Eurobarometer survey Flash 101 "Head teachers – June 2001".

Figure 9a. EU teachers (%) using off-line computers with pupils in 2001



Source: Eurobarometer survey Flash 102 "Teachers – June 2001".

Figure 9b. EU teachers (%) using on-line computers with pupils in 2001



Source: Eurobarometer survey Flash 102 "Teachers – June 2001".

education, ICT is essentially considered as a tool in primary education for carrying out projects and is not included in the curriculum *per se*, while for secondary education, ICT is an integral part of the minimum curriculum in most countries. The main reasons advocated by teachers for not using the Internet are linked to connectivity (school is not connected to the Internet –40%), and equipment (the school has no computers for education 24%, there is no Internet access in the classrooms –26%). Only one in five teachers does not use the Internet because he/she does not believe it is relevant to his/her teaching with a striking feature: the percentage is the highest in the countries where Internet is more developed, i.e. Denmark (43%), Finland (48%) and Sweden (49%).

Meanwhile teachers' Internet use at home is high – nine out of ten European teachers have a computer at home and seven out of ten have an Internet connection at home with the exception of Greek teachers. And, again with the exception of Greece, the overall picture is much less contrasted than at school level. Further, in 92% of cases teachers have themselves paid for their personal computers. In only 4% and 2% of the cases have they been paid for by the government or school respectively. As for government sponsorship it is particularly common in Sweden (over 20%), and to a lesser extent in Denmark, Spain, the Netherlands, and Britain (10%). School sponsorship is further significant in Denmark and Sweden (10%).

Finally we have seen some data on the development of the ICT tools in schools. Having a traditionally passive role, this is gradually changing making the tools an integral part of the teaching with a need to reform the curricula. However, although some individual schools have reached this level it is by far the general experience and many countries have a long way to go to reach there.

ICT stages of development

As demonstrated in the previous section today dissemination of ICT in the education sector in Europe is at different stages with varying needs of further development. Southern European countries overall have a low rate of penetration in terms of coverage as well as in terms of variety of educational tools proposed to pupils and students, while countries like Sweden and the United Kingdom, for example, have a higher rate of penetration. In most pre-accession countries, projects for the use of ICT at all levels of education are gradually implemented, while concurrent measures are taken in the labour market and for community and lifelong learning enhancement.

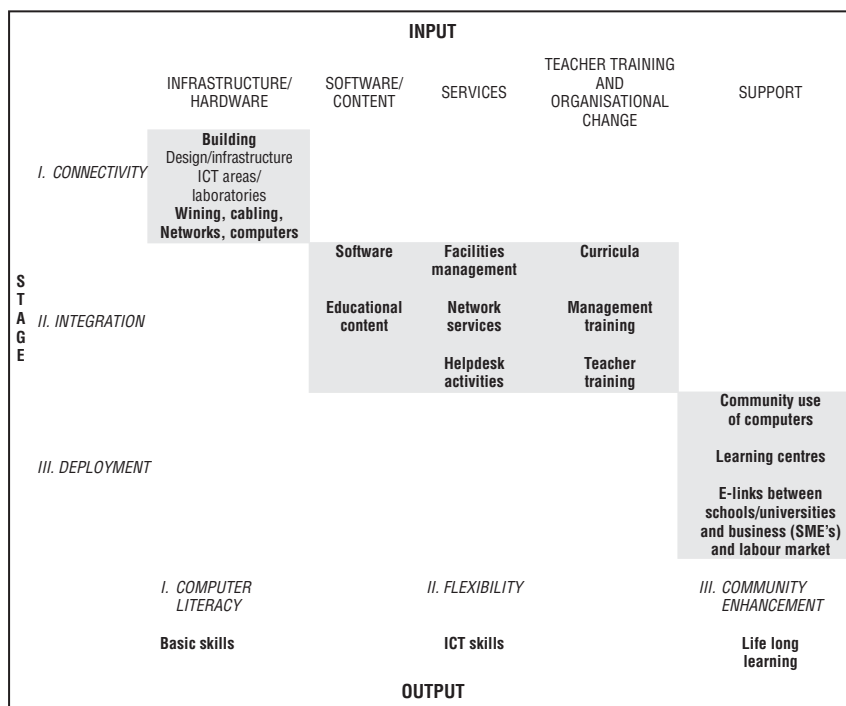
The introduction and wide dissemination of ICT in schools and universities requires substantial investment in organisation, facilities, equipment, management and teacher training programmes. This is further an area that develops in a quick pace and therefore it also comes with a need for future strategies. Software and curriculum development are particularly lagging

behind and consequently also have to be developed, as need is to enhance the skills of managers, teachers, and service suppliers. The home environment will also play a significant role in support of development and interest. eLearning has to be seen in such a wider context.

Herein the ICT market is analysed in view of its different stages of development – connectivity, integration and deployment – in view of its inputs which mainly are its components, defined by its infrastructure and hardware, software and e-learning, services, teacher training and support and research and development and its outputs defined as i) Computer literacy and basic skills, ii) Flexibility, e-Learning activity and proficiency and deeper skills, iii) Community enhancement and lifelong-learning as shown in Figure 10.

The stages as such represent gradual introduction into a wider *Blended Learning Approach* where ICT is fully implemented and works. This means that having reached the third state of development, countries are moving towards a state where new opportunities for learning are provided within a blended learning approach be it in schools, work life or at home, with a mix of different

Figure 10. ICT stages of development



Source: Author.

means and tools to achieve this and where these three spaces interact. In fact so far we have looked at quantities mostly in terms of how many and to which degree computers are used at schools.

Recent evaluations show that even in the countries, which appear to have the most number of computers implementation of ICT as such into the school and the curricula has not yet succeeded. A case is Sweden moving into the third stage of development and in spite of huge efforts and money spent on ICT technology, the technology has not been fully used to the satisfaction of teachers and pupils. Basically it has to do with the approach taken – to supply computers – later this approach was complemented with training to the teachers – finally the teaching as such has still not changed fundamentally and there is need to refocus targets, where exactly targets and standards and aims to be reached need to be set in advance. In other words this calls for a strategy.

Hence, the risk of implementing EU-guidelines can be that too much focus is placed on the number of computers/connexions, etc., per pupil while loosing sight of the wider framework of aims, targets and compliance to country specifics.

However, despite the long way to go before ICT is fully integrated in the school environment clearly there are benefits related to the output described in the preceding Figure and subsequent effects and externalities of ICT, *e.g.*:

I. Computer Literacy and Basic Skills:

- Enhancement of teaching tools and curriculum to fit modern needs.
- Enhancement of hard/software, helpdesk facilities and management within this area.
- Enhancement of educational achievement.
- Decrease in dropouts and repetition rates.

II. Flexibility, E-learning Activity and Proficiency, Deeper Skills

- Advancement in modern curricula being developed, applied and monitored.
- Enhancement of virtual learning opportunities.
- Enhancement of educational networks.
- Enhancement and research and development to further ICT educational tools.
- Enhancement of just in time learning.
- Enhancement of creativity and innovation in learning.
- Closer integration of formal, non-formal and informal learning.

III. Community Enhancement, Lifelong Learning

- Regional development.
- Probability of being employed will increase.
- Given employment, higher rates of return (higher salary).
- Community use-at-large of computers when they are not being used for educational purposes.
- Enhancement of lifelong-learning opportunities.
- Higher educational and social aspirations, and ability to assess learning at different stages in life, ages and when necessary with a just-in-time approach.
- Overall positive spill over effects.
- Improved partnerships (public-public and public-private) between schools and museums, between universities and industry, for example.e

IV. Blended Learning Approach – an integrated view

- A final reach of a blended just in time and lifelong learning approach encouraging an integrated school (applying a variety of tools)-work-leisure approach.
- Opening opportunities between schools all over the world – using the most up to date tools.
- Learning transcending the borders of schools, colleges and universities to offer a more lifelong learning approach.

Hence, the wider implementation and integration of e-Learning in a blended learning approach where all the above fall into place is expected to resume in cost efficiencies as well as cost effectiveness to the schools/pupils/teachers/staff, companies, and to the community in large.

The costs of educational information and communication technology

In terms of financing ICT investment resources are most commonly coming from the public school sector. However, a small fraction of school computers (14%) have been donated by private sources to a varying degree between countries. Private sponsorship is most common in Austria, Germany, and the Netherlands (28-30%), less common in Portugal, Greece and Ireland (20-22%), and least common in Luxembourg, Denmark, Sweden and Finland (4% and below).

Few countries provide a distribution of expenditure among the various categories, i.e. equipment and human resources. Based on the existing information,¹⁰ it appears that expenditure on equipment and facilities dominates in the budget dedicated to ICT. Finland and Greece are the two only countries allocating more funds for the training of human resources. In large

this demonstrates the state of development that the countries are in and also that it will yet take time until a fully integrated approach is launched.

We will briefly assess the kind of costs that programmes implementing, maintaining and developing information technology in schools would induce with regard to the introduction, maintenance and development of ICT technologies. However, we cannot present a comprehensive picture. This is an area subject to fast development. Solutions have to be left to the experts. Hence the cost table is a rough tool that indicates some of the costs that may be included.

Table 1. **Example of costs of the implementation of ICT**

		Fixed F/Variable V cost	Capital C or recurrent R cost
Infrastructure Equipment	Furniture Computers Power protection Backup generator Broadband	F	C
Installation	Air conditioning	F	C
Software site licences		For V depending on the agreement	C
Learning management/ content/organisation		V	R
Training of teachers and laboratory instructor/ constructor		F	C
Helpdesk /training/ management/organisation		V	R
Training/professional development			C & R ¹
Electricity		V	R
Teacher time		V	R
Peripherals		V	
Telecommunications	Telephone Internet provider	V	R
Computer supplies		F	C
Maintenance and services provision	Equipment Software Routine	V	R
Insurance		F	R
More...			

1. The professional development of staff generates recurrent costs to provide follow-up training teachers and administration to enable them to use information and communication technology in a more efficient manner.

Source: Author.

An example of costs is provided in Osin (1998) where estimates for costs for Israel to implement such a program are assessed. With a ratio of 12 students per computer (which is very close to the current EU average), the total annualised costs were estimated to be approximately USD210 per student. Other studies, undertaken for the United States as quoted in Osin, present cost estimates ranging between USD120 to USD450. A ballpark figure of USD300 per student could then be a qualified first good estimate of the unit cost to estimate the impact of such programs in country budgets.¹¹

Cost comparison may involve the cost per student computer contact-hour of a computer laboratory configuration versus a classroom configuration and in the last instance a laptop configuration. However, as indicated, because we wish to see a more integrated learning strategy approach all these figures will be poor indicators of the overall costs of the inclusion of ICT.¹² Overall in the long-run the investment in this area is expected to bring with it a number of benefits as previously noted including savings in costs and increased effectiveness.

Policies and implementation

In this section we review the policy recommendations of the EU Commission on ICT and eLearning and the implementation of these policies. The different stages of implementation will serve as our starting point.¹³

At the European level, the “e-learning: Designing tomorrow’s education” initiative¹⁴ has been adopted by the European Commission in May 2000 following the Lisbon Summit. This initiative is part of the comprehensive eEurope action plan¹⁵ aiming to exploit the European strengths and overcome the barriers holding back the uptake of digital technologies. Managed by the Education and Culture DG, the concrete lines of action have been defined in the e-Learning action plan¹⁶ for the period 2001-2004 to develop the comprehensive use of ICT into education and training:

- to create flexible infrastructures and equipment that will make e-learning available to all;
- to promote universal digital literacy and create a culture of lifelong learning;
- to develop high quality European educational content;
- to promote co-operation between players involved in the delivery of e-learning.

This European initiative will extend in the framework of the “e-Learning 2004-2006 programme” with a budget of EUR 36 million aiming to promote effective integration of Information and Communication Technologies (ICT) in education and training systems in Europe. The rationale for this programme is grounded in the ability of using ICT as a new form of literacy – digital literacy

– which together with more traditional forms of literacy and numeracy allows citizens to participate fully in the knowledge society and to sustain social cohesion.

This initiative clearly demonstrates that eLearning is primarily a concept of “learning” making use of ICT technologies, subsequently organising the learning bits differently than accustomed by the traditional educational environment offering new opportunities and bringing learning to a larger public. This is also demonstrated by the inclusion of ICT in a number of other programmes and EU activities.¹⁷

Implementation stages

Connectivity

There is a gap between European Union member countries with regard to ICT implementation at all educational levels as demonstrated. Within this area given the general guidelines and targets set by the Commission, countries are faced with needs to narrow the gaps to meet guidelines (see www.elearningeuropa.info/dir_national.php?lng=1 for information on national strategies in eLearning). Accession countries will have to catch up with the rest (average) of Europe and there is a wide spread on where the different countries are currently.

Briefly falling out of our previous discussion in terms of the European Union countries – there are countries at the stage of dissemination or close to dissemination (Sweden, Finland, UK and to some extent Denmark,¹⁸ the Netherlands and Ireland), countries on average we would characterise as being those in the middle of integration, and we have a few real low key performers in the state of connectivity (Greece¹⁹ and Portugal).

Considerable progress is being made with the implementation of coherent and effective policy and regulatory framework. Over the last years, the candidate countries have made great strides in basic access to communications. Accession countries all come in at the lower level of implementation. With a few exceptions, there is still a low penetration of computers in schools. The costs of the Internet access vary widely in candidate countries. Costs are considered relatively high, and that means lower regular usage. In addition, there is substantial divergence between the countries for all three levels (primary, secondary, and tertiary), although individual countries have made different efforts to keep up with the European Union (15) and Estonia in particular is an example of fast development within this area.²⁰ As such Estonia serves as an example of the measures to take for the countries coming in late but catching up fast. As far as we can see no country to date lives up to an integrated blended learning approach at the school level.

Integration

Historically, in February 1997 an agreement was reached regarding the basic principles and policy issues required for the realization of an advanced information and communications society and for the promotion of international joint projects at the G7 ministerial meeting in Brussels. The Lisbon summit in March 2000 put development of innovation and ICT into a top priority.

At the Stockholm European Council in March 2001 ICT was again the focus with new targets to be met, while the need for global commitment has intensified. Examples – such as School-Net²¹ – of cooperation over borders have become more common at all levels of education, and a prerequisite for Member countries system so as to meet EU-guidelines. Individual countries have set up national targets as well.

According to the recommendations of the Council of Europe, a desirable goal for the year 2000 for all elementary and secondary schools was to have at least one multimedia computer per classroom, connected to a local network and to national and international networks. In large EU policies aim at ICT enhancement at all levels of education: primary, secondary, tertiary, vocational – lifelong learning, and wider e-learning framework activities (see Section 2 for a short review of the EU policies and the EU e-Learning portal at www.elearningeuropa.info/ and also Cisco Networking Academy Program website at www.cisco.com/edu/emea/academy/academy_funding_programmes.shtml).

However, EU-recommendations are often complemented by national guidelines to better cover national needs. A current trend in several EU countries is the formation of committees with education and business representatives to promote ICT in schools and at workplaces. This obviously is a good step to make the link between the school-industry and finally also the home/leisure areas all increasingly moving in the same direction in order to assimilate innovation and allow a blended learning approach.

As discussed in previous sections, variations in European Union countries with regard to ICT implementation are huge, and development is ongoing some still exhibiting a large number of pupils per computers while others are in the process of changing curricula, training teachers, and developing software applications to be used in training. A complete blended approach has not yet been formally introduced and there are many opportunities and room for innovation within this area.

The countries that are further along and in the process of finishing their first evaluations of the early stages of bringing information and communication technology into schools – mainly the connectivity and in part the integration stage are looking into promoting more comprehensive measures in the future. In addition, the continuation of the development

towards a seemingly virtual world with opportunities of e-Learning is a key priority with the emphasis on the learning part – however, this again has to be put in its context.

Deployment

e-Learning creates new opportunities while raising concern and need for learning management. Learning in this area even within schools and not just for corporates relates to training and skills management and demands inclusion in the curricula. Solutions will only be effective if they fit into a strategy with standards and targets clearly spelled out from the start. Although at each stage of development requirements will vary in a blended learning approach a clear cut vision is needed from the start. Such an approach will bring more long-term coherence in the solutions and practices to be adopted in the different countries. In all this educational objectives will be crucial to meet. These will be country specific but with the development in markets likely to become more and more alike.

Impact of ICT on educational attainment

The availability of equipment in schools as measured by different indicators such as the ratio of students to computers or the access to Internet provide an indication of the level of implementation of national policies for resourcing computers in education but does not give any information about the quality or effective use of computers for learning.

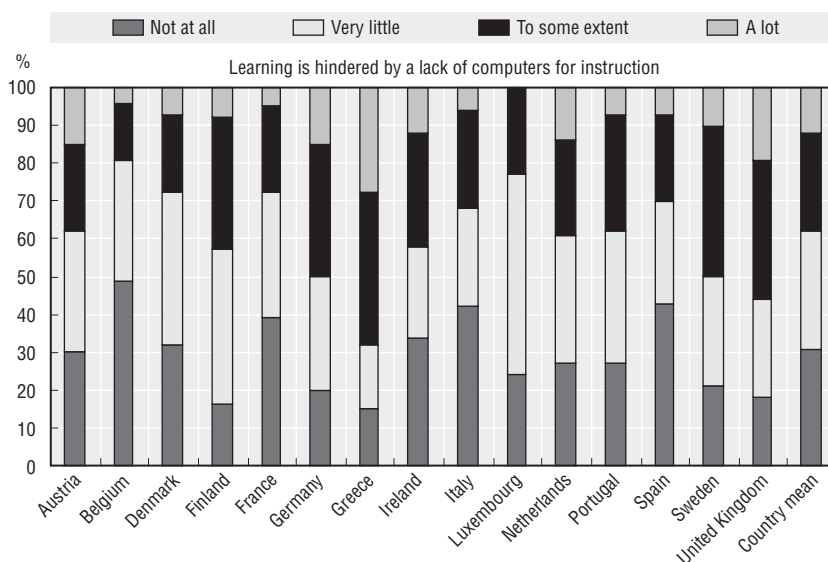
There is a lack of studies evaluating the impact of the introduction of ICT tools on pupils' educational attainment. A first recent paper²² reviewing the experience of the use of computers on pupils' educational performance in Israel does not provide evidence that computer-aided instruction improves pupil performance. Based on the implementation of the "Tomorrow-98 Programme" in 1994 aiming at increase the availability and hence use of computers in elementary school and country's middle schools, the study identified a higher likelihood that fourth-grade teachers used computers to teach mathematics. However, it does not translate into an improvement of pupils' attainment: mathematics scores of pupils in schools that received new computers actually went down. One interpretation coming out of the study is that either computer aided instruction is not better or less effective than other teaching methods or alternatively computers may have consumed school resources or diverted educational activities and teaching effort, which *ceteris paribus* would have prevented a decline in educational performance of the pupils. The study suffers from the following shortcomings: i) the impact of introducing ICT on educational achievement will need time to develop and requires an adequate measurement of the benefit streams associated to the use of ICT as an additional pedagogical tool; ii) the lack of positive effect could

result from the need to design and implement a comprehensive e-learning policy integrating teachers' training (in terms of adequate pedagogical methods and ICT skills) and educational multi-media materials development as well as appropriately designed curriculum; iii) the results of the study need to be completed by other evaluations of the impact of ICT on educational performance of pupils.

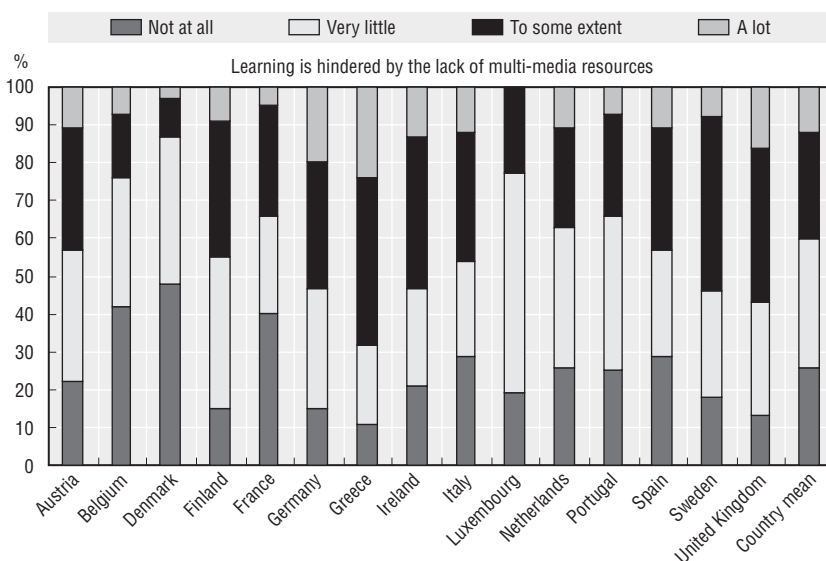
Additional evidences are now available on the impact of ICT on the learning process. At an international level, the PISA study integrated a qualitative assessment of the effect of computers and multi-media resources on the learning of 15-year-olds pupils. More specifically, school principals were asked to evaluate to what extent the lack of computers and multi-media resources for instruction hindered the learning of 15-year-olds pupils. These results are summarized in Figures 11 and 12.

Evidences about the impact of the lack of computers on pupils' attainment are mixed: in Germany, Greece, Sweden and United-Kingdom, the lack of computers was perceived as negatively affecting the learning process of pupils. On the contrary, in Belgium, France, Luxembourg and Spain, levels of computer availability were not considered as an obstacle to learning. Considering the relationship between the perceived intensity of the lack of

Figure 11. **Impact of computers on the learning process**



Source: OECD (2002), *Education at a Glance – OECD Indicators 2002*, OECD, Paris.

Figure 12. **Impact of multi-media resources on the learning process**

Source: OECD (2002), *Education at a Glance – OECD Indicators 2002*, OECD, Paris.

computers on the learning process and the number of pupils per computers, a weak positive correlation could be identified (equal to 0.35): the perception that the lack of computers is an obstacle to learning increases with the unavailability of computers.

However, in countries like Sweden or the United-Kingdom, the availability of computers in schools is high and school principals in these two countries are concerned by the lack of computers on the learning process. On the contrary, countries like Greece or Portugal have a low level of development of ICT infrastructure at school associated with the perception that the low availability of computers negatively affects the learning process of pupils. Countries in a middle position in terms of available resources for ICT in schools appears to be less affected by the lack of computers for instruction.

The perception about the impact of computers and multi-media resources on the learning process of pupils is relatively similar: the ranking of countries remains the same, demonstrating the importance of having a comprehensive or integrated approach in the recourse to ICT tools to support learning.

The access to ICT resources (computers, software) for pupils is not limited to schools. On the contrary, pupils' use of computers at home is more frequent: an average of 64% of 15-year-olds pupils in OECD countries reported having home computers available for use every day, but only 27% had this facility at school. To some extent, the introduction of ICT tools at schools followed the

rapid pace of development of computers at home requiring to achieve an adequate complementarity between the availability of resources within and outside schools. Independently of the effect of ICT on the learning process in schools, the access to computers in schools will reduce the risk of digital divide between pupils from different socio-economic background. The PISA study illustrated that the proportion of pupils saying that they never have a computer available to use is 10% points higher in the home than at school suggesting a potential positive effect of schools in helping to bridge the educational gap between the ones having and having-not access to ICT materials. At the same, the inclusion of ICT in the curriculum and pedagogical practices has to avoid creating a disruptive effect between the school and home environment, especially for pupils not benefiting from the support of digital literate parents.

Investment needs

Based on schools already using computers the major obstacles in realising the schools ICT related objectives as reported by school principles were (amongst a list of 18 options):

- that not enough computers were available;
- that the teachers lack the knowledge/skills;
- that it is hard to schedule computing time.²³

These issues are indeed basic. Hence, the first investment step is to overcome the connectivity phase, however, this should be achieved based on a full strategy being in place.

As a first step ahead the European School Net (EUN) workshop in March 2000 put forth the following propositions:

1. Create a critical mass of digitally literate teachers;
2. Dare and share – that is do take risks and to promote change;
3. Evidence for the decision-makers speeds up change;
4. Reach the critical mass quickly;
5. ICT is not necessarily subversive – allow teachers to adopt to ICT and change their teaching methods on their own terms;
6. Organisational change is about individual and collective change and will be deeply affected by the wider social impact of ICT;
7. Learning in virtual environments can provide real added value;
8. Teacher training should reflect priorities and be achievable;
9. New assessment methodologies and a common measure of ICT competency will reduce the ICT skills gap;
10. Change requires sustainable business models and possibly a period of experimentation.

These guidelines are wide encompassing empowering, developing and providing far-reaching skills/competence. They call for the need for a vision, a comprehensive policy “beyond just spreadsheets in maths and word-processing in English” (Mc Kinsey). Hence, a blended learning strategy approach should be taken in consideration allowing and demanding change in a number of areas at the school level.

There is a shared recognition that the potential bottlenecks for the dissemination of ICT in schools (with differences between countries in function of the level of implementation of the required infrastructure and connectivity) are essentially in terms of the provision of adequate educational content complementing the traditional textbook integrated in new pedagogical methods and organisational framework requiring an upgrading and refocus of the teachers’ training.

In most European countries, a substantial reduction in the proportion of public expenditure on education as a proportion of GDP has been observed, only four countries – Denmark, Greece, Portugal and Sweden – recorded an increase in the percentage of GDP spent education. The most important part of the public funds invested in education corresponds to current expenditure, the most significant part (around 75%) being earmarked for teachers’ salary. At the same time; on top of budgetary restrictions, public authorities are confronted with the emergence of new investment needs created by the promotion of lifelong learning policies, requiring new prioritisation among the education budget. The reduction or stabilization of the public funds allocated to the education sector is not compensated by an increase in the private funding of education and training.

In this environment, despite the “fashion effect” of ICT for education, the implementation of ICT policies could be slowed down, or at least be reviewed with the objective of spending existing resources more efficiently. At the same time, ICT provides opportunities to funding, including the option to recourse to public-private partnership (PPP). The nature of PPPs will be based on a mix of the private sector providing technical skills and taking financial risk, with the public sector contributing long term financial commitment and educational skills and taking some educational risk, i.e. that the teachers can be trained and the pedagogy can be developed to ensure effective learning outcomes.

Considering the different provision of the different inputs of a e-Learning strategy, the infrastructure component is a potential candidate for PPP solution. Indeed, buildings do reliably predictable things, which can be contractually defined in terms of the outcomes they make possible. It is possible to make a reasonable definition of the basics of networks, computers and software but much more than this is needed for effective e-learning environments. For the software/content component of an eLearning strategy,

it is possible to develop interactive content that has a sufficiently good track record of producing appropriate educational outcome across large numbers of pupils for there to be some kind of PPP involved in its provision, distribution, operation, maintenance and support. However, this is an area probably an order of magnitude more complex than the “new school buildings”, requiring additional investigations to learn about really effective e-learning content and the surrounding pedagogy.

The creation of content remains an important issue. Indeed, the uncertainty about the relationship between the nature of the educational content and educational achievement limits the recourse to PPP, at least as a contractual structure where the learning process and outcome that will result from the interaction between the pupils and the teachers is used to allocate risks and define rewards for the private contractor. The risk that the learning process itself should be effective will remain with the teachers, trainers and the educational establishments. These key players will wish remain in control of the content, modifying it; rather like they do at present for a traditional lesson. This provides a key challenge in terms of the design of content (which should be modular in order to allow such manipulation) and intellectual property rights (IPR) (which should allow teachers to add to and mix content, whilst respecting the underlying property rights). Hence the infrastructure and learning resources (pre-requisites) are “delivered”, but the eLearning itself is very much “tailored” to the educational context.

For the teaching component, the recourse to PPP is only possible for the training aspect. The procurement of teaching through PPP is not adequate given the complexity of the tasks performed by the teachers and the associated uncertainty related to the measurement of the outcome of the teaching process (how to disentangle between the impact of the family, socio-economic and school environments on pupils performance?).

There are also new opportunities for schools in a wider framework. As human capital/intellectual capital has become a core asset in the corporate world, because a modern firm's performance is reflected in part by the competencies and skills of its workforce, a schools performance has to be seen fairly much in the same way. Schools working in an environment of cut budgets and change need to be more focused as well as skills oriented, at all levels, on an organisational, staff/service and pupil level. Solutions have been sought in giving schools more autonomy promoting competitiveness and innovative financial solutions, including PPP arrangements.

The development will create opportunities while challenging the classic didactic strategy. A blended learning solution has to deliver at many levels (organisation/management/staff/service/pupil). Performance indicators spelled out from the start will measure its success.

Concluding remarks

Given that the ICT sector is characterised by a dynamic evolution the key role for the education sector is to provide a solid base empowering, developing and broadening ICT use in schools.

Each country is currently at its own stage in building up the necessary ICT skills at schools and workplaces. So far evaluations of ICT show that the initial phases of bringing in computers into schools have not had as positive effects as was expected on educational attainment (for example based on the experience in Sweden and the United Kingdom). The cause has been foremost, connectivity, the lack of an implementation policy and the failure to train teachers. Hence, even if the number of computers in each country is a poor measure of the effectiveness of computers in teaching or the effectiveness of ICT implementation it is a first threshold to overcome. We have pointed at the different stages of development in this study. Foremost our focus has been on the provision of a blended learning approach, where ICT is one source of tools used in a dynamic educational process be it at schools, at firms or at home.

Educational objectives need to be clear albeit flexible to allow and develop new educational possibilities and continual training – and in particular measures in line with growing needs for lifelong learning and social cohesion.

Teacher training is one crucial part of this development in the deployment of information technology in the classroom and computers are powerful instructional tools. But their potential will not be realised without teachers being trained in their use and continual development. Therefore a need for blended learning approaches emerges. This area is an area of opportunity to reach European ICT goals and development.

It is crucial that governments incorporate funding in their recurrent budgets to follow the development within this area and to provide schools with means to upgrade their computer skills and familiarise themselves with the latest software/innovation/development on the market for teaching their disciplines and to import management learning. Quality educational software is critical for maximising the instructional benefits of information technology in schools. All this demands both improved software supply but also improved ICT services, including the parts of networks – reviewing network costs – cabling etc it is likely that schools to a larger extent will have to acquire expertise in these areas employing a business oriented approach, also profiting from a standardised integrated school/business approach to capitalise on the lessons learned on the business side.

In particular a comprehensive view needs to be taken to understand from where investment comes into a fuller picture of future educational development.

Possible institutional barriers and regulations within this area may have to be looked at more carefully, due to differences with regard to legislation, regulation, and/or security within this area others are in the initial stage.

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Notes

1. Following an OECD definition (there are several definitions on ICT in the literature).
2. OECD (2001), *E-Learning – The partnership challenge*, OECD, Paris.
3. See www.webcommission.org.
4. See http://europa.eu.int/comm/education/elearning/doc_en.html.
5. See The World Bank Institute at www.worldbank.org/worldlinks/english/.
6. Analysis of the introduction of ICT into European Education Systems could be found in the following publications: Eurydice (2001), Basic Indicators on the Incorporation of ICT into European Education Systems – Fact and Figures, 2000/01 Annual Report, EC, Brussels (www.eurydice.org/Documents/TicBI/en/FrameSet.htm), European Commission (2001), eEurope 2002 Benchmarking –European youth into the digital age, SEC(2001) 1583, 9.11. 2001, Brussels (http://europa.eu.int/information_society/eeurope/news_library/documents/education_staff_paper/education_en.pdf) and the related Eurobarometer analysis available at: http://europa.eu.int/information_society/eeurope/benchmarking/list/2001/index_en.htm.
7. European Commission, DG's Information Society and Education, Culture, and Audiovisual, Working Document, Europe 2002, Benchmarking, European youth in digital age, February 2001.
8. Although the data can be questioned with regard to comparison quality they provide an overview of the current situation.
9. "The conjunction of high figures for computer labs and low figures for equipped classrooms in countries that have a high number of pupils per computer, in particular Italy, Greece and Spain, suggests that the first phase of equipment is to put computers in dedicated rooms to share them between classes. The second stage would be to equip classrooms and libraries. Eventually laptops would come into the picture; as is the case in Finland, Sweden and the UK. However, laptops could also be an alternative to computer labs to give access to the widest possible number of pupils, as could be the case in Germany." p. 12, DG Information Society, DG Education, Culture and Audiovisual, Europe 2002, *Benchmarking, European youth in the digital age*.
10. See Eurydice (2001), Basic Indicators on the Incorporation of ICT into European Education Systems – Fact and Figures, 2000/01 Annual Report, EC, Brussels (www.eurydice.org/Documents/TicBI/en/FrameSet.htm).

11. Sensitivities around this value could be looked at.
12. In addition, as a comparison companies that have introduced e-learning to take one example suggest there are many benefits to these investments.
13. See Eurydice study www.eurydice.org/Documents/Survey4/en/FrameSet.htm.
14. COM(2000) 318 final, 24.5.2000, "e-learning – Designing tomorrow's education", EC, Brussels. (http://europa.eu.int/comm/education/e-learning/doc_en.htm)
15. COM(2000) 330, 14.6.2000, "eEurope Action Plan", EC, Brussels. (http://europa.eu.int/information_society/eeurope/action_plan/index_en.htm).
16. COM(2001) 172 final, 28/03/2001, "The e-learning Action Plan-Designing tomorrow's education". (http://europa.eu.int/comm/education/e-learning/doc_en.htm). See also the eLearning portal launched by the EC:
17. In addition to the inclusion of eLearning in different programmes (Leonardo da Vinci, Lifelong Learning...) of the Education and Culture DG, these action lines defined in this plan are part of other initiatives taken by various DG of the EC, among them the Information Society DG with its Information Society Technologies programme (IST) launching several research measures or initiatives on e-learning, on mobile e-learning and on the use of emerging technologies; the Research DG with some proposals for research on e-Learning in the key action "Improving the Socio-Economic Knowledge Base"; the Enterprise DG involved in the implementation and promotion of programmes on appropriate standards or on the monitoring of ICT skills and the impact of eEconomy on European firms competitiveness, the Employment DG in the context of the European employment strategy and the e-accessibility and social inclusion fields. Including the analytical support provided by Eurostat for the collection of indicators, by Eurydice and Cedefop for the analysis of ICT on the education sector, it provides a broad overview of the complexity of the European actions in the eLearning field.
18. Danish ICT characteristics:
 - Information technology has for long been on the agenda for action in the Danish educational system and ICT has been introduced in the basic education system. In Denmark ICT is vital, therefore continual investment in this area is a prerequisite for its maintenance and further development. A strategy for information technology in the training of teachers and their in-service and further training was launched in 1997 following the Act for IT policy which was launched in 1995. The initial 1995 IT Act emphasized efforts to be established in basic school. The newer strategy on teacher training effort is focusing on New teaching environments and forms of study and education
 - New forms of evaluation.
 - Flexible further training and teaching practice.
 - Cooperation and the development of organisation.
19. Greece has put forth a large educational reform that also incorporates measures to develop ICT in schools within the Third Community Support Framework, 2000-2006. At this stage ICT is rather underdeveloped both in schools and at workplaces. A large operational programme for ICT in schools therefore has been put in place. The Greek ICT Targets are as follows:
 - By end of 2001, all Greek schools should have access to Internet and multimedia resources, with adequate web-based support services.
 - By end of 2001, fast Internet for researcher and students, by continuing the upgrade of the academic Greek network.

- By end of 2002, all teachers should have been individually trained as necessary in the use of internet and multimedia resources.
 - By end of 2003, the target is that all pupils leaving compulsory education are digitally literate.
20. Estonia has developed e-readiness fast and is a success story in this area. The development is sustained by a good climate for development according to an international study. In addition, Estonia and Japan obtained the highest rating with regard to governmental leadership, worker training, and business climate. All of which promotes growth and development. The success in Estonia refers to the introduction of ICT is explained by the following facts:
- No old economy.
 - Efficient know-how transfer – closeness to Finland and Sweden.
 - Good academic background.
 - Good overall level of technical education.
 - Use of de facto standards.
 - Embraced openness.
 - Under regulation.
 - Liberal economic environment.
 - Foreign technical assistance.
 - Public investments.
 - The highest priorities within this area are the quality of education and ensuring equal opportunities for access.
21. School-net: www.school.net.
22. Angrist J. and Lavy V. (2002), “New Evidence on Classroom Computers and Pupil Learning”, *The Economic Journal*, October, 112, pp. 735-765.
23. These observations are based on the following countries Belgium, Czech Republic, Denmark, Finland, France, Hungary, Italy, Japan, Luxembourg, New Zealand, and Norway. Major differences are reported between the different countries.

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Managing University Clinical Partnership: Learning from International Experience

by

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Dialogue between the leaders of academic clinical organisations in different countries has revealed that the core elements of the partnership between universities and health care systems are remarkably consistent across national boundaries. There is now an impetus to move beyond analysis of common challenges and towards strategies for success that draw on international experience. This paper summarises some of the conclusions that emerged when leaders of teaching hospitals, health care systems, health professional schools and universities met to learn from international experience and to identify strategies for success. The conclusion reached is that these organisations must articulate their unique role in national health systems, communicate their underlying values and redefine the social contract with their national and local communities.

Introduction

Complexity in the relationship between schools of clinical education, their parent universities and health care providers has long been a subject of discussion within individual national systems (Commonwealth Fund, 2003; Lozon and Fox, 2002; Smith, 2001). Where this discussion has been extended to international comparisons a consistent theme emerges: that the core elements of the partnership between university and health care are remarkably consistent across national boundaries (Davies, 2002; Smith and Whitchurch, 2002). What lies behind this phenomenon is the increasing globalisation of biomedical research, clinical education and even health care itself (Owen, 1998). Despite these global forces, university clinical centres remain rooted in the local communities that they serve, and may consider it important to emphasise their community contribution (AAMC, 1998). These paradoxical forces have led to the observation that universities and their clinical partners must “think globally and act locally”.

Shared experience of the common tensions faced in developing partnership is now sufficiently well recognised that leaders of these centres want to move the debate on, transcending national policy boundaries. There is an impetus to move beyond analysis of common challenges and towards strategies for success that draw on international experience. This paper summarises some of the conclusions that emerged when leaders of teaching hospitals, health care systems, clinical schools and universities met to develop a forward-looking and strategic agenda.¹

An overview of the key issues facing university clinical partnership

Participants from fifteen different countries were asked to share in writing their individual views on the organisational issues they see as key to the partnership between universities and health care systems. This exercise was undertaken before the participants came together in seminar mode, ensuring a range of contributions unconstrained by group dynamics. Analysis of the responses reveals issues that are “the same yet different”: there are common underlying issues that present in different ways according to specific aspects of national context.

The interface between health services and universities was described as a critical point of transformation and as the interface between the present and the future in healthcare. As an ideal, research informs education and clinical

practice. Academic clinical organisations are characterised by a culture of inquiry, reflection and innovation and are successful in integrating the elements of the “tripartite mission” (clinical care, education and research). In practice, there may be a slow separation of goals, driven by differing and poorly integrated incentive structures for service, teaching and research. Participants identified a range of questions about the future of university hospitals and medical faculties. At the heart of these questions was the notion of the “social contract” between academic health organisations and the societies which support them and whom they serve. A perception that the issues of concern to institutional leaders had low political salience sat alongside a concern that university hospitals and medical faculties might not be reforming their activities in line with changing expectations.

A **core challenge** from most countries was the view that health and education policies are developed in isolation from each other. This is not conducive to the development of university clinical partnership and presents serious impediments to working across organisational boundaries. This point was illustrated with reference to the United Kingdom, where a variety of ministries and government agencies pursue a range of policy goals from those related to health care delivery through workforce development to innovation and technology transfer. However, there is no central overview of these goals and the onus is on individual academic health centres to integrate these at the institutional level. This task has been made more difficult by the fragmentation of health care systems and reluctance to pursue radical models of governance.

However, there are exceptions to this picture. One example is the Academic Medical Centre of the University of Amsterdam. Here the university hospital and the medical faculty have been operational as an integrated organisation for the past eight years. This model has facilitated the bringing of both laboratory and clinical research as well as teaching of medical informatics and traditional medical education into close contact with clinical care. At the time of the integration a great effort was made to provide primary health care and public health with a practice component to complement teaching and research. For the geographic area that the hospital serves, GPs and public health services have also been integrated into the Academic Medical Centre. This model has now been adopted in most of The Netherlands, where seven out of eight medical schools have merged with their affiliated teaching hospitals.

This raises the question: why has there been so little progress made with new organisational models elsewhere? One view is that funding for clinical science and health services research is losing out relative to funding for basic science. In the United Kingdom, the Academy of Medical Science has drawn attention to the inbuilt bias towards basic science in career structures, funding

and other incentives. This has meant that the model of the academic clinical centre as a place for applied and translational research has been eroded in practice, though many still subscribe to this ideal.

Other changes in the external environment have placed stress upon existing models. Education is being extended beyond formal programmes into a system of lifelong learning. It will be increasingly decentralised and the university will have to expand its range of clinical partners to encompass all service providing organisations. Tertiary care will be further centralised in order to increase the use of capital-intensive equipment and specialised expertise. University hospitals will need larger catchment areas and a greater capacity to meet the pressures of international competition.

Another consistent theme is the complexity of financing of academic clinical organisations, and the consequences for transparency and accountability. Funding from different sources is combined locally to produce the outputs of the tripartite mission, which are, in economic terms, joint products. National systems, whether market-based or more centrally directed, have not fully recognised these outputs or provided the right incentive structures to encourage the balance of outputs that meets societal goals. This appears to be the case for both market-based systems and systems of performance management.

A commonly expressed view is that there is a **reluctance to permit a unique identity and role for academic clinical centres**. These centres make a distinctive contribution in developing the quality of health care services, integrated delivery systems, knowledge management, innovation and wealth creation. Yet politicians and policy-makers do not always acknowledge this contribution. However, politicians only respond to public views and academic clinical centres must ask themselves why it is that the issues that pre-occupy them as institutions have so little salience with the public.

The difficulties in influencing the external environment and engaging with government indifference has led to something of a crisis of confidence amongst those who work in academic clinical centres. There is uncertainty about the goals of the organisation, its identity, and the future of the university hospital.

Leaders of academic centres acknowledge that they need to better engage with other institutions in local health systems. There is a need for a **more systematic focus on partnership**. To return to an earlier example, this appears to have been central to the success of the Amsterdam Medical Centre, which has a politically sponsored clear internal identity and external mandate to link research, education and service as a designated centre of excellence. Its success has been underpinned by the development of a network of primary care academic partners and a strategic approach towards organisational design.

The successful academic clinical centre of the future will be a **distinctive partnership managed according to shared values**. It will attract new paradigms, for example medical humanities and operations research, as well as excelling in biomedical science. Teaching, learning and workforce development would not be overshadowed by research and service priorities. There would be a strong multidisciplinary ethos and systems for translating clinical and health services management research into improvements in public health. Academic centres need to become integrated parts of wider networks for service, teaching and research, linking in primary care and community services.

Some participants stressed the cultural demands of moving towards this vision, including the need to apply non-linear thinking to university clinical partnerships. The capacity to work across boundaries is central to the social missions of relating scientific knowledge to practice and instilling critical faculties in future clinical professionals. Research from Sweden has shown that structural separation between sectors has had a significant cultural impact. Yet many seem uncomfortable with structurally led change, preferring to emphasise the need to create an environment conducive to innovation and learning (Smith, 2002).

Developing strategies on the basis of international experience

The seminar provided an opportunity to begin to think about strategies to steer university clinical partnership, drawing on international experience whilst remaining mindful of the pitfalls of comparative studies (Klein, 1991).

Defining the distinctive nature of the university teaching hospital

University hospitals are defined by complexity, intensity of teaching and research, range of services and their complex financing arrangements. In discussing academic clinical organisations, the emphasis should shift from hospitals and from the academy to health care systems. Networks will be necessary to deliver all aspects of the tripartite mission: research, teaching and care. University hospitals need to focus on communicating their contribution to society in all its dimensions.

Measuring the performance of academic clinical centres

Identifying key performance indicators for the separate elements of the tripartite mission is challenging but possible. However, the risk of only doing this is that the use of such performance indicators may actually undermine the integration of activities that is the essence of the academic clinical centre. The challenge is to develop performance indicators that actually measure success in integrating the tripartite mission and the value added by this. For example, how would one measure the effectiveness of interactions between

clinical and basic science researchers or the teaching effectiveness of clinical attachments? Potentially perverse effects from performance management systems are a major area of concern for the leaders of academic clinical centres

Maintaining teaching as an equal partner

The academic centre needs to move beyond its historical medically dominated character and become more multi-disciplinary in its approach to education. Although scepticism about multi-professional education may remain, given the poor evidence base, this has become a political imperative. Not all academic health centres will share the same emphases and strengths. Some will be strong on basic science, others on health services research or multi-professional education. There is a need for managerial academics as well as clinical academics. Effective governance structures and leadership will be needed to overcome the tendency for teaching to be the “poor relation” in the academic centre.

Developing networks for service, education and research

There is an international trend towards decentralization and primary care led services. This trend is leading to delegation of power and resources to authorities responsible for very small populations. This creates a problem for academic health centres that may need to deal with multiple authorities and require a large planning focus for more specialist services. Network development will be an essential response to this and to other changes, for example new paradigms for education of clinical professionals. The requirements for successful network development include communication, leadership, funding, organisational models and adequate informatics.

Good governance and accountability

It is tempting to believe that issues of governance can be solved by a particular set of organisational arrangements, for example ownership of clinical facilities by the medical school. However, the essence of good governance is the maintenance of dialogue in a spirit of shared endeavour, rather than any particular structure. In this way, the tensions that are inherent in the relationship can be used to create a positive dynamic. Good relationships between key individuals and a willingness to solve problems at an early stage will also be essential to the success of the combined venture. Although they may not be sufficient, clear structures and mechanisms for liaison will be necessary. Achievement of the missions of both parties requires both mutual trust between the health care provider and the university and written agreements as to roles and responsibilities. Effective innovation at the local level by academic clinical centres may prove more influential than central policy initiatives.

Responding to the challenge of workforce development

The challenge of maintaining an adequately skilled clinical workforce has become a global issue, with significant under-supply of clinical professionals in many countries and over-supply in others. The challenge of expanding the clinical workforce raises many issues for academic clinical centres. Government responses are likely to include a push for greater workforce flexibility and new professional roles linked to multi-professional education; a demand for wider access and shorter training programmes; and for accreditation of foreign nationals. These pressures may prove uncomfortable for universities that have historically provided pre-registration education to high standards of academic attainment. Governments may become frustrated with what they see as the inflexibility and elitism of the universities as they look for new approaches to delivering the clinical workforce. In this area, there is a sense that major re-positioning by universities might be required soon but that this will be fraught with ideological divisions that have yet to be fully articulated.

Conclusions

It is important not to lose sight of the fact that academic health centres are, by any standards, remarkably successful institutions. They have proved durable and transformed the lives of millions. The risk is that policy-makers will fail to recognise their special contribution and the onus is on academic centres to articulate this. They also need to communicate their underlying values and redefine the social contract with their national and local communities.

The challenge for academic clinical centres is to re-define their unique role in national health systems. These contain many other players, many of who neither understand what academic centres do, nor appreciate their contribution to shared goals. Universities must change to reflect changing societal expectations. There must be innovation in pre-clinical education and research must be focused on issues that will affect the quality of health care delivery.

Ensuring that a fast developing knowledge base has an influence on practice, preparing professionals to practice in increasingly complex environments, and improving health delivery are goals shared by academic clinical centres in different countries. The pursuit of these goals will be aided by international dialogue between institutional leaders concerned with developing strong relationships between research, service and practice. This offers the opportunity to compare models of governance and leadership as well as the identification of incentives to stimulate working at the interfaces of the tripartite mission. Performance indicators that measure this interface activity are needed, with a particular requirement to measure the translation of research into improved practice.

Academic clinical centres should not lament their lack of political salience but engage directly in the public debate. Patients and the public may prove to be the greatest allies of academic health centres if properly engaged. Effective collective representation is needed and this may need to be multi-national, especially in the context of the European Union.

The commonality of issues across different national settings becomes ever more apparent. In different countries, the leaders of academic clinical centres are identifying the same issues and arriving at similar solutions. Possible areas of international collaboration include: defining the benefits that academic health centres offer to society; performance measurement; strategies for supporting clinical research; multidisciplinary education and training; leadership in academic health centres. However, this is a dialogue that has only just begun and can be developed further.

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Note

1. In November 2002 more than 50 participants from 15 countries came together to examine the key organisational issues at the interfaces between health services, teaching and research. The OECD Programme on Institutional Management in Higher Education (IMHE) hosted the event. As an international forum for institutional leaders and policy makers IMHE has a long-standing interest in this area and seeks to promote the exchange of information and expertise between member countries. The European Health Management (EMHA) and the UK's Nuffield Trust for Research and Policy Studies in Health Services supported IMHE in the organisation of the event. The combination of these three supporting organisations resulted in an assembly of individuals rich in expertise and insight. Participants from North America, Australia and Europe covered a range of disciplines and included academics, clinicians and managers. Many of the individuals attending combine these roles in an illustration of the ethos of academic health institutions. The meeting followed on from a similar event in August 2001, which was understood to be the first international meeting to consider this subject matter.

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Systemic Responsiveness in Tertiary Education: an Agenda for Reform

by

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Over the last several years the author conducted 126 interviews and held four focus groups with academic staff, administrators and others associated with Australian universities, about the problems and challenges they believed faced the system of tertiary education. Widespread concern and pessimism pervaded the interviews about the future of tertiary education in Australia. Approximately three quarters of the interviewees said that the system was worse, or certainly no better, today than a decade ago; a similar number held out little hope that the system would improve, if not deteriorate further, in a decade. In this article the author outlines what he sees as systemic barriers to change and then offers suggestions for overcoming those barriers and enacting reform.

Recently, there have been several, careful analyses about the causes and consequences of the decline. Simon Marginson and Mark Considine have written about how universities are now less sure of themselves, and how they exist within a morass of intellectual incoherence about governance and change (2000, p. 6). Sheila Slaughter and Larry Leslie (1997) have discussed how a new form of global capitalism has forced universities to respond in unconventional ways, mostly to their detriment. Tony Coady (2000) has edited a work that critiques the reforms of the last decade and a half from a sharply critical viewpoint. Jan Currie and Lesley Vidovich (1998, 2000) have discussed how the movement toward market principles has placed fundamental academic values at risk. Craig McInnis (1992; 2000a; 2000b) has tracked changes in the nature of academic work and shown how general job satisfaction has declined while workload has increased. Peter Coaldrake and Lawrence Stedman (1999) have pointed out the stresses that confront academic work, and Don Smart (1997) has argued that the loss of autonomy in Australian universities has made them weaker institutions. Finally, the National Tertiary Education Union (2000), the Group of Eight (self-named "Australia's leading Universities") (2000a; 2000b), and the Australian Vice-Chancellor's Committee (2000a; 2000b) all have issued dire reports that provide various portraits of a system in decline.

The interviews and focus groups I conducted offered similarly gloomy commentary. A majority of the respondents commented that they would not encourage graduate students to pursue academic careers. An equally significant number of interviewees expressed the opinion that Australian universities were not competitive with elite institutions in other parts of the world, and that the best Australian academics frequently found better salaries and working conditions abroad. Perhaps most worrisome, a majority also felt that systemic decline was inevitable. "We will drift along", commented one interviewee, "We will continue to get worse, gradually. A few institutions might merge or close. One or two might actually get stronger somehow. Most will sink to mediocrity. There's just not much we can do."

I disagree. While I fully appreciate the simultaneous compression and hemorrhaging that the system faces, as well as the intellectual and almost existential exhaustion that many within the system feel, I am equally aware that systemic reform is imperative in a time of rapid change and globalization. One point is certain: the failure to reform will neither ameliorate the problems that currently exist nor encourage creative new directions and initiatives to occur at a campus level.

Many previous analyses and the vast majority of the interviews have pointed to the reduction in federal funds as the main culprit in the decline of the universities. Indeed, the shortfall of resources is so often mentioned as the problem that it is frequently hard to move beyond an economic discussion of the university to a consideration of non-economic initiatives that might be considered. When a university loses 50-60% of its budget in a decade's time one ought not to be surprised that the organisation's constituents obsess about how to recover lost income. In this article, however, I work from a slightly different perspective. The analysis follows from two assumptions:

- universities need to be able to capture additional income; and
- any future federal government (Liberal or Labor) will not provide that additional income as it has been traditionally defined (e.g. grants to universities) equivalent to previous levels.

Although some may hope to a return to previous levels of government funding, I have found no evidence that there is any sentiment – or ability – to make such a decision. True, a new Labor government may seek to provide additional funds to tertiary education, but significant new funds will still be needed from additional sources. Thus, in an environment where universities need to be innovative and strategic, what actions might be taken to enhance organizational creativity that, in turn, will increase the economic strength of the institution?

Accordingly, I outline below what I see as systemic barriers to change and I then offer suggestions for overcoming those barriers and enacting reform. I learned of the barriers from the interviews and the extensive literature that exists. The suggestions come in part from previous work I have done on organizational responsiveness (Tierney, 1998; 1999). Caveat emptor! This is an “essai” in the root sense of the word: a trial of some ideas. Based on the interviews that I have conducted, I am trying to move the discussion away from a sense of pessimism about the future and a sense that the only alternative is a return to previous paths that have been taken. Instead, I am trying to come to terms with the barriers to change and how we might overcome them by taking new paths.

Roadblocks to change

An overly centralized system: One key precept of academic life is that universities ought to be immune from political interference. Such an assumption does not mean that tertiary organizations are free to be non-responsive to the needs of society or unaccountable for their performance. Indeed, in organizations that serve the public good an accompanying precept must be a willingness to ensure that quality improvement is ongoing and measurable. However, the changes in the governance system in Australian

universities over the recent past have made them too much like a government agency and not enough like a coordinated system of self-directed organizations whose challenge is to be responsive to the needs of society. When a university begins to resemble a government agency three distinct problems arise: 1) a possibility for political intrusion, 2) a lack of coordination, and 3) a disincentive for particular forms of innovation.

First, a system that is directed by the federal government opens itself up to becoming a political effort where political processes, desires, and goals confuse what should be regionally or state coordinated, strategic choices of the institution. As a governmental entity decisions are likely to occur on a political, rather than an impartial, level. By raising such an issue I neither mean to disparage those in the political realm nor suggest that institutions that receive public support are not ultimately responsible to those individuals whom the public elect. However, certain organizations ought to be more independent from public control than others. Just as we do not want a politician to decide if an airplane is fit to fly, we also do not want a politician to decide what should be taught in a university. Those who are knowledgeable about airplanes ought to decide about an aircraft's fitness. Similarly, institutions where the stated goal is to search for truth need to be free from outside interference – such has always been the case at the world's best universities. At the same time, where an institution is placed, how big or small it is, and whether a new institution opens or a current one closes, ought to be based on a strategic vision rather than a political imperative.

Relatedly, the second problem with a university being forced to act as a government agency pertains to the lack of systemic coordination. As one observer has commented, “Australian higher education currently exists in a policy vacuum” (Schwartz, 2000, p. 5). One needs to consider distinct geographic regions of the country and coordinate what is best for the state or territory. What should not take place is that degree and course offerings occur because an institution simply wants to offer a particular degree either for fiscal gain or prestigious enhancement.

In effect, Marginson's analysis of “steering from a distance” rightly points out a conundrum of the worst kind: institutions are lost in a world of perceived autonomy where they develop courses or provide classes anywhere in the world because of the fiscal constraints that the system has placed on them; such a freedom of necessity to offer any classes anywhere allows no systemic coordination. Indeed, some might claim that the ability to offer classes anywhere points out the freedom institutions have rather than the straightjacket I claim they must wear. However, when government provides and takes away funds and determines the fiscal parameters of institutional life, then what kind of institutional autonomy actually exists?

Consider, for example, Western Australia. How many universities ought to offer degrees in education? How many universities ought to have an engineering faculty? My purpose here is not to offer an answer, but instead to suggest that an unregulated system where any institution may offer whatever it wants does not enhance the system. Universities need to have finite and unique visions rather than expansive ones that appear geared toward simply adapting to the needs of the marketplace. In previous work I have pointed out how high performance universities are cultural entities that need to be interpreted to internal and external constituencies; they are not simply businesses that adapt to the whims of the marketplace (1998; 1999). Duplication of degrees ends up with institutions competing against one another for a finite number of students; the system ends up less, rather than more, than the sum of its parts. In effect, there needs to be some form of buffer between the federal government and the individual institution.

The third problem of a centralized political system is that at a time when business and managerial philosophies continually point to the importance of decentralized decision-making processes, the opposite occurs in a centralized system. In effect, decisions are determined at a centralized level and accountability is measured at a decentralized level. Such a system creates the frantic search for additional funding; when combined with an unregulated system, we see the proliferation of law schools and the like. Decision-makers end up making instrumental choices based on the desire for a quick fix and fiscal need, rather than deciding on strategic choices based on long-term viability and health.

A form of organizational schizophrenia exists where the centralized unit increases its control over the organization while it decreases its fiscal contribution. In a system where the overarching goal is to encourage the organization to be more fiscally independent there needs to be a concomitant organizational structure that encourages entrepreneurial activity. The opposite currently occurs in Australian universities.

A lack of mission differentiation: One problem related to the lack of coordination is that the universities in Australia more or less appear to be attempting to undertake similar activities and philosophies. True, the University of Melbourne has created a private university and it has spearheaded a drive to create a consortium of universities in an on-line initiative (Universitas 21), and other institutions are building campuses in different countries in Asia, but the similarities are greater than the differences. In many respects, such a problem vexed much of tertiary education throughout the 20th century. One sees, for example, that after World War II in the United States there was a rapid rise in research at the expense of teaching; by century's end, within all sectors of higher education in the US, academic staff were more rewarded for doing research than teaching.

The point is not that research is bad and teaching good, but that a system needs differentiation. Not everyone should be attempting to do the same activities; surely some institutions might emphasize teaching while others focus on research.

The importance of mission differentiation in the 21st century will be even clearer. In a world of finite resources, some institutions should be able to make inroads in undertaking research while others will have its academic staff teach more. Currently, such differences are implicit rather than explicit. When I asked individuals, for example, how their institution differed from a neighboring institution, they were unable to explain the difference except in the most generic of terms. “They are larger”, said one, and another said at a different institution, “They have a better endowment because they are older.” The point is not that there is one correct answer, but rather, individuals who work in an organization perform better when they have a sense of where they are heading and how they differ from other institutions.

Institutional differentiation does not get defined by the nature of its funding; rather, funding gets defined by the mission of the organization. A clearly defined mission of a university revolves around four primary issues: 1) What are the curricular offerings of the institution and how are they taught; 2) How does one define a productive member of the academic staff; 3) What is the nature of the institution’s external environment, and 4) How might one define the organisational culture of the institution?

In a system that has clearly differentiated missions, one will not see the proliferation of the same kind of degree offerings or the same pedagogical style from one institution to the next. One would expect, for example, that some institutions would focus on small seminars and tutorials and another might engage in larger lecture classes. One institution might experiment with different kinds of interdisciplinary-based degree offerings, while another might have more traditional-based courses and degrees. Rather than assume that all institutions will emphasize business and commerce degrees as a way to capture funding, some institutions will try to be more focused on the humanities while others emphasize the sciences. From this perspective, an institution might try to engage with countries in Asia in culturally specific manners that impacts teaching and learning for all students, rather than simply see Asian students as the way to generate much needed income, or as a way for Australia to educate students in the former colonies.

Similarly, when institutions have differentiated missions then explicit expectations of academic staff will be clearer and will vary from institution to institution. Rather than expect that applied research is the sine qua non for all academic staff, one institution will privilege teaching while another will emphasize applied, rather than basic, research. Again, in an institution that

emphasizes teaching one expects to find unique and innovative ways to teach as well as to evaluate teaching. Instead, what I have found is that most institutions are more similar than different in their approaches to measuring productivity because their missions are unclear. The question, “what is the mission of your institution” ought to evoke a clear, simple statement that sets an institution off from others, which in turn, marshals activity in one direction and not another. At best, such differentiation currently occurs implicitly, rather than explicitly, so that some institutions have their staff teach more and others hope to work with Asia in a particular manner. But one senses that the choices are less strategic and more driven by a concern for generating capital than developing a philosophical consensus about the nature of the university.

Obviously, the environment in which the institution is embedded also helps define the nature of academic work and the type of courses to be offered. The institution will define its environment in any number of ways, and over time, the nature of its relationships will change. Rather than assume a deterministic model where institutions and environments react in a predetermined manner, I am working from the assumption that a form of symbiosis exists where an institution has significant latitude in determining how to work with external constituencies.

Each point speaks to the import of the organization’s culture. Culture pertains not only to instrumental activities such as teaching and research, but also to the manner in which governance is enacted, who gets heard and who does not, how people interact with one another, and a myriad of symbolic activities which help the institution’s participants make sense of academic life.

A rigid, rather than experimental, environment: High performance systems are ones that encourage experimentation and innovation (Tierney, 2001). Such organizations are different from others that are able to exist by a repetitive series of activities that enable the system to function effectively in a stable environment. A good example of an organization that works well in a stable environment is a McDonald’s hamburger outlet. The manager of the outlet has a precise idea how many hamburgers will be sold; the customer knows what he or she wants upon entering the store. The employee knows the finite number of skills required to complete the task. A repetitive series of activities has served McDonald’s well, and they have sold billions and billions of Big Macs. McDonald’s is not an innovative organization, and it thrives in a stable environment.

Australian universities, however, need to be innovative organizations in large part because their environment is no longer stable. Technological changes presage dramatic innovations in teaching and learning. A turbulent fiscal environment demands entrepreneurial activity that enables new

income streams to occur. New competitors will challenge traditional universities so that research and teaching activities will face challenges that force universities to act in ways that depart from “business as usual”. Students who are raised in the era of e-mail have different needs and preferences. Such changes necessitate an organizational culture that rewards experimentation and innovation. One expects to see universities trying to undertake new activities in unique ways.

However, the present climate in Australia is precisely the opposite. Governmental regulations stifle creative activity and the lack of fiscal support forces innovation to be geared almost entirely toward capturing funds. Australian public funding has been cut more than virtually everyone else in the OECD (Considine, Marginson and Sheehan, 2001). A system that encourages creative activity is not one that rewards all institutions similarly, sets mandates and targets with regard to enrollment, tuition funding, and productive activities, and does not make an attempt to reinvest in tertiary education.

My point is not that universities can ignore being accountable, or that measures on which to base quality can be overlooked. However, the strongest performance measures are those that internal constituencies develop and a regulatory agency is able to approve. Rather than a “one size fits all” mentality, an innovative environment is one where the government loosens its hold on monitoring and evaluation, and the organization increases its concern for quality improvement based on beliefs about institutional purpose. Instead of continually pointing out that the government role in fiscal support of tertiary education ought to be minimal and force institutions to seek funds in a helter-skelter manner, one might suggest a more systematic approach about where wise reinvestment of public funding is warranted, and where private monies might be developed. In a high performance system a governing body tries less to prevent bad things from happening and tries more to make good things happen. Rather than a punitive model, one develops an incentive-based model. Currently, Australian tertiary education is mired in a system of checks and balances that depresses the entrepreneurial spirit precisely at a time when innovation is necessary.

A disinterest in pedagogical issues: On an international level, we are currently in a period of greater pedagogical ferment than at any other time in a generation. The Internet and web-based learning have facilitated changes in traditional teaching. The advent of distance learning and computer generated courseware has precipitated a great deal of interest in developing entirely different teaching and learning modalities than could have been envisioned less than a decade ago. A tremendous amount of research has been generated about how one might successfully evaluate good teaching; breakthroughs are finally happening with regard to the measurement of learning. Indeed, there is increased evidence not only on how much a student learns in class, but also

out of class, so that the entire university environment might be thought of as a learning community. Such information enables different structures of learning activities to take place if the classroom is tied together with what takes place outside of the classroom. And too, the age-old questions of what a student needs to know continues to stir thoughtful commentary based on new social and cultural contexts of the 21st century.

Unfortunately, many of these kinds of conversations are not taking place on a sustained or systematic level in Australian tertiary education. Yes, some individuals have tried to foster meaningful dialogues, and one area or another has taken an interest in teaching and learning. But when I asked individuals about pedagogical activities the most common response I received was that teaching is better today than a decade ago because teaching evaluations are now done in classes. Although teaching evaluations are to be applauded, such an activity is microscopic when compared to the wealth of additional activities that should be occurring.

The response of why more pedagogical discussions are not taking place on campuses is that most energy has been focused on either explaining to governmental agencies what takes place on campus in order to meet new requirements, or in creating new markets to generate capital. Again, the problem lies with placing fiscal needs ahead of those that are more central to the life and maintenance of the university. To offer a sequence of courses in Pakistan, or to try to get students from Sri Lanka to study in Australia for no other reason than because a market exists that will provide income is to reduce academic life to that of a business; in the long-term such a strategy will bring into question the *raison d'être* of the university. If students are simply consumers and the curricula is nothing other than a product, then one can justifiably ask whether a business might offer such services and products more efficiently than a university.

There are very real, healthy pedagogical debates that ought to take place on university campuses, but they do not seem to be happening largely because of a systemic environment that makes such discussions difficult. Pedagogical decisions that are made because of perceived fiscal imperatives rather than philosophical beliefs contribute to confusion about the mission of the organization, which further confuses an institution's constituents about what they should be doing. The possibility certainly exists for a coordinated learning environment to occur on university campuses that in turn enhances the economic well being of the institution, but until the systemic environment changes, such discussions are not likely to take place.

A constrained, rather than elaborate, fiscal stream: I have purposefully placed this problem last because, as I have alluded, in many respects the prominence that fiscal shortfalls have played in freezing creative thought

exacerbates problems rather than solves them. Nevertheless, the fiscal constraints that universities face at the start of the 21st century are severe and do not have an easy solution. As I noted earlier, virtually no one I interviewed assumed that a future government of one or another political persuasion would return to funding tertiary education at the levels of support enjoyed a generation ago. However, significant monies could be wisely reinvested in areas of national interest and import even while one recognizes the country will not return to its previous levels of support.

The problem, however, is not that the government will maintain its current meager level of support, but that the systemic environment in which universities exist do not support the development of coordinated and alternative funding streams. Government policies could call for the reinvestment in areas of national interest, and tax structures could be developed that encourage philanthropy. Philanthropic giving in the United States is a mainstay of private tertiary education. In the last two decades, it also has become commonplace for public universities to undertake capital campaigns that have relied on individual and industrial giving. Private foundation support for research at America's leading universities is considerable. Differential tuition based on institutional decisions on what is necessary and competitive have enabled some institutions to be more tuition dependent than others, while other universities focus on generating revenue streams from philanthropy, foundations and the like.

For creative fiscal activities to occur, Australian tertiary education faces two hurdles. First, consistent with the other points outlined in this essay, governmental regulations need to be lessened, and a more supportive tax environment needs to be considered that encourages philanthropic giving. Second, true institutional diversity needs to be fostered once the government has outlined broad areas of systemic philosophical agreement. To elaborate on these issues, I now turn to a discussion of how one might grapple with the problems raised in the interviews I conducted.

Stimuli for reform

Establish a tertiary education coordinating board: There needs to be a dual buffer system established that removes tertiary education from needing to act as if it were a governmental agency. A national tertiary education coordinating body acts as an agency that follows the directions of the federal government, but also mediates between the government and universities. Such a body is particularly important in a country where the institutions derive the bulk of their public funds from the federal government. In the United States, for example, coordinating bodies take place at a state level because that is where public institutions receive most of their public funds. As with other important

agencies, the coordinating body is independent of the federal government, but ultimately responsible to it. The goals of the coordinating body are 1) to ensure access for the broadest number of Australian citizens as possible; 2) to ensure that each university offers a quality education; and 3) to control costs.

From these goals devolve four key roles for the coordinating body that in part account for the subsequent suggestions I shall make. First, the coordinating board translates into policy what the federal government has set as its goals for tertiary education. Second, it enables policies to be developed that allow differential funding schemes that ensure access and enable quality to occur. Third, the coordinating body helps stimulate an experimental and innovative environment that builds upon mission differentiation. Fourth, the coordinating body works with state and territorial boards so that more systematic planning takes place.

The second buffer pertains to regional coordinating bodies. The state/territorial coordinating body reports to the federal one, but it has broad discretionary power. Its work relates to approving or disapproving new courses of studies, considering how institutions might work together, amalgamate or merge, and setting directions about how new entities might (or might not) arise. Universities have a key role to play not only in the enhancement of the nation's economy, but also within their states. At present, the state role in university life is relatively mute. While I am certainly not suggesting yet another layer of political control, it behooves us to acknowledge the need for greater state and territorial coordination.

My purpose here is neither to determine the precise parameters of coordination nor to delineate the steps to implementing such a reform, but instead to suggest ways for the improvement of tertiary education. To be sure, there are numerous pitfalls in the creation of such an entity. One problem is to look to the past and assume that previous iterations of a particular structure are what a new one would look like. A second problem is to develop a halfway measure where the federal government maintains an active role in such a coordinating body by appointing a majority of the members, but allows the vice chancellors and other groups to appoint a few other members as well. A third problem is to assume that any action the coordinating body takes needs to be approved by the government.

Each problem will doom the initiative. Structures are not perfect and timeless; as different problems and contexts arise, structures that once were impediments to change or ahead of their time may take on a different appearance. A new structure also is not a duplication of a previous one. Although any number of constituencies ought to feel that they have a voice in the direction of such a body, if the goal is to remove it from the political process, then one needs to work to lessen political interference rather than

instill it with political representation. And such an agency needs autonomy on issues of regulatory implementation while it implements the broad policies of the government.

I appreciate the irony that on the one hand I write of too much centralization, and in the next I suggest a coordinating body. However, the coordination is of a different kind from that which exists now. Universities are removed from the political realm. The degrees of freedom with which a university may act increase if it fits their distinctive mission. The excessive homogenization that steering from a distance requires is eliminated.

Creating a coordinating body on a federal and state/territorial level will enable greater coordination across universities, an environment where institutional differentiation and experimentation takes place, and where access is increased while costs are maintained. Such outcomes are not now taking place in Australian tertiary education. If they are not taking place, and one disagrees with the creation of a coordinating body, then it is reasonable to ask what structural reforms will stimulate these outcomes. At present, a great deal of discussion is taking place at the federal level about some such buffer, but nothing has yet taken place. Universities need a disinterested agency that helps stimulate reform on a national level while the universities generate unique initiatives at an organizational level.

Create explicit and finite differentiated missions: There needs to be a focus away from the “one size fits all” mentality and toward the explicit definition of what an institution does and how it differs from others. No system the size of Australia’s can support thirty or forty universities that have an equal interest in research or offer courses in a similar manner. Students also are not well served if all institutions focus on research, or if all institutions try to reach out to international students in similar ways. Instead, institutions need to develop missions that set themselves off from one another.

One test of whether a distinctive mission has been developed is to remove the identity of the institution and see if individuals know which institution it identifies. An institution, for example, which states that its goal is “to provide the highest quality education” or “to educate students for employment in a rapidly changing environment” are generic goals that do little to create an identity for the institution. Which institution is not dedicated to quality education or employment for its students?

Alternatively, an organization with a stated mission to focus on urban issues, to stimulate an environmental consciousness, or to promote multiculturalism, are examples of unique initiatives that set the institution apart. An institution where the academic staff believes that all of its students should have a foundation year in the humanities and sciences if they are to be well-rounded democratic citizens is a pedagogical example of how to create a

distinctive mission. Obviously, certain institutions have no desire to focus on urban issues or the environment, and that is precisely the point. A mission needs to be specific enough so that in a state of crisis those who work for the organization believe in what they are doing to the extent that they will not drop the mission at the first sign of trouble. The mission is also finite; universities undertake discrete challenges.

The best examples of clear mission statements are those of institutions that Burton Clark (1972) has defined as “distinctive”. As the overriding ethos of the organization’s culture, a mission statement helps people make sense of who they are as an institution and where they want to go. A mission statement not only raises questions about which direction the institution should move in the future, but it also offers answers.

Finally, an organization’s participants need a mission statement that points people in two ostensibly different directions. One direction is grand and sweeping; the statement inspires people and rallies them around a grand cause. A mission statement is not the place to itemize or create objectives. Nevertheless, what flows from a worthy mission statement is a sense of where organizational units and individuals will focus. As Peter Drucker has pointed out, “A mission statement has to be operational, otherwise it’s just good intentions” (1990, p. 4). In effect, a mission statement should enable a university’s participants to come together to enact the differentiated goals that they have established. I emphasize the import of having the university’s participants, and not merely a select few from the vice chancellor’s office, participate in and advance the institution’s mission. A distinctive mission is not successful if only a handful of senior executives know what it is. A mission needs to permeate the organization and drive action.

Develop an innovative climate: In general, over the last generation, public institutions have not been known for structural creativity or innovation. I have suggested that creating a buffering agency between the government and the university will in part enable universities to develop unique missions that stimulate organizationally specific initiatives. In turn, an environment needs to exist where structural innovation, rather than stasis exists. By “structural innovation” I mean more than simply the ability to run after whatever funding possibilities exist out in the world. Instead, an institution’s participants work from differentiated missions in innovative environments that enhance teaching, learning, research and the quest for knowledge. At present all tertiary institutions in Australia are public universities. The assumption is that one structural size fits all. In the future, institutional differentiation needs to occur.

In the United States, for example, there are public state universities that are under the purview of state control in a manner akin to Australian

universities. However, there are also institutions such as Pennsylvania State University, which are “state-related”. State-related institutions have more degrees of freedom to act than do “state” institutions; their monies from the state are also less.

Further, because public monies continue to decrease in some states in the United States, some individuals have argued that one or another public university ought to become a private university because it will have greater options that it might pursue. Other institutions have considered amalgamating with a range of entities such as for-profit corporations or non-profit agencies (*i.e.* museums) in an effort to provide better services. Some institutions have opted to maintain the traditional structure and relationship to the state as a public university, but they have internally reorganized themselves by borrowing an idea from elementary and secondary education in the United States: a charter.

That is, many concerned observers of public elementary and secondary education in the United States consider schooling to be moribund and bound by overly rigid rules that do not enable a sufficient degree of experimentation precisely at a time when innovation is necessary for educational improvement. Charter schools are examples of public experiments that have the endorsement and support of the local school, the teachers and parents in the school, the unions, and the school board. In effect, there has been broad agreement to set aside many of the regulatory guidelines that mandate how one or another action is conducted so that every teacher in every school teaches in the same manner. Instead, the school develops a charter that enables it to conduct its work in ways that make most sense to teachers, parents, and administrators. To be sure, a charter must meet broad assurances that are set by the governing board, but within that structure there is an equally great amount of leeway to develop policies and procedures that are best for the local school, rather than for the bureaucracy that has developed over time.

Although charter schools are a recent experiment that pertains to the lower grades, charters are also occurring in a few locations in the United States in tertiary institutions. A similar kind of innovation seems warranted in Australian universities. The point is not that every institution necessarily needs to develop a charter that frees itself from governmental regulation. However, at a time where most agree that experimentation and innovation will benefit the system as a whole, then the ability of a coordinating board to develop similar kinds of reform will be useful.

At a minimum, we want institutions within a system to think “outside of the box”. While I am not advocating any one of these structural reforms, I am arguing that a range of options need to be considered that enable different universities in Australia to operate in ways that will further access and equity, improve quality,

control costs, and meet the distinctive missions they create. Some institutions will undoubtedly remain wedded to governmental regulations and they will be able to provide quality services. But other institutions may benefit by becoming state-related, developing a charter, creating relationships with other organizations, or even privatizing. I am suggesting that structural diversity, rather than similarity, will better serve the citizenry.

Focus on teaching and learning initiatives: One result of the development of distinctive missions and the ability to generate unique structural arrangements pertain to this fourth suggested reform. In an environment where structural arrangements suggest institutions should be more alike than different and fiscal issues drive change, no one should be surprised that courses in business, commerce, and accounting are omnipresent, and the humanities vanish. Certainly in some institutions a focus on business courses makes sense, but one need not be an artist to assert that any country that ignores the centrality of the humanities is a country that is culturally at-risk. In a time of rapid globalization, the ability of different universities to emphasize courses in history, literature, classics, the arts, seems not simply a pleasant sideline if one can afford it, but a cultural imperative. How is the citizenry to function in an increasingly multicultural world if the universities do not prepare students as multicultural citizens? What does it mean to be Australian in the 21st century? Such questions necessitate robust discussions and debates that are most likely to be found in classrooms that are in less evidence today than a generation ago: history, literature, the arts and humanities.

In an innovative environment where universities have distinct missions, one might expect to find an academic staff that has reached agreement pertaining to core educational requirements for all of its students. The argument over what courses and credits a student needs to take is as old as universities. Academic staff has continually gone back and forth about parochial and universal requirements, and I do not see why such arguments and debate will not continue into the foreseeable future. However, there now seems to be a suppression of debate about what a student should learn as curricula has been transformed from a pedagogical activity to a fiscal one.

Similarly, different pedagogical styles and methods need to be encouraged and supported. At present there seem to be two broad comments that virtually all university personnel make about the teaching and learning environment. On the one hand, distance learning is the wave of the future, and on the other, as I mentioned earlier, student evaluations are an improvement from the past where there were none.

The problem is that distance learning is a technique. One ought to use distance learning in unique ways that are in accordance with the philosophical assumptions behind teaching and learning. What are those

assumptions? The assumptions flow from the agreement that has been reached about the university's mission. One institution, for example, might see its purpose as serving low-income working adults, while another institution might focus on providing a well-rounded education for full-time traditionally aged students. If either point is part of a mission, then distance learning will be used in different ways.

If a university wishes to educate significant numbers of international students on campus, then when courses are offered may need to be reconfigured. Why should universities be at a low-use capacity during the summer months if 30-40% of its clientele desire courses? Further, ought not some universities focus on service learning, cooperative learning, and out-of-class experiences as an institutional strategy? My point here is not to advocate for one or another pedagogical strategy. I am arguing, however, that a system that encourages diversity and differentiation will develop curricula that are specific to the institution and offer curricula that meet the needs of the learners.

Generate multiple revenue streams: At present there are three broad revenue streams: government funds, international full-fee paying students, and national full-fee paying students. At least three additional revenue streams need to be considered: reinvestment of public funds, philanthropy and tuition differentiation.

Although no government will support funding to the equivalent of the past, we ought not draw the argument in dichotomous terms such that either public universities should rely entirely on the government for funds or they should survive entirely on private monies. Instead, the federal government might considering increasing their commitment to public tertiary in selected, strategic areas in addition to baseline funds.

Further, while I acknowledge that the vast majority of interviewees from which this work derives, believed that philanthropic giving is not a viable revenue option. Individuals pointed out that Australia did not have a history of philanthropic giving akin to the United States. Others stated that Australia did not have the wealth of the United States. Still others commented that the tax structure did not encourage private donors. And finally, some individuals said that the affective identification that United States institutions had developed with its alumnae did not take place in Australia. Most often, individuals pointed out that if donations were to be given to an organization, the private school was the most likely recipient. Not coincidentally, individuals pointed out that private schools generated the strongest degree of alumni commitment. Thus, my initial suggestion for fiscal reform seems to fly in the face of overwhelming opinion to the contrary, although I should also point out that a small percentage of respondents felt that private donor giving was quite possible.

I base my suggestion on several assumptions. First, one ought not look at the state of philanthropic giving in the United States today and assume that Australia will replicate it overnight. A century ago the United States did not have a history of philanthropy either. True, the United States is more wedded to capitalism and Australia is a more egalitarian country; one by-product is that the wealthy in America have enormous resources to dispense. Nevertheless, Australians hold one percent of the world's wealth. For such a small nation, such wealth offers enormous potential for philanthropy. Indeed, a contradiction exists when some argue that not enough wealth exists to donate monies to tertiary education, but others point out that enough wealth exists to donate substantial income to primary and secondary schools.

I should also point out that not every institution should necessarily embark on a philanthropic undertaking. However, if the system is the unit of analysis, it seems self-evident that alternative resources need to be raised. Accordingly, some institutions should be encouraged to embark on significant capital campaigns. For such an activity to occur, three issues need to be resolved. First, tax structures need to be reformed so that philanthropic giving is not simply tolerated, but encouraged. Second, a professional development office needs to be established that is cost-effective and held to clear benchmarks about fund-raising. Third, alumnae relations need to be cultivated.

I appreciate that philanthropic giving will not immediately generate vast amounts of wealth for all institutions. However, I am predicting that the first institution that embarks on a carefully planned capital campaign of a substantial amount – 250 million dollars or more – will be surprised at how fast the goal is reached if their purposes are clear and the environment is supportive.

The final suggestion is perhaps the most controversial issue that I offer. Public universities ought to be free to offer differentiated tuition if they receive approval by the national and regional coordinating boards. My suggestion here is based on the assumption that there is nothing sacrosanct with how much an institution charges its students. What matters are the underlying philosophies upon which those tuition charges are based. Australia and the United States are systems that support mass education, but their funding schemes are vastly different. Curiously, in the more egalitarian of the two countries – the United States – a greater percentage of students attend postsecondary education. Again, I am not suggesting that the United States is a perfect system; indeed, I have written elsewhere about the problems that exist for low-income students in the United States (Tierney, 1992).

However, the issue ought to turn not on deflating the real costs of a college education, but instead, on enabling the greatest number of students to

attend an institution without incurring enormous debt upon graduation. Assume, for example, that tuition at all institutions is set at “X” dollars when one studies engineering. However, the real cost for engineering is “X + Y.” Certainly those students who come from wealthy families can afford to pay “X + Y,” whereas poor students cannot. However, all students are subsidized by government funds. The opposite needs to occur: those who can afford to pay the real cost of studying at the university should pay for some portion of it. A tuition scheme needs to be developed that takes into account the real costs of tertiary education and how to ensure that those who cannot afford that cost are enabled to attend without taking on enormous debt.

Further, institutions ought to be able to set their own tuition rates so that one institution will charge “A” while another will charge “A + B.” Again, the underlying principles are twofold. On the one hand, some institutions are more highly valued and they ought to be able to set their tuition according to that value. On the other hand, as long as funding schemes are in place that ensures that not only the wealthy go to those institutions that cost the most, then an unequal system has not been devised.

When we enable different institutions to develop alternative funding streams, the system as an entirety benefits. Rather than force all institutions to compete for the same research grants or the same international students, we need to devise ways for institutional differentiation to develop that lessens stress on the system as a whole. Philanthropic giving and differential tuition are the two most significant ways to develop alternative revenue streams.

Conclusion

Organizational life is not a causal relationship where if we do “x” then “y” will happen. Hence, I am not suggesting that if a coordinating board is put in place, then fiscal health will automatically return to the universities. Structures are enacted and interpreted by individuals, and these structures exist in a dynamic, fluid system. The most that one can hope for is to develop a system that creates the conditions for change. I have argued here that the current system of tertiary education in Australia has a faulty structure that gravitates against change rather than promotes innovation. A dual system governing board will enable coordination in ways that are currently unavailable and will remove universities from the political sphere. Innovation and experimentation will be heightened, and the current mania for reporting will be secondary to a results-oriented agenda.

The ability to create unique missions, in turn, enables different curricula and pedagogies to develop. Although the final point pertains to increasing revenues, I have suggested that the route to organizational health and high performance depends upon the enactment of all five points. My argument has

been that without such changes the patterns that are currently in place will simply repeat themselves: stress, anxiety and low morale will continue to pervade the system.

As I noted at the outset, throughout the interviews I conducted there was broad agreement that the system is worse off today than a decade ago, and that if we maintain business as usual, then the system will continue to deteriorate. The road to reform, always uncertain, always perilous, is surely better than maintaining the status quo. I am not suggesting that if these reforms are enacted academic staff and administrators will have created a Paradise Regained as if universities are currently a Paradise Lost. Universities need to be dynamic, changing entities with a stable core commitment to values such as academic freedom and the search for truth. They are central to the health of a country's economic, social, and cultural well-being. New contexts require new formulations. The reforms offered here move away from trying to recreate what once existed or merely trying to adapt to the marketplace. "Every man is the architect of his own destiny", said Don Quixote on his deathbed as he tried to give his friends courage to face the future. And too, our universities are architects of their own destinies. We ought not simply be buffeted by changed environmental conditions or simply react to governmental initiatives. The reforms offered here provide the architecture on which to build dynamic and democratic universities for the 21st century.

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Incentives and Accountability: The Canadian Context

by

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Since 1997, the Canadian federal government has introduced a variety of new incentives to enhance significantly the funding of university research in this country. While these funding initiatives have been welcomed by Canadian universities, they are accompanied by a heightened emphasis on accountability which dictates new eligibility conditions for universities' access to these funds. Given that research and innovation have become more central and significant spending categories for the federal public purse, universities in Canada are increasingly subject to public scrutiny, due to concerns for public accountability and safety.

The new programs often involve more strategic central co-ordination and consequently require that the university administration, and not just faculty, justify funding requests. Universities are also expected to demonstrate compliance with a growing array of federally codified guidelines and regulations.

These federal expectations of accountability are multiplying as both the investment in research and the different types of funding mechanisms grow. They are compounded by the fact that, in Canada, universities operate under provincial jurisdiction, which require an additional level of accountability. All these forms of federal and provincial accountability require universities to devote additional time and resources to the stakeholder management process and to the justification of new funds sought and received. The presentation will explore the cumulative impact of these federal and provincial requirements and consider how Canadian universities are positioning themselves to address growing expectations to account for the use of public funds.

Universities in Canada are increasingly recognised by policy and decision-makers as catalysts of innovation and essential partners in a larger network of knowledge creation and knowledge exchange which involves a host of other organisations, both public and private. The active participation of universities within these innovation networks is seen to provide a wide range of benefits which include tangible outputs such as the education of future leaders and citizens, basic and applied research, consulting and advisory services and the commercialisation of university research, among others. Growing recognition by all sectors of Canadian society of universities' contribution to the social and economic well-being of the nation is leading to heightened demand for university education, research, and innovation.¹

In its forthcoming publication, *Trends in higher education*, the Association of Universities and Colleges of Canada (AUCC) estimates that the demand for university enrolment may grow by as much as 30% or 200 000 students by 2011. It is anticipated that this growth will be fuelled both by a population surge of 18 to 24-year-olds and by increases in participation rates.² Participation rates will be positively influenced by student responsiveness to labour market demand, by a heightened recognition of the economic and social returns generated by a university education and by a growing number of university-educated parents who will likely encourage their own children to pursue a university degree.³

On the research front, Canadian universities currently perform one-third of the country's national research and development. OECD data on the share of national R&D performed in higher education reveals that in Canada universities occupy a far greater role in the performance of national research activities than in most other industrialised countries – nearly 50% more than in other G7 countries and more than twice as much as in the United States.⁴ By 2011, university research expenditures are projected to more than double as Canada seeks to move from 14th to 5th place in terms of gross expenditures on research and development as a percentage of its GDP.

Insofar as faculty is concerned, as many as 40 000 professors may be needed by the end of the decade as Canadian universities confront massive faculty renewal and respond to new enrolment and research demands. AUCC projects that Canadian universities will need to replace 20 000 or 60% of their current roster of 34 500 professors by 2011 due to retirement or attrition. As many as 20 000 more professors may be needed to respond to the growth in enrolment demand and the push to enhance the quality of education and research.⁵

Canadian universities must address this growing demand for their services at a time when citizens, communities, businesses and governments have increasingly high expectations of the returns generated by both individual and societal investment in universities. There are also growing government expectations to manage federal, provincial, private sector and student support more effectively and efficiently than ever before. The scope of the challenge of responding effectively to demand and meeting accountability expectations is exacerbated by the need for universities in all regions of the country both to provide high quality services across the board and to nurture their respective teaching and research niches.

While universities in Canada have long confronted competing priorities for the use of available funds, as institutions across the country seek to meet a wider array and growing list of stakeholder expectations, they cannot all respond to the same degree to each need. The needs and challenges vary from region to region, among universities of various sizes, and according to the financial resources available to each institution. Consequently, Canadian universities have and will continue to make choices with regard to which programs and services will be offered and what types of regional or institutional specialisation should influence their teaching and research priorities. Nonetheless, as universities make more and more strategic choices in response to the growing demand for their services, the need to demonstrate and publicly account for the effective use of resources both to internal and external stakeholders is only expected to escalate.

It is in this context – that of the centrality of Canadian Universities to the success of its nation's increasingly knowledge-based society and economy, of the growing expectations placed on Universities by all sectors of society and of the heightened emphasis on public accountability – that sections which follow examine the nature and scope of federal and provincial expectations of universities as well as the financial incentives provided by governments in support of research and teaching. In the final section of the paper, the types of accountability to which these new expectations and incentives give rise are examined against the backdrop of Canadian universities' current planning and reporting mechanisms.

Federal and provincial governments' expectations of universities

In response to signals from Canadians about the growing importance of universities and in light of the fact that research and innovation are increasingly central and significant spending categories for the public purse, both federal and provincial governments have become more explicit in recent years in articulating their expectations of the university community. These expectations, and the accountability measurements to which they give rise, are being assessed carefully

by universities as federal and provincial governments in Canada remain the primary source of funding for university activities. As of 2001-02, government support accounted for just over 50% of all university funding.⁶

Given their direct constitutional responsibility for education, provincial governments in Canada provide the majority of all government support to universities. In 2001-02, this direct support from the provinces amounted to almost CAD 7 billion.⁷ For its part, the federal government exercises its spending power to provide provincial governments with cash and tax transfers to assist them in the delivery of postsecondary education. Moreover, the federal government provides more than CAD 1.3 billion in direct support of university research activities.⁸ Both levels of government also provide grants, loans and tax incentives to students through student aid programs.

Each provincial government articulates formally and informally its expectations of universities in its jurisdiction through such means as legislative acts, government policy, public comment and/or private exchanges with senior university administrators or their representative bodies. In 1999, however, all provincial and territorial education ministers through the Council of Ministers of Education, Canada (CMEC) collectively articulated a series of seven “expectations” for postsecondary education across Canada.⁹ First and foremost was the goal of ensuring that all qualified students have access to a high quality university experience. The expectations also included an emphasis on ensuring that university programs provide learners with relevant and diverse knowledge, competencies and skills to facilitate their participation both in the labour market and society. On the research front, the expectations highlighted the need for university research and scholarship programs to contribute to the cultural, social and economic development of Canada’s communities and regions.

Similarly, in February 2002, the federal government released two innovation strategy papers intended to stimulate a national discussion regarding the contribution of all stakeholder groups to improved innovation and productivity.¹⁰ The papers identified both broad and specific challenges for universities in the decade ahead. These included, among others:

1. More than doubling basic and applied university research activities.
2. Identifying new and more cost effective ways for the treatment and prevention of disease.
3. Contributing to a rapid expansion in the amount of R&D conducted in Canada both by performing research for industry and government and by supplying the economy with far more master’s and PhD graduates.
4. Tripling the revenues generated from commercialisation of university based R&D.
5. Expanding university undergraduate enrolment “at the rate needed to sustain growth in the knowledge based economy”.

6. Improving the participation rates of all Canadians, especially those from economically disadvantaged backgrounds, from aboriginal groups and from traditionally underrepresented groups.
7. Increasing the use of technology enhanced learning to improve access to, and the quality of, university education.

These federal innovation papers also included a formal call to all stakeholder groups, including the university community, to create an action plan that would detail their collective commitment to achieving the national innovation goals. AUCC responded in June 2002 with a plan outlining a series of 15 major commitments including providing more learning opportunities for traditional and non-traditional students, expanding graduate programs to enhance Canada's pool of highly qualified personnel and at least doubling the amount of research universities perform by 2010.¹¹ University presidents were prepared to make these collective commitments insofar as federal and provincial governments as well as the private sector were prepared to take the complementary steps required to achieve the targets proposed and the appropriate financial support for the realisation of the objectives was forthcoming federal and provincial incentives for universities.

Federal and provincial incentives for universities

At the federal level, expectations regarding universities' contributions to innovation are not anticipated to come without financial incentives to facilitate and encourage the participation of universities from across the country in the national innovation strategy. As precursors to its innovation strategy papers, the Canadian federal government has introduced a variety of new incentives over the past five years to enhance the funding of university research. Five of these initiatives have transformed the funding landscape for university research in Canada since 1997.

- In 1997, the Canada Foundation for Innovation, with a cumulative endowment of CAD 3.15 billion, was created to strengthen Canada's research infrastructure. Capital investments made by the CFI and its provincial, institutional and private sector partners will approach CAD 8 billion by 2010.
- In 1998, after several lean years, the federal government restored funding to federal research granting agencies to their 1993-94 levels and has since provided additional funding for such targeted initiatives as the New Economy Initiative, which provides CAD 100 million over four years for research on new economy issues.
- In 1999, the federal government created the Canadian Institutes of Health Research, a multidisciplinary approach to health research organised through a framework of 13 virtual institutes. Funding for these institutes in just the last five years is now double that of its predecessor.

- In 2000, the federal government created the Canada Research Chairs, a CAD 900 million initiative to support the establishment of 2 000 research chairs by 2004-05.
- In December 2001, the federal government made an initial contribution of CAD 200 million towards the indirect costs of research, together with a firm commitment to work with universities to establish an on-going program in support of the indirect costs of research.

These new investments in research infrastructure, personnel and grants represent several billion dollars since 1997. Between 1998 and 2001, the federal government's investment in university research grew by 54%. In light of these increases, federal governments now fund 21% of higher education R&D.¹²

Despite these increases, investment in university R&D in Canada still lags behind several OECD competitors and arguably limits the extent to which Canadian universities can meet national innovation goals. For example, despite the amount of federally sponsored research performed by Canadian universities, there is currently no ongoing support for the indirect costs of research associated with these activities. In 2001-02, the indirect costs of such federally funded research were estimated at approximately CAD 400 million. In recognition of this fact, the next federal budget is expected to deliver on the promise of long-term funding for indirect costs as well as support for smaller universities seeking to build their research capacity.

For their part, provincial incentives for universities cover both research-related support and more general operating support. On the research front, the provinces have in recent years assumed a growing role in providing direct support for the research function of universities. In some cases, these represent initiatives taken by provincial governments independent of federal programs; in other cases, provincial support has been complementary to that provided by the federal government. A number of provinces have invested heavily in university research with five of ten provinces having established their own research granting agencies. Most provinces also provide support for such activities as targeted research initiatives (for example, in health or agriculture) or promotion of university-industry collaboration and technology transfer. Many provinces also provide the 40% matching funds required by the Canada Foundation for Innovation for research infrastructure. A few provinces provide funds to cover some of the indirect costs of federally-funded research and provincially funded research.

The bulk of the financial support provided by the provinces, however, is in direct operating support which amounted to CAD 5.8 billion in 2001-02.¹³ In relative terms, this amount represents a marginally smaller share of provincial government spending in 2001-02 than at the outset of the 1990s. As

a result, government operating support for universities is 17% lower than in 1992-93 and 30% (almost CAD 4 000) less than the CAD 12 000 per student that governments provided at the beginning of the 1980s. In 2001-02, governments provided only 61% of the operating revenues of universities versus 83% in 1980.¹⁴ Given the decline in per-student support at the provincial level and the lack of internationally competitive levels of federal funding for R&D (despite a renewed commitment to university research in recent years), fulfilling increasingly explicit and ambitious federal and provincial expectations will clearly be a challenge for universities.

Institutional, federal and provincial accountability

Accountability is by no means a new concept for Canadian universities. Universities in Canada routinely account for the use of public funds to both internal and external stakeholders via an array of communication and reporting mechanisms. University administrators are accountable to their boards of governors, which include representatives from the faculty and student bodies as well as from local business and community leaders. Each university also has a senior administrator who is responsible for overseeing the sound financial management of all funds. In addition, universities regularly provide reports to federal and provincial government departments and granting agencies to document the use and outcomes of the funds provided for operating grants, research grants and contracts, and domestic and international outreach activities.

Nonetheless, both the nature and frequency of these accountability activities are changing. While the articulation of federal and provincial expectations and the accompanying commitment of universities to achieve mutually agreed upon goals has long been part of the government-university relationship, the public nature of this articulation has assumed a distinct new force. Additional government support for universities is increasingly conditional on the provision of institutional strategic plans that are publicly accessible; the assessment of performance against government approved indicators; and comprehensive and explicit expectations of managing research in the public interest and with public scrutiny of means and results. This reality combined with the proliferation of funding mechanisms, each with its own specific expectations and forms of accountability, is placing new demands on universities that have repercussions on how they account for the funds received.

Canadian universities must submit a growing number of qualitative and quantitative reports that demonstrate more specific impacts of the funding provided to a host of federal and provincial agencies each year. Their senior administrators are also increasingly called upon to proactively and centrally manage tensions over resource allocation and demand for public accountability.

These activities entail significant additional time and resources devoted to the management of the teaching and research enterprise. In order to continue capitalising on government funding opportunities, universities are therefore becoming more strategic in planning and accounting for the linkages between available funding and institutional priorities.

Universities' strategic planning exercises enable them to determine to what extent they are, or could be, more responsive to the variety of demands they confront, both individually and collectively. This planning facilitates their efforts to anticipate future needs, define their niches, ensure community buy-in, manage creatively, maximise efficiencies, and leverage effectively across all their services. It also requires them to communicate and demonstrate how their financial and organisational choices support and fulfil the objectives and priorities established for each institution. Overall, strategic planning encourages the integrated co-ordination of research, teaching and community service activities and a synergistic and shared vision of the role of the university in the process of knowledge exchange.

Strategic plans developed by universities to date reinforce the degree of diversity that exists across the university system and suggest the potential for even greater diversity where and when appropriate. Universities typically revisit their strategic plans every two to three years and regularly measure their progress in achieving their objectives. While the scope and nature of strategic planning exercises vary from one institution to another, and many institutions have stand-alone plans for research, information technology and/or academic programs, these planning processes are increasingly integrated and their results made publicly available. As of 2001-02, strategic plans were publicly available on most Canadian university websites.

The emphasis on strategic plans has been fuelled in part by new federal research initiatives that promote more strategic central co-ordination by institutions and consequently require that university administration, and not just faculty, justify funding requests. For example, the Canada Foundation for Innovation (CFI) requires that universities not only provide a summary of their institutional strategic research plan, but also link their plan to the process for securing matching funding from other public or private sources within six months of a CFI decision.¹⁵ Universities must also submit their strategic research plan, complete with linkages to research infrastructure requests made of CFI, to justify the relevance of their nominations to the Canada Research Chairs Program.

Universities seeking federal money also face escalating requirements to comply with a wide array of guidelines and regulations related to the administration of research funds such as the care and treatment of animals involved in research, the support of research ethics boards for research

involving human subjects, and assessment of the environmental impact of research. As part of this growing accountability on compliance issues, the three federal granting agencies have engaged universities in a two-year process to create a Memorandum of Understanding on roles and responsibilities in the management of federal grants and awards. All universities in Canada that receive funds from one or more of the federal granting agencies are now expected to sign this MoU and its accompanying schedules by the Fall of 2002 as a condition for future funding.¹⁶

The MoU not only defines the conditions Canadian universities must meet before their researchers are considered eligible for funding, but also seeks to document, through the signature of university presidents, that presidents formally acknowledge and agree to comply, on behalf of all those in their institutions, with these expectations. The memorandum and its schedules constitute a contract that could create legal obligations for institutions toward the agencies as well as to third parties. Its implementation is requiring significant due diligence on behalf of institutions to ensure that their own internal rules and procedures are consistent with those expectations set out in the MOU. The current MOU, which covers eight distinct aspects of research administration, will be followed by a second wave of schedules that could address more than ten other aspects of university oversight.

Federal accountability measures such as these are compounded by the fact that, in Canada, universities operate under provincial jurisdiction, which require an additional level of accountability. For example, universities in several provinces now measure at least part of their performance against provincial indicators. These performance indicators inform their respective governments' allocation decisions with regard to university funding.

In 1997-98, Alberta became the first province in Canada to link performance to funding in the university sector.¹⁷ Since 1997-98, a performance envelope award of approximately 2% of total operating grants (CAD 15 million) was made available to universities.¹⁸ There are two components to Alberta's Performance Based Funding Mechanism (the name given to the instrument used to distribute the performance awards), the learning component and the research component. The learning component is comprised of indicators that are intended to measure institutional responsiveness, accessibility and affordability. The research component (worth approximately 20% of total performance envelope awards) is calculated by national peer group rankings on a "report card" using the following Key Performance Indicators (KPIs): 1) council monetary awards per full-time faculty member (based on 5 year rolling average); 2) citation per research publication (based on 5 year rolling average); 3) community and industry funding for sponsored research per faculty member; and 4) research revenues as percentage of provincial grants.

In 1999-2000, an additional CAD 100 000 was available for each university with outstanding research performance as measured by the institution's report card score on the KPIs.¹⁹

In Ontario, performance-based funding (PBF) was introduced in 2000-01 by the Minister of Training, Colleges and Universities. The government's official rationale in introducing PBF was to establish a formative accountability mechanism that would both improve the system and help the government to achieve its legislated objectives in the university sector.²⁰ The amount of funding allocated to PBF in 2000-01 represented approximately 1% – or CAD 16.5 million of universities' total operating grants.²¹ In 2001-02, CAD 23.2 million or 1.34% of the operating grant budget was allocated to universities for PBF.²²

PBF for Ontario universities is currently based on three Performance Indicators (PIs): 1) degree completion rate; 2) six month employment rate of graduates; and 3) two year employment rate of graduates. Degree completion rate is measured by comparing all first-year students who are seeking bachelor or first professional degrees in a given year with the records of students who received a bachelor's or professional degree in the seven years subsequent to that year (e.g. 1991 entrants/1992-98 graduates = degree completion rate). Employment rate of graduates is measured by the number of employed graduates (or those offered employment) divided by the total number of graduates in the labour force.

Institutions are rank-ordered, and then divided into three groups based on their scores in the three performance indicators. Universities in the highest scoring group receive double the amount of funds of the second group, while universities who score in the bottom third receive no performance funding. According to the *Report from the University Members of the University Working Group on Performance Funding*, universities in Ontario are deeply concerned with the methodologies used in the measurement of these indicators and with improving the link to performance based funding. Chief among their concerns is the need for the government to recognise the diversity in university policies and institutional missions, as well as the lack of control that institutions have over external factors that influence the indicators.

In Quebec universities were recently required to sign performance contracts. These contracts represent a different approach to the performance base funds introduced in Alberta and Ontario in that fulfilment of the performance contract becomes a precondition to any future increase in an institution's operating funding. Each contract negotiated between the provincial government and the university established a number of indicators against which improvements in each institution's performance would be measured.²³ Both parties shared in the development of relevant goals for the university and

were encouraged to reflect the diversity of the universities and their mandates in the establishment of the objectives. To this end, each university's performance contracts were designed using a given set of indicators which best suited their particular mission. The generic performance indicators from which universities' crafted their specific performance targets including the following eight categories: graduation rate (Full-time programs); participation rate; international students; student support; faculty recruitment; academic programs; research; and balanced budget.

Once the goals for the institution were set, the performance contract outlined the funding increases universities could expect if they met their targets. Universities were given an extended time frame to adjust their current practices to targets identified in the performance contracts. In 2000-01, the Minister of Education announced approximately CAD 750 million in new funding over three years for Quebec's universities to cover commitments made in its policy on finance regarding universities.²⁴

Conclusion

Performance-based indicators, public performance contracts and detailed reporting mechanisms are often double-edged swords. On the one hand, they respond to a political need for a measurable indication of universities' success in meeting the objectives defined both from within universities' own planning processes and by external funding partners. On the other hand, given the need for these indicators to provide some level of comparability or equity in assessment among institutions, they are often crude measurements of the objectives identified. Furthermore, given the challenge of defining provincially or nationally relevant indicators, they often fail to account for the institutional diversity that is both characteristic of, and demanded of, universities in Canada.

As the appetite and requirement for accountability increase, universities will need to continue planning strategically to meet stakeholder expectations and to play an active role in defining accountability measures that value and promote a diverse range of outcomes. Accountability measures that recognise this diversity and yet promote effective, efficient and transparent use of finite financial resources will enable universities to demonstrate their responsiveness to stakeholder expectations. The demonstration of this responsiveness will in turn facilitate the attraction and retention of the funding required for universities to provide more and better services in the decade ahead.

The challenge remains, however, to respond to legitimate expectations to account for the use of public funds while avoiding loss of institutional autonomy, excessive cost and undue risk to institutions. Responding to this

challenge will require not a performance contract, but a social contract. Such a contract would be based on open communication, ongoing co-operation and mutual accountability among all stakeholders in Canada whose collective success depends upon well-resourced and internationally competitive Canadian universities.

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Notes

1. This background paper was created from excerpts of AUCC's forthcoming publication, Trends in higher education, a publication prepared by AUCC's Research and Policy Analysis Division. I acknowledge the permission of all authors from the division for the right to use jointly produced material. Particular thanks to Herb O'Heron, Lawrence Aronovitch, Steven McKibbin and Ann Gratton for their comments and assistance in the preparation of this document.
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Student Satisfaction in Higher Education: a Turkish Case

by

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The aim of this paper is to determine the level and the factors for university students' satisfaction with the institutions they are attending. Firstly, the concept of satisfaction will be defined. Secondly, a conceptual framework to demonstrate the relationship between the factors which lie behind university student satisfaction will be presented. Thirdly, the results and implications of a survey with which the authors tried to test the presupposed relationships within the boundaries of the conceptual framework will be given and discussed. The limitations of the research are also given. The results of the research show that, at least for some Turkish university students, the quality of education, instructors, textbooks and being female and informed before attending university can be considered important factors of satisfaction.

Although there is a significant amount of research on student satisfaction, Harvey (2001), Lee *et al.* (2000), Benjamin and Hollings (1997, 1995) argue that student satisfaction is an important issue that has not yet been fully explored. Satisfaction or dissatisfaction with a university or faculty does not only affect student performance (Pike, 1991; Bean and Bradley, 1986) and the competitive advantage of universities in an ever-increasing competitive environment (Lee *et al.*, 2000). More significantly, it also affects both the physical and psychological health of students. Dissatisfaction causes stress and this in turn provokes psychological and psychosomatic disorders (Öngider and Yüksel, 2002).

For a detailed report on the nature and impact of psychological and psychosomatic disorders on students, one should refer to Stirling University's *Mental Health Guidelines* which were updated in March 2003. The guidelines refer to research conducted among university students both in the United States and in the United Kingdom. The results of this research consistently suggest that students are at particular risk of mental health problems. Öngider and Yüksel (2002) find similar results for Turkish university students studying at the institution where this research was conducted. Thus, an attempt to determine the sources of satisfaction becomes a very important endeavour in itself.

The aim of this article is to determine the level and the factors for university students' satisfaction with the institutions they are attending. Firstly, the concept of satisfaction will be defined. Secondly, a conceptual framework to demonstrate the relationship between the factors which lie behind university student satisfaction will be presented. Thirdly, the results and implications of a survey with which the authors tried to test the presupposed relationships within the boundaries of the conceptual framework will be given and discussed.

"Satisfaction is a person's attitude toward an object. It represents a complex assemblage of cognitions (beliefs or knowledge), emotions (feelings, sentiments or evaluations) and behavioural tendencies" (Hamner and Organ, 1978, p. 216). The object of satisfaction may be anything. When a person states that he/she is satisfied with something, he/she is regarded as having a positive

attitude toward that specific object. Conversely, a person may be dissatisfied with something. In that case he is regarded as having negative attitudes toward that very object.

Probably, the simplest, most straightforward method to measure satisfaction is to ask individuals questions as to what extent they are satisfied with a given object (Hamner and Organ, 1978:217). Thus, accuracy can be enhanced by defining the “object” of satisfaction very carefully.

In this article, the object is university students’ satisfaction and it is defined as the positive and negative attitudes developed by the students with regard to their institutions.

Conceptual framework

Before proceeding into the details of the conceptual framework, it seems necessary to designate the level of analysis at which the following research was conducted. According to Harvey (2001), the predominant satisfaction surveys cover five areas: 1) institutions (university level), 2) faculties, 3) departments, 4) courses and 5) teacher-appraisal by students. In this study, we have collected information regarding the faculties and unless otherwise stated, our analysis, results, comments and conclusions must be interpreted at this level.

Taking previous research (Harvey, 2001, 1997; Lee et al., 2000; Donald and Denison, 1996; Morrison, 1999; Marsh, 1991; Rich et al., 1988; Guolla, 1982; Feldman and Theiss, 1982) and the authors’ personal observations as a basis, it is assumed that there are four major groups of factors which seem to affect student satisfaction: 1) institutional factors 2) extracurricular factors, 3) student expectations and 4) student demographics (Figure 1).

Some of these factors are similar to Harvey’s 2001 study. According to Harvey, most universities around the world conduct satisfaction surveys among the students regarding the services they provide. These services include: 1) learning and teaching, 2) learning supports facilities, 3) support facilities, 4) external aspects of being a student, 5) the learning environment. In this study, services one and two are classified under the heading “academic factors”, services three, four and five are classified under “extracurricular activities”. In addition to these, institutional, expectational and demographic factors are also included in order to come up with a more comprehensive framework.

Institutional factors break down into two major components: academic factors and university administrators’ management philosophy and style. Academic factors include: a) quality of education, b) communication with instructors both in and outside the classroom, c) curriculum, d) textbooks and other teaching materials and e) student evaluations of instructors (Guolla, 1999; Cashin, 1992; Marsh, 1991, 1987; Abrami, 1989). Administrative factors

include the philosophy and practices of university administrators (Donald and Denison, 1996; Porter and McKibbin, 1988; Ames and Ames, 1984; Rigby, 1984; Cameron, 1981).

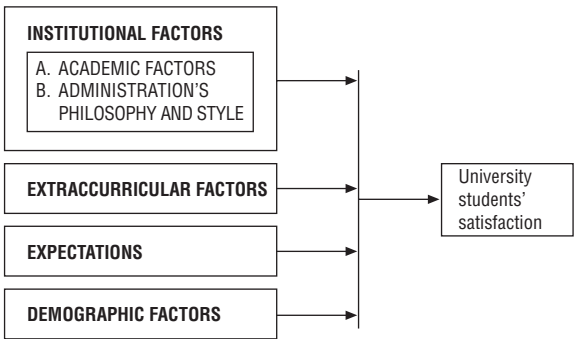
Extracurricular activities consist of all social, health, cultural and sportive activities plus transportation and boarding services (i.e. campus life) that a university may provide to its students (Harvey, 2001; Harju et al., 1998; Donald and Denison, 1996; Prieto, 1995; Cameron, 1981).

Another important factor that determines university students' satisfaction includes their preferences and **expectations** regarding their faculty. From the process point of view, satisfaction is the difference between expectations and achieved performance (Wanous et al., 1992; Feldman and Theiss, 1982). When expectations and performance match, satisfaction occurs. A mismatch will end up with dissatisfaction. Expectations do not only relate to the students' faculty choice and probability of finding a job after graduation but also to what he/she expects from higher education. In this study expectations include: a) participation in faculty or university administration, b) the sectors in which students expect to find jobs after graduation in Turkey, c) pursuing further education abroad, d) finding a job abroad, e) whether they would send children to the same faculty, f) whether the faculty prepares students for the labour market or not.

Demographic factors are factors such as age, sex, class attendance, cumulative average, etc. Figure 1 shows the relationship between the satisfaction of university students and the factors mentioned above .

It can easily be claimed that there may be several other factors that can determine the formation of satisfaction, which is indeed a highly complex socio-psychological phenomena. Thus, the conceptual framework presented in Figure 1 may be criticized from several points of view. For example, one can

Figure 1. **A conceptual framework of factors relating to university student satisfaction**



Source: Authors.

easily suggest that there might be numerous other factors that may determine the formation of satisfaction. It may quite convincingly be argued that this framework does not show likely interactions between the independent variables. Furthermore the causal relationship invoked may turn out in fact to be the reverse. That is, instead of a demographic factor such as success in class (Grade Point Average) creating satisfaction, satisfaction may increase success (Grade Point Average) (Donald and Denison, 1996; Pike, 1991; Bean and Bradley, 1986). However, this type of endeavour surpasses the researchers limits and explains why the authors have chosen the factors which have been most used in previous literature. One further reservation regarding the research, and which is explained below, is that the authors had to omit administrative style and philosophy from the research design due to an inadequate sample. Quantitative analysis of this factor could not be given, yet some qualitative interpretations will be provided through inference. After all, it is assumed that the areas where students are dissatisfied are the points which both academics and administrators pay attention to.

Method and sample

The Faculty of Business from which we have drawn the sample is a young faculty which was established in 1992 at Dokuz Eylül University, Izmir, Turkey. It has 4 departments and a total of 872 students, of which 182 students are first year students. The language of instruction is English in all the departments. Dokuz Eylül University is one of the largest state universities in Turkey. It has 36 000 students and ranks fifth among 52 state and 23 private (foundation) universities. All 52 state universities are run, financed and controlled by a constitutionally established body, the Higher Education Council. Foundation universities are semi-private in the sense that they are controlled, but not run and financed, by the Higher Education Council. There are laws, rules and regulations which every state and foundation university has to observe.

Thus, almost all universities operate within the same legal framework. The legal entity of universities is therefore not considered as a separate variable and hence, not included in the institutional factors group.

In order to test the previously mentioned relationship in the conceptual framework, a survey was conducted among the sophomore, junior and senior students of the Faculty of Business in December 2001. First year students are not included in the sample because information such as cumulative average could not be obtained at the time of the survey. Another reason for omitting first year classes was the presupposition that they were very new to the Faculty and had not been able to develop realistic expectations and acquire meaningful experiences. They were therefore not in a position to compare their experiences with their expectations. The entire population of the students in

sophomore, junior and senior classes at the Faculty of Business at the time of the survey was 690. The authors tried to reach the entire population, however only 419 students responded. The rate of response was 60.7%. Detailed information about the sample is given in Table 1.

Table 1. **Research sample**

	Gender N = 419		Age N = 389				Previous Residence (Regions) N = 419			
	Female	Male	17-18	19-20	21-22	23-	Aegean- Thracia	Mediterranean	Central Anatolia	Other
Frequency	223	196	6	157	186	40	339	37	17	26
Percentage (%)	53.2	46.8	1.5	40.4	47.8	10.3	80.9	8.8	4.1	6.1

Source: Authors.

Survey and measures

A questionnaire of 63 questions was prepared by the authors and addressed to students during December 2001. The authors tried to choose a relatively less stressful period for the students (i.e. away from the stress of examinations or presentations). Questions are grouped under four subheadings: 1) demographic (28 items), 2) institutional (18 items), 3) extracurricular (5 items), 4) expectations (12 items). The questions were designed to address the presupposed relationships in the conceptual framework.

The questions were prepared at nominal, ordinal and interval levels of measurement. The variable “satisfaction” on the other hand was measured at nominal level. Possible answers to this question were “Yes”, “No” or “I have no idea”. Although literature is replete with Likert type measurements of satisfaction, which allow for ordinal level of measurement and statistics, the authors opted for nominal measurement. The reasons behind this choice were firstly, that the authors were not interested in individual but rather the general level of satisfaction of a large group; secondly, that by using such a method, it became possible to see the net strength of student satisfaction (i.e. to what extent this attitude is strong). Because the dependent variable was measured on a nominal level, the statistics used were frequencies, ratios and chi square tests. The test of significance level is determined to be at 0.05.

Results and discussion

The results concerning the satisfaction of students with this Faculty in general are: 60.3% satisfied; 15.4% dissatisfied; 24% have no clear opinion. This percentage of satisfaction can be considered quite high for a young Faculty.

A summary of the factors and sub-factors which seemed to be associated with satisfaction are shown in Table 2. The results concerning factors of

satisfaction clearly show that academic factors, especially satisfaction with the faculty, explain student satisfaction more than the others. Guolla (1999), Cashin and Downey (1992), Marsh (1991), Conant (1985) also pointed to the importance of the instructor's performance. Highly performing instructors' students are more satisfied not only with their instructors but also with their institutions. Thus, even if a Faculty administration performs poorly, their students remain satisfied as long as they have highly performing instructors. However, if administrative problems keep piling up, this may cause competent, high-quality instructors to withdraw or leave their organizations. Thus, we should expect a decrease in students' satisfaction if this were the case and an indirect decrease in the satisfaction of students from the Faculty.

Table 2. **Statistically significant factors relating to student satisfaction**

	Chi square (X^2)	Sample size
1. Academic factors		
Faculty performance	50.38 ($p < 0.00$)	322
Communication with the instructor in the classroom	24.11 ($p < 0.00$)	315
Communication with the instructor outside the classroom	42.26 ($p < 0.00$)	314
Quality of education	73.89 ($p < 0.00$)	314
Textbook quality	8.02 ($p < 0.04$)	
2. Extracurricular factors		
No significant relation has been found		
3. Expectations		
Those who wish to send their children to the same Faculty	84.42 ($p < 0.00$)	233
4. Demographic factors		
Gender	15.25 ($p < 0.00$)	315
Age	6.55 ($p < 0.00$)	314
Previous information about the Faculty	4.83 ($p < 0.03$)	314

Source: Authors.

Other academic factors such as communication with the instructor in and outside the classroom (Hong, 2002; Fredericksen et al., 2000), the quality of education that professors provide and the textbooks that they choose, all relate to students' satisfaction. Rich et al. (1988) found that appropriately chosen textbooks increase student satisfaction. According to our personal observations, most of the highly performing instructors also have satisfactory communication in and outside the class with their students. Because they are open to two-way communication and hence feedback, they usually come up with the best choices concerning textbooks. Thus, from the student's satisfaction point of view, it becomes crucial for university administrations to recruit, motivate and retain highly performing instructors. News of the mismanagement of instructors by the university administration or destructive conflicts with them immediately starts circulating not only among faculty staff and students but also in the home environment (Guolla, 1999). This type

of experience will not only lead to a decrease in the prestige of the university but will also harm its competitive edge.

Among the second group of factors, namely expectations, only one variable seemed to be associated with student satisfaction. Although the expectation about whether the Faculty prepares students for the job market seemed to be associated with satisfaction, it was not included because the test of significance level was slightly above the 0.05 level (0.08). The only variable that seemed to be associated with satisfaction is the students' desire to send their children to the same Faculty in the future. Those who answered "yes" to this question showed and stated greater satisfaction with the Faculty in general than those who replied "no".

Due to the deep economic crisis and political instability in Turkey, the authors of this paper expected students' expectations about the contribution of the Faculty to finding jobs after graduation to be highly associated with student satisfaction. But the results of this research did not support this view. In an attempt to explain this phenomenon, a rank-ordered question was put to the students "In your opinion what is the purpose of higher education?" 43.6% of students stated that the purpose of university education is to improve one's intellectual skills (similar non-materialistic values were also reported in İmamoğlu and Aygen (1999), Başaran (1991). Only 11.5% regarded university education as a means to finding jobs. Thus, creating job opportunities for the students does not greatly enhance student satisfaction. However, the improvement and accumulation of knowledge is very much related to the quality of education and hence directly and indirectly contributes significantly to students' satisfaction. This argument is in line with van den Bosch's (2003) argument. Bosch states that "The labour market for graduates is constantly shrinking. Even five years after graduation, individuals have difficulty in finding jobs which are appropriate to their specializations. The value of higher education does not lie in its content anymore but rather in its capacity to help students acquire the skills of a) proper and disciplined thinking, b) methodical research and analysis, c) applying knowledge and d) with others". It is almost common knowledge in Turkey that a great many graduates work in jobs which are totally different from their field of study. Students applying to the Faculty of Business seem to be aware of this and they value the development of intellectual skills more than anything else, just as van der Bosch stated. This trend seems to be universal (Toulmin [2000], Emery [1994], Griffiths and Murry [1985]).

Table 3. The purpose of higher education

In your opinion what is the purpose of higher education?	Number of students N = 419	Percentage %
To receive a diploma	23	6.0
To meet the demands of my parents	4	1.0
To develop my intellectual skills	166	43.6
To become a sociable person	12	3.1
To specialize and have a profession	78	20.5
To find a job	44	11.5
To reach a more prestigious and high-status position in society	54	14.2

Source: Authors.

As stated earlier, of 28 demographic factors, only 3 seem to be significantly associated with student satisfaction. Of these 3, the first 2, i.e. gender and age are current characteristics of the respondents. However, the variable being informed before joining the Faculty belongs to their past. A great majority of female students (88.1 %) expressed satisfaction with the Faculty, against 70% of male students. Thus, being female increases the likelihood of being satisfied with this Faculty. However, both parties seemed to be more satisfied with the Faculty in their first years. A slight decrease has been noticed in the satisfaction of juniors and especially seniors.

The reason male students are less satisfied than female students can be explained by making use of the expectation-performance theory of satisfaction. University education is a long-term process. Students who join a university or faculty with predetermined expectations start comparing their expectations with the performances of their respective educational institutions, during this rather long period. If expectations are not met, i.e. if the performance level is below the level of expectations, dissatisfaction occurs. Vice-versa, if performance is equal or above what is expected, individuals experience satisfaction. The results of this research seem to support this view. New students (18-19 age group) seemed to be more satisfied than older students (22-23 age group). In the Faculty of Business at Dokuz Eylül University, it seems that with age, some of the students do experience slight dissatisfaction, due to the increase in pressure, the stress of graduation and anxieties about what is expected from them after school. This is especially true for male students. The satisfaction of male and female students starts differing in and after junior class. Male students, due to enormous social conditioning (Kağıtçıbaşı, 1981) feel trapped between finding a job and the restrictions of the economic crisis. Recent research by Yetim (2003) confirms this view. Yetim, who conducted research among Turkish male university students, found that male students have a deeper feeling of mastery than female students and that this feeling of mastery is deeply rooted in their social conditioning. The feeling of mastery is defined as the extent to which people feel to be in control of the important

circumstances in life (Pearlin and Radabaugh, 1976) and close to choosing between fields of work, organizations and jobs. It stimulates traditional social male conditioning (i.e. you have to master your life) and is the source of enormous tension among male students.

Another expectational factor that seem to predict student satisfaction is the information about the Faculty which students gathered before choosing to apply. Those who are pre-informed are more satisfied than the ones who are not. Naturally pre-informed students form sound and realistic expectations. Thus they experience less disappointment and dissatisfaction. In the light of this result, university administrators should pay serious attention to informing new entrants about what to expect. As Morrison (1999, p. 10) states, "Specific institutions of higher learning utilize tools available for identifying student needs and ascertaining ways their programs might enable students to be more successful in meeting their personal academic goals".

Although several studies found a correlation between extracurricular activities, such as campus life, and student satisfaction, no significant relationship has been found in this research. Out of the five sub-factors, such as the presence of student clubs, medical services, accommodation services, transportation, sports and cultural activities only medical services have a relationship with satisfaction at 0.08 level of significance which is above the accepted 0.05 level.

The interpretation of this factor presents difficulties and is open to speculation. The only rational explanation may lie in the answer to the rank order question: "In your opinion what is the purpose of higher education"? Almost none of the students mentioned or included in their rank ordering the attractiveness and quality of extracurricular activities. Their major concern seemed to be to develop both intellectually and professionally.

Thus, at least for some Turkish university students, the quality of education, instructors, textbooks, and being a female and informed before attending the university can be considered important factors of satisfaction. Based upon the above results, some suggestions are being made to university administrators. After all, as Watson (2003) states, "For student satisfaction surveys, providing feedback also encourages the university management to explain how they deal with the shortcomings that emerge from the survey"

Informing high school students who intend to pursue higher education is very important. Students informed beforehand establish realistic expectations.

- Special attention should be given to the recruitment, motivation and retention of high quality instructors.
- Instructors must be trained to establish healthy communication with students.

- In order to recruit the best students, financial help must be provided prior to their entry (such as scholarships, funds etc.). In view of the deep and serious Turkish economic crisis, many students and families would appreciate this.
- The reasons behind male students' relatively low level of satisfaction requires further investigation.
- Although, social services seem to be unrelated to satisfaction, there is still adequate evidence that especially low cost medical services are indispensable for students.

Limitations of the research

One significant limitation of this study is that its sample size may not be representative of all Turkish university students. Thus, care should be shown if generalizations are going to be made.

The second limitation is the probability of having missed significant factors in the conceptual framework which might have explained the satisfaction phenomenon more thoroughly. Obviously, the topic covers a highly complex social situation. There may not only be important independent but also situation specific or moderator type variables which have not been included in the framework.

The third limitation is the author's difficulty collating information from university administrators (presidents, deans, chairpersons, etc.). Thus, administrative philosophy and style has not been analysed.

Despite these limitations, the authors would consider the study to be a significant contribution were it to provoke some interest among the researchers in the field.

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