

PEB *EXCHANGE*

THE JOURNAL OF THE OECD PROGRAMME ON EDUCATIONAL BUILDING

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OECD



The OECD Programme on Educational Building (PEB)

The Programme on Educational Building (PEB) operates within the Organisation for Economic Co-operation and Development (OECD). PEB promotes the international exchange of ideas, information, research and experience in all aspects of educational building. The overriding concerns of the programme are to ensure that the maximum educational benefit is obtained from past and future investment in educational buildings and equipment, and that the building stock is planned and managed in the most efficient way.

Seventeen OECD Member countries and 13 Associate members currently participate in the Programme on Educational Building. PEB's mandate from the OECD Council to advise and report on educational facilities for students of all ages runs until the end of 2006. A steering committee of representatives from each participating country establishes the annual programme of work and budget.

PEB Members

Australia	Netherlands
Austria	New Zealand
France	Portugal
Greece	Slovak Republic
Hungary	Spain
Iceland	Switzerland
Ireland	Turkey
Korea	United Kingdom
Mexico	

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Dienst voor Infrastructuurwerken van het Gesubsidieerd Onderwijs (DIGO – Belgium)
Het Gemeenschapsonderwijs (Belgium)
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Provincia di Rovigo (Italy)
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Regione Toscana (Italy)
Republic of Slovenia
Service général de garantie des infrastructures scolaires subventionnées (Belgium)
Tokyo Institute of Technology (Japan)

PEB AND OECD ACTIVITIES

“DESIGNING TOMORROW’S SCHOOL” SEMINAR

“Designing Tomorrow’s School” was the theme of an international PEB seminar that attempted to define some of the basic concepts that will affect the future of school buildings. The seminar concentrated on existing examples of innovative institutions in France, Ireland, Italy, Mexico and the United Kingdom. Sustainable school buildings, the multi-use classroom and public-private partnerships were some of the topics addressed.

The seminar, held 1 to 4 September 2002 at the National University of Ireland (NUI), Galway, received special attention. The recently-appointed Irish Minister of Education and Science, Noel Dempsey, opened the event, which was covered by local press and television. PEB is grateful to the Ministry and NUI for organising and hosting this successful seminar.

An exhibition presenting schools and universities featured in the PEB compendium of exemplary educational facilities, *Designs for Learning*, took place in conjunction with the seminar.



EDUCATIONAL INFRASTRUCTURE WORKSHOP IN MEXICO

The conclusions of the international PEB workshop on educational infrastructure are now available on the PEB Web site (<http://www.oecd.org/els/education/facilities>). Discussions centred on three themes: delivering education and training in the knowledge society; monitoring and evaluation of public policies for educational infrastructure; and promoting and disseminating good practice in the planning and management of educational facilities. The workshop took place in Guadalajara, Jalisco, Mexico, in February 2002, and was organised by the Mexican authorities.

OECD EDUCATION INDICATORS

The OECD education indicators enable countries to see themselves in the light of other countries' performance. The latest indicators, published in October 2002, provide new information on student learning conditions, including the learning climate in the classroom and the use of information technology, as well as on tertiary education. Here are some of the findings:

- The average number of years that a person is likely to spend in formal education rose between 1995 and 2000 in all but two of the 20 OECD countries for which comparable data are available. The increase was biggest in Greece and Hungary, at 16% and 14% respectively.

Quality and use of school resources for 15-year-olds (2000)

Quality and use of the school library			Availability and use of computers			Quality and use of science laboratory equipment		
Percentage of students enrolled in schools where principals report that learning is hindered to some extent or a lot by lack of instructional material in the library ¹	Percentage of students who report that they ² ...		Percentage of students enrolled in schools where principals report that learning is hindered to some extent or a lot by lack of computers ¹	Percentage of students who report that they ² ...		Percentage of students enrolled in schools where school principals report that learning is hindered to some extent or a lot by inadequate science laboratory equipment ¹	Percentage of students who report that they ² ...	
	never use the school library	at least several times a month		never use computers in the school	use computers in the school at least several times a month		never use the science laboratory	use the science laboratory at least several times a month
OECD countries								
Australia	17	35	30	8	60	16	16	61
Austria	22	4	38	15	68	34	57	25
Belgium	24	4	19	27	48	19	43	27
Canada	20	22	31	14	50	19	20	44
Czech Republic	25	4	37	33	47	22	62	17
Denmark	14	43	28	2	79	21	11	77
Finland	43	6	43	6	64	43	67	9
France	15	20	28	35	22	13	43	33
Germany	35	10	50	38	32	32	41	37
Greece	50	6	68	31	37	64	50	14
Hungary	12	11	13	15	72	27	70	8
Iceland	37	21	45	10	66	53	47	23
Ireland	48	7	41	35	42	42	22	59
Italy	34	3	32	26	53	37	51	21
Japan	24	16	31	60	22	34	50	19
Korea	35	13	24	30	57	28	25	40
Luxembourg	16	11	23	22	49	14	55	24
Mexico	60	33	68	49	30	66	33	35
New Zealand	11	32	40	16	41	19	15	65
Norway	59	22	61	11	44	49	10	62
Poland	32	21	39	27	55	43	37	33
Portugal	17	38	39	30	33	23	47	33
Spain	27	14	30	40	37	32	37	29
Sweden	27	36	51	10	60	16	6	83
Switzerland	15	12	23	23	43	16	44	29
United Kingdom	38	18	56	9	63	42	7	67
United States	21	20	31	12	44	23	23	34
OECD total	29	18	38	29	41	32	33	34
Netherlands ³	31	18	39	28	44	20	65	11

1. Based on school principals' responses.

2. Based on students' responses. For the description of the index of the use of school resources see the section on Definitions and Methodologies of this indicator.

3. Response rate is too low to ensure comparability (see Annex 3 at <http://www.oecd.org/els/education/eag2002>).

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

- Average class sizes in primary schools range from fewer than 20 pupils per class in Denmark, Finland, Luxembourg and Switzerland to 31 in Turkey and 36 in Korea.
- Students between the ages of 9 and 11 spend, on average, 841 hours per year in the classroom, while students between the ages of 12 and 14 spend nearly 100 hours more per year. However, the figure varies significantly across countries.
- On average, a 15-year-old pupil in an OECD country can expect to share a computer at school with 13 other students. But this varies widely across countries and, in some countries, between regions and schools. About one 15-year-old in three uses a computer at school daily or at least a few times per week but two out of three use a computer at home with a similar frequency.
- In high performing countries, school resources tend to be used more frequently, schools tend to have a higher level of autonomy, teachers' morale and commitment tend to be higher, and teacher-student relations tend to be relatively better. In countries with relatively low performance, negative school climate indices tend to cluster, and the indices on the use of school resources, teachers' morale and commitment, school autonomy and teacher-student relations tend to fall below the OECD average.
- Public expenditure on education continues to grow faster than total government spending, but not as fast as gross domestic product. In 1999, the latest year for which comparable figures are available, OECD countries spent an average of 5.5% of their GDP, including both public and private contributions, on education.
- In a number of OECD countries, governments pay most primary and secondary education costs, but leave the management of educational institutions to the private sector to broaden the range of learning opportunities without limiting the participation of students from low-income families. In Belgium and the Netherlands, the majority of primary and secondary students are enrolled in such government-dependent private institutions. In Australia, France, Korea, Spain and the United Kingdom, the proportion is still more than 20%.
- Amidst a general trend towards freely circulating capital, goods and people, individuals are also looking more closely at foreign institutions for tertiary education. In 2000, according to available data, 1.6 million foreign students were enrolled in tertiary-level institu-

tions outside their country of origin. Of these, 1.5 million were studying in OECD countries, an increase of 14% compared with two years previously, with numbers of students from other OECD countries rising at around the same rate as numbers of students from outside the OECD.

The 2002 edition of *Education at a Glance – OECD Indicators* is available through the OECD's Online Bookshop at <http://www.oecd.org/bookshop>.

UNIVERSITY LIBRARIES FACE NEW CHALLENGES

A well-attended international seminar on universities and libraries took place at the OECD in August 2002. The background of the seminar was the fact that universities – and their libraries – face an expanding range of challenges and opportunities and many are being asked to do more for less.

Changes are associated with demands for excellence in research, while continuing support is provided for mass education and non-traditional means of delivery are developed. Furthermore, libraries increasingly serve the wider community as well as internal users. Consequently libraries are developing new roles to support the mission of their parent institutions.

Related issues are how to develop external partnerships and how to ensure value for money and an effective infrastructure.

The appearance and function of libraries have changed drastically in recent years. As the librarian at Trinity College Dublin, Bill Simpson, put it: "The libraries of 30 years ago bore more resemblance to those of the great medieval cathedrals than they do to the kind of modern library we are talking about today. We now have bibliographical records, meta-data in electronic form, with direct links to the contents of whatever is recorded. Users access most material, certainly most journals, electronically. Virtually all of our business today, except for those things that require face to face contact, is concluded electronically."

Libraries are important learning resource centres but are increasingly costly to run. Particularly subscriptions to periodicals have become expensive over the last few years and libraries feel forced into package deals, which include journals they would not have acquired otherwise.

It is not unreasonable, therefore, that funding agencies and managers of higher education ask how much money

should be put into libraries, especially now that that old material is being digitalised and new material is readily available in electronic format. Hence Kari Raivio, Rector of Helsinki University, asked: "How many libraries do we actually need and who is going to pay for them?" Sir Brian Follett's paper summarised recommendations to the UK Government on the future of research libraries in an electronic world. If, as a result of these recommendations, a new national body is established to support research libraries, it should provide sustainable services and be driven by the needs of the professional researchers. A number of national level responsibilities are envisaged in relation to access and management of electronic content but also to collection and management of hard copy material.

Regardless, and somewhat paradoxically perhaps, the centuries-old tradition of building monumental libraries has not come to an end. New library buildings are still being built, and the seminar participants were given many examples of new trends in library facilities. Sarah Thomas, Cornell University Librarian, showed that today libraries in the United States must respond to new user needs such as electronic classrooms and areas for social interaction. In addition to being technology-enriched, libraries must have cafés, inspirational reading rooms, comfortable seating and 24-hour access. Other new features, to deal with space constraints, are off-site collections. Such storage is sometimes arranged in partnership with other universities, and high-density

storage can provide extra capacity for lesser-used materials.

For more information, contact Jan Karlsson, OECD/IMHE, tel.: 33 (0)1 45 24 92 01, e-mail: jan.karlsson@oecd.org.

OECD ONLINE LIBRARY

The online library of the Organisation for Economic Co-operation and Development, SourceOECD, is now available in French as well as English. SourceOECD contains all the Organisation's books, periodicals and statistical databases from January 1998 onwards. Subscribers can access books as complete entities or chapter-by-chapter and can export statistical tables. Subscribers can also opt to receive all new printed books that are published during their subscription period.

SourceOECD is primarily designed for those who work or study at institutions such as universities, consultancies, companies, and non-governmental and governmental organisations. Once an institution has subscribed, anyone who has access rights to the institution's computer network has unlimited usage.

Access to the search engine and free parts of the service is available to everyone at <http://www.sourceoecd.org>.

Free trials are available on application by e-mail to SourceOECD@oecd.org.

NEWS

"DESIGN FOR LEARNING" SEMINAR IN THE UNITED KINGDOM

The Scottish Executive hosted the "Design for Learning" seminar on school building design for the 21st century on 12 November 2002. The event was organised to help foster and promote a shared awareness of the need to strive for excellence in school building design.

The seminar took place within the context of a recently launched GBP 1.15 billion investment package that will deliver 300 new or refurbished schools to Scotland – the biggest ever school building programme in the United Kingdom.

The importance of a consultative approach involving education stakeholders in the school design process was a key theme throughout the day and was also reflected in the broad stakeholder representation. Attendees included nearly all of Scotland's local authorities along with architectural companies, construction development consortiums, interests group representatives for children, teachers, unions and industry as well as financiers, service providers, education academics and students in architecture.

The event presented Scotland's aims and objectives within a strong European and international context. On arrival participants passed through an exhibition of exemplary school building designs from across Scotland, the United Kingdom and Europe.

Scottish Executive ministers opened the event, highlighting the importance of design, the need for consultation in the process and recognition of the developing services being delivered through schools.

Richard Yelland, Head of PEB, presented *Designs for Learning: 55 Exemplary Educational Facilities* at the seminar which was attended by more than 250 people.

For further information, contact Hugh Dames, tel.: 44 131 244 0373, e-mail: schoolestate@scotland.gsi.gov.uk.

LETA 2002

Learning Environment Technology Australia (LETA), an international, multi-discipline event established in Adelaide, South Australia, in 1994, is held biannually in partnership with educators, architects, information technologists and administrators. LETA 2002 included full participation by a group of students from Adelaide high schools. The speakers from various countries addressed the theme "Leading the Learning Edge".

Keynote speakers from telecommunications specialists Telstra and EDS outlined the likely future in telecommunications, while leading educators described the challenges and opportunities for education. Prakash Nair (USA) provided new perspectives on learning, while Louise Bywaters (Australia) outlined the skills required by middle management.

Stephen Heppell (United Kingdom) presented notschool.com and demonstrated how learning can be achieved through individual programmes using computers, mobile phones, mentoring and coaching, and a commitment to achievement. His presentation resonated with ideas put forward by PEB and LETA in previous years and provided an example of ideas into action.

Former Commonwealth Minister for Education the Honourable John Dawkins AO outlined opportunities from taking a leading role in the planning and delivery of education by making use of new technologies, rethinking how learning takes place for children and adults and planning infrastructure to meet the ongoing and evolving needs of the community. This paper hinted at a new charter for public education in a future in which there will be very significant changes in the technology, the nature of learning, the demography and the funding of public education services. Dawkins drew on a number of OECD references including PEB and scenarios devel-

oped by David Istance, and emphasised that these were issues of interest to all OECD countries.

LETA 2002 brought together a number of ideas raised by PEB and keynote speakers from previous years:

- In 1984 at the first PEB conference held in Australia, Hedley Beare (Australia) urged those attending to "stop building schools that are schools" and to start planning for lifelong learning and centres which provided for integrated learning.
- In 1994 Bruce Jilk and George Copa (USA) introduced the notion of a "signature" for each school to identify its unique needs and ensure these were met.
- In 1996 David Loader (Australia) told delegates they should spend less time worrying about competition from the school next door and more time learning about the new technologies and the ways in which these services would impact on learning opportunities.
- In 1998 Ron Lake (Australia) demonstrated the creation and integration of multi-campus learning centres and showed how learning could be enhanced through choice and diversity. (Lake is now heading up the development of the National Science and Maths School due to open early 2003 in Adelaide).
- In 2000 Leenamajja Ojala (Finland) spoke on Finland's national education and information economy strategy which includes many similarities to initiatives now being taken in Australia and New Zealand.

Richard Yelland (PEB) and Bruce Jilk have urged delegates to put into action some of the ideas which have been discussed, and the presentations and displays at LETA 2002 demonstrated that action has been taken across Australia to create integrated learning centres, to include the community in planning and to seek out opportunities for joint ventures.

Australia's Department for Administrative and Information Services Building Management and the Education Department's Site Property Services mounted a display on standards, design guidelines, asset management and details of recent projects submitted for the Design Share Award competition in which Australia had 11 winning entries from across the continent.

This fifth LETA was held in conjunction with the Australian College of Education Leaders and the Council of Education Facility Planners' Australian Chapter (CEFPI Australia).

LETA 2004 will be held in Adelaide in October 2004.

“SEED CORN” FUNDS AT VOCATIONAL AND TECHNICAL SCHOOLS IN TURKEY

In recent years Turkey has been expanding vocational and technical education, and “seed corn” funds are benefiting certain schools.

Amongst the public funds used for education, “seed corn” funds are innovative in that they are not part of the consolidated budget but are given directly to the school by Turkey’s Ministry of Finance. Presented here are the effects of these funds on vocational and technical education and the legal aspects of this funding operation.

One thousand forty-two educational institutions under the Ministry of National Education’s responsibility receive “seed corn” funds. In 2001 the schools had a capital of approximately 53 billion Turkish lira and realised a profit of approximately TRL 19 trillion. With their profits, Ankara Gazi Vocational and Technical High School, for example, was able to purchase flexible panel saws, a numerically controlled machine and an edge banding machine for student use.

Effects on vocational and technical education

Effects on students. With income from “seed corn” funds, improvements have been made to practical training workshops in vocational and technical schools, giving students better access to new technology.

Effects on personnel. Revenue from “seed corn” funds makes it possible for teaching and administrative personnel to attend domestic and international trade fairs and seminars every year in order to keep up with developments in their respective fields. Teachers are then able to pass on their new knowledge to students.

Effects on schools. Vocational and technical schools with “seed corn” funds are recognisable by the good state of their buildings, as the funds allow them to undertake repair and maintenance work as soon as it becomes necessary. These schools can create revenue by investing in machinery and equipment which are used by students, as part of their training, to produce goods that are sold for a profit.

The past record of “seed corn” funds at educational institutions suggests that, as long as they are used for the purpose of assisting education, they can provide even further benefits. However, limiting the commercial dimension is important in order to prevent such operations being used in a way that is detrimental to education.



Legal aspects

The operations of “seed corn” funds are governed by statutes, regulations and official instructions. The statute concerning “seed corn” funds at vocational and technical schools under the Ministry of National Education sets out the types of schools that are eligible, the amounts of capital, the employment of personnel for “seed corn” operations and their pay, and the selection of the responsible staff.

Purchase, sale, rental and barter transactions, and the establishment of limited real rights in connection with “seed corn” funds are governed by regulations for invitations for tender to ensure timeliness, competition, openness and productivity.

Moreover, the operational regulations for “seed corn” funds contain provisions that are designed to ensure efficient use of the funds that are invested.

GREECE’S SCHOOL BUILDINGS ORGANISATION TURNS 40

The School Buildings Organisation S.A. organised a week of events between 15 and 19 October 2002, in Athen’s Syntagma Metro Station, to celebrate its 40 years of contribution to Greek education.

The School Buildings Organisation (OSK) S.A. is one of the longest-lived organisations in building construction and enjoys exclusivity in the domestic market for constructing and equipping school buildings.



1st Primary School of Korydallos



4th Vocational Institute and 1st Technical-professional Lyceum in Athens

Since the OSK became a *Société Anonyme* in 1998, both its strategy and production have evolved. Combining the dynamics of a modern, competitive construction company and the social mission of a non-profit organisation, the OSK created the framework for a range of organisational changes, such as upgrading its services through technical, operational and financial means, flexibility in staffing and training, and exploiting its real estate assets. In addition, it has increased its production and focused on improving the quality of educational infrastructure. In the last three years, OSK delivered over 800 classrooms.

In Attica, on the prefectural level, the OSK constantly monitors the demographic evolution of the student population, expropriates or purchases the necessary building plots, designs architectural and statistical studies, oversees construction work, provides technical and scientific consultancy services to municipalities, communes, prefectural authorities and institutes of higher education, as well as furnishes equipment to all the country's school units.

Internationally, the OSK has begun providing services to cater for and upgrade the infrastructure of Greek schools in other countries in order to meet the present-day needs of Greek citizens abroad. In parallel, in the context of the Greek scheme for the economic reconstruction of the Balkans, OSK is seeking to undertake the project management for constructing and repairing schools in Serbia.

The educational community and Greek society at large recognised the OSK for the way it handled the aftermath of the 1999 earthquake and for the major repair work it carried out on the school buildings of Attica. The OSK's managing director reported on the organisation's disaster management programme at the joint PEB-OSK conference in Thessaloniki in November 2001.

The OSK's workforce – 101 licensed engineers, 51 technicians, 16 science officers, 106 management support staff – provide the organisation with the flexibility and capability of developing cutting-edge applications such as implementing the "school of the future" and the multi-purpose school, a school that respects the environment and is used not only by students and educators but also by the entire community.

HUNGARY'S GERMAN SCHOOL OF BUDAPEST

The October 2002 issue of *PEB Exchange* featured a description of Hungary's German School of Budapest. The architect who wrote the article, Ágnes Novák, has received feedback from the school's users. Both teachers and pupils said they think the building is ideally set in its surroundings and it harmonises with nature. Concerning its functional use, the pupils appreciate the varied and friendly spaces, and the teachers regard the building's safety as an important improvement over past constructions (there have been no accidents since the school opened in August 2001). The schools operators underlined the building's easy care and maintenance.

For further information, contact Ágnes Novák, MSc. Architect, Szent István University Ybl Miklós School of Built Environment, Thököly út 74, Budapest, 1146, Hungary; telephone: 00 36 1 306 0394, fax: 00 36 1 351 3404, e-mail: novag@elender.hu.

ENERGY EFFICIENCY IN QUEBEC

In Quebec, a school board and a college of higher education have been raising awareness about energy

efficiency among students, teaching staff and other school-building users.

For several years now, the School Board in Rivière du Nord has been developing an interesting approach aimed at fostering a greater sense of responsibility among users. For the school year 2002/03 it has innovated by building a pedagogical component into its programme, as part of the school guidance project ("*école orientante*"). The School Board's Physical Resources Department has set up an Internet site on energy savings, designed to assist and raise awareness among staff and students. The site can be visited at: <http://www.csrndn.qc.ca/energie/>.

Elsewhere in Quebec, the idea of incorporating energy efficiency into a broad environmental programme and making it a multidisciplinary activity involving the administration, teachers and students has won the Rosemont College an award. In the 13th "Energia 2002" competition, run by the AQMP (*Association québécoise pour la maîtrise de l'énergie*, or Quebec association for energy conservation) on 23 October last, the college was congratulated on its environmental achievements and named as winner in the institutional building category. The Energia competition acknowledges excellence and performance in the field of energy efficiency and energy savings.

"Since it was founded in 1968, Rosemont College has always tried to be environmentally friendly and since 1976 has been launching special energy-efficiency initiatives", said Gilles Lafortune, Director of Physical Resources and Computing. Rosemont College's environmental achievements can be consulted under "Collège" on its Web site: <http://www.crosemont.qc.ca>, and a summary of its achievements has been posted on the AQMP site: <http://www.aqme.org> under "Concours Energia".

KOREAN CONTEST FOR OUTSTANDING EDUCATIONAL FACILITIES

Korea has published the winners of its 2001 contest for educational institutions with outstanding facilities. The national contest recognises institutions that create a physical environment accommodating changes in the curriculum as well as in society, and schools that are conducive to thriving educational activity. The winners are publicly advertised so that other schools can follow their example, ultimately improving the overall quality of school facilities throughout the country.

Institutions eligible to apply were:

- public and private elementary, middle and high schools, schools for the disabled and national universities;
- school with facilities of at least 2 000 square metres;
- schools that had completed building projects, either fully or partially, during the period from the previous year's contest to this contest.

Of the 45 participating schools and universities, the jury selected two grand prize winners in the category of design and one in the category of construction. In addition, a total of seven institutions received the Excellent in Achievement award in the two categories. The jury was made up of architects, university professors and journalists specialised in architecture.

Nam-Myun Elementary School and Seonam Middle School in Chungnam Province won both grand prize in design and the Excellence award in construction. The two schools share the same facilities, which are successfully designed to meet the educational objective of open education.



A classroom of Nam-Myun Elementary School and Seonam Middle School

The school has an environmentally friendly lighting system. The electricity used in classrooms is on an "overnight savings scheme" to reduce the electricity bill. Solar energy is optimised as natural light enters through classroom windows. Likewise the graded cafeteria ceiling enhances sunlight exposure to brighten that area.

Multiple uses of space were planned, such as for the cafeteria. Sinks and kitchen counters are installed throughout the cafeteria so it can function as a cookery classroom during normal class hours. This space also serves for community use.

The schools, with a surface area of 6 800 square metres, have 319 students.

A brochure with numerous photographs of the winning institutions is available in Korean from the Ministry of Education, fax: 82 2 730 6068.

THE 8TH ORME MEETING IN MARSEILLES

An event devoted to educational multimedia in France

The 8th meeting of the *Observatoire des Ressources Multimédias en Éducation* (ORME) was held in Marseille from 9 to 11 October 2002, focusing on new educational environments. The event brings together the various actors in France involved in developing multimedia resources in education and the way they are used. The ORME meeting is organised with the support of national and local bodies and in partnership with numerous business people, and it confirms the desire for exchanges between the representatives of the Ministry of Education, the institutions and the private sector.

According to the organisers, this year's theme, "The New Educational Environments", characterises the major trends taking place in education and training systems, which can no longer be understood by means of the traditional concepts. The boundaries between initial and continuing education are becoming blurred; the university lecture is losing ground, being partly or completely replaced by tutorials and personal work by the student. More generally, the concept of e-learning focused on occupational training, as introduced by the United States in the late 1990s, is expanding. Against this background, it is important to know how to mobilise the resources needed to develop knowledge and create effective and relevant work environments.

Publishing educational digital content

The 2002 event provided the Education Ministry with an opportunity to report on a further stage in the development of a centre for digital content industries in Marseille, with the creation of Ma.T.I.C.E. (*Marseille Technologies de l'Information pour la Culture et l'Éducation*). This system is contributing to the installation of a complete digital content transfer chain, involving the organisation, management and development of local and national competencies: research, training, monitoring, design, distribution and project support.

In 2002, part of the programme targeted three specific groups: parents of students; local and regional authorities; and media professionals specialising in information and communications technology, education and training. The 8th meeting was also attended by a number of representatives from AVICENNE, a centre for distance training resources; backed by UNESCO and supported by the European Union, the project involves 15 Mediterranean basin countries, each of them setting up a

national federative structure called the *Centre Avicenne*. PEB's recent work was the subject of various presentations and discussions.

For more comprehensive information, please contact Isabelle Etienne (isabelle.etienne@oecd.org).

UNITED KINGDOM ACCESS TO ICT

The United Kingdom is increasing access to information and communications technology (ICT) for its citizens through online centres and broadband connectivity in schools.

The government met its target to have 6 000 online centres up and running by the end of 2002. The centres enable people with little or no ICT skills, especially people in deprived areas, to get access to PCs. The Minister for Adult Skills and Learning, Ivan Lewis, said, "One of our main aims is to reach people in disadvantaged communities by providing low or no cost information and communications technology services. We want to encourage them into learning and updating their skills." Online centres have been set up in all 2 000 public libraries in England, in voluntary and community centres, in colleges and in cyber-café. Around 500 online centres are also University for Industry (Ufi) "learndirect" centres established to stimulate longer term lifelong learning via ICT.

GBP 199 million was made available from the Capital Modernisation Fund (CMF) to help fund UK online centres in deprived communities. All of the CMF centres were also able to apply for joint funding from the GBP 77.5 million New Opportunities Fund that was provided to help with revenue costs. Public libraries have received GBP 120 million for ICT equipment and staff training from the Lottery through the New Opportunities Fund.

Between 2002 and 2004, the UK Government is making available GBP 710 million for schools' ICT infrastructure, including broadband connectivity. As at 11 October 2002, one in four schools across England are connected to broadband at two megabits per second or faster. Broadband is the term used to describe a wide range of technologies that enable high-speed, always-on connections between computers and enhanced access to the Internet. The additional bandwidth provided by a broadband connection allows new value-added, media-rich learning content and services to be delivered.

PROJECTS

SCHOOL SAFETY IN FRANCE

Whether we are politicians, administrative staff, teachers or parents, we all attach great importance – and rightly so – to every aspect of student safety. The safety of our schools is a particularly sensitive topic because it affects children's lives and is given a high profile in the press.

France's *Observatoire national de la sécurité des établissements scolaires et d'enseignement supérieur*

Aware of this, the French government set up in 1995 the *Observatoire national de la sécurité des établissements scolaires et d'enseignement supérieur*, a national agency for safety in schools and higher education, bringing together the public owners of school buildings, representatives of staff and parents from public-sector schools and those under contract in the private sector, and the relevant ministries. Its mandate covers any issue concerning the safety of people, premises or equipment: solidity of buildings and fire risk, accident analysis and prevention, technology and science equipment, and major hazards. Its annual reports (diagnosis and proposals), drawn up in conjunction with experts, are sent out to government, public authorities and any stakeholders with an interest in safety.

The first French overview of safety in lower and upper secondary schools in the public and private sectors looked at fire safety in 30 000 buildings (11 000 schools). All aspects of alarms, safety lighting, non-compliant doors, stairwell enclosure and smoke control, and the isolation of high-risk areas were closely scrutinised in safety commission reports, and 7% of all buildings (15% in the private sector alone) proved to be at risk.

In 1996 the *Observatoire* drew up a safety inventory of all machine-tools in vocational and technological secondary schools. This was just before the European Directive was due to come into force and at a time when the French criminal code was placing more emphasis on liability for manslaughter or unintentional injury owing to deliberate failure to comply with rules on safety or caution; and the evidence was quite startling. In public sector schools, 30% of the machines failed to comply, 29% were obsolete, 23% had always met safety standards and 18% had been brought up to standard. This

is the kind of diagnosis that the *Observatoire* must conduct on a regular basis to ensure that the necessary steps are taken by those in charge.

The *Observatoire's* track record

The *Observatoire's* contribution to progress on safety since it was created consists mainly of information and training, accident inventories and subsequent prevention, and progress on regulatory issues. Its publications in the field of fire safety, health and hygiene (*e.g.* asbestos, radon), sports equipment, experimental work and major hazards have been backed up by training initiatives in partnership with the *Institut national d'études de la sécurité civile* (national institute for research into emergency services). Initiatives targeting private secretaries to the regional Prefects and heads of interministerial departments in charge of disaster, emergency and firefighting services have also enabled the Ministry of the Interior to circulate the agency's proposals to players on the ground.

Following the *Observatoire's* proposals, progress has been made in regulating fire safety (visit reports, circulars on the responsibilities of school/college heads, and the safety of primary pupils). Workshop safety has also been addressed in legislation based on the agency's recommendations (workshop facilities, electrical risk prevention, teacher training and new pedagogical tools). In vocational education, the Ministry has placed considerable emphasis on the safety dimension (physical security, effective monitoring and control, manual/service jobs, laboratory staff, etc.). With regard to healthcare and emergency services in schools, the *Observatoire's* work is reflected in a national protocol and in the health and safety circulars sent out at the start of the school year. Other ministries such as Youth and Sport have also worked on decrees and laws that reflect the agency's proposals (on goalposts, for instance, and agreements on physical education and sports in schools).

The *Observatoire* and major hazard prevention

In France, major disasters such as the fire at the Pailleron lower secondary school that caused 20 deaths in 1973 have led to progress on safety rules in places of assembly. However, substantial efforts were required before permanent steps were taken to develop a safety culture, apart from regulations covering premises and equipment. Although compulsory fire-evacuation drills are conducted almost everywhere, they are not sufficiently integrated into the school curriculum. Since the severe storms in the 1990s, a major-hazard awareness campaign has been conducted jointly with the Ministry

of the Environment. It has met with little success, as only 10% of educational establishments have any staff who have attended an emergency preparedness course. Recent events, in particular the disaster in Toulouse (see box), have reinforced the general belief that it is important to provide educational teams with the appropriate instructions and tools.

The explosion of a chemical plant in Toulouse in 2001 seriously damaged educational premises housing 20 000 students, and completely destroyed three upper secondary schools. The *Observatoire* visited the sites and began work on the solidity of the buildings, safe areas for students and staff, and emergency preparedness. The main problem in such a situation is that all communications networks immediately break down and the people in charge are completely isolated as they cope with the emergency, whether it is caused by a natural disaster, an industrial accident or a terrorist attack.



This is why a guide (see above) has been drawn up to help educational establishments prepare for an emergency by closely involving students and parents alike. The six-page guide provides information on a set of safety measures enabling them to cope with a major accident until the emergency services arrive. It comes with a set of fact-sheets on the various stages of the safety plan: informing families, assigning responsibilities, emergency telephone numbers, emergency kit, list of absent or injured students, individual observation sheets and conduct in an emergency. Each establishment should draw up its own safety plan covering site-specific hazards and the lay-out of its premises. These individual plans should also be followed up with the appropriate drills.

However prepared a school might be to cope with specific hazards, there is always a possibility that it might have to handle unforeseen or unpredictable situations. Some disasters occur without warning. The curriculum

The chemical explosion in Toulouse

The explosion of a chemical plant in Toulouse on 21 September 2001 resulted in 2 500 casualties and damage to school and university premises, taking a heavy toll on students. Among the more seriously injured were 16 students and two staff members. One secondary student was killed as he left his school's changing rooms. Ready before the others, he was making his way to the gymnasium when the explosion occurred, sending debris, including heavy fragments of metal, hurtling in all directions.

Of the area's 184 nursery and primary schools, 79 sustained some damage, including 30 with serious damage. Twenty-six lower secondary schools were damaged, with one entirely destroyed, as well as 11 upper secondary schools, with three destroyed. Also hit was Mirail University, and the National Polytechnic Institute sustained damage amounting to 55 million euros.

Two of the three upper secondary schools that were destroyed contained 1 500 students at the time of the explosion. In the first, *Lycée Gallieni*, students were attending class or workshops, or were in the changing rooms before going to the gymnasium. All the school's windows were shattered, and walls and false ceilings collapsed. However, the concrete structures resisted. The gymnasium was totally destroyed by the blast.

The second, *Lycée Françoise*, where supporting beams gave way in some buildings, sustained similar damage. Hairdressing students, whose training rooms were wrecked, were injured by flying shards of glass and miscellaneous objects.

The most serious injuries were caused by falling blocks of building material.

The *Lycée Gallieni* in Toulouse after the explosion



© Xavier LOTT

should also prepare students for this by teaching some basic reflexes such as not behaving erratically, and controlling panic by avoiding two mistakes: overreacting and underreacting. As part of the work of its major hazards commission, and in partnership with senior officials in the ministries of Education and the Environment, the *Observatoire* does more than just draw up documentation. It identifies and promotes local experiments that merit the attention of the educational community. Finally, much of its work focuses on training or awareness campaigns for all those with an interest in safety.

Safety is possibly the issue that most requires efficient co-operation from every section of the educational community. Arrangements for emergencies, including major hazards, must involve the supervisory authority, the mayor and the educational community as a whole, under the responsibility of the principal; and they cannot be improvised. The *Observatoire's* ongoing role is to provide back-up in the form of diagnoses, proposals and methodological tools. It is by involving stakeholders in an approach based on joint observation and active risk prevention that all those concerned can join forces in the drive to promote safety.

To find out more, contact:

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NEW SOUTH WALES SCHOOL DESIGN PROJECTS

Australia's New South Wales Education Facilities Research Group, a joint initiative between the Department of Education and Training and the Department of Public Works and Services, provides action research into issues which impact on school design. These issues include curriculum development, changes in teaching strategies and new directions in school management and organisation. The research group has a programme of work which includes the development of guidelines and training manuals for teachers, parents and students as well as

architects, engineers, planners and administrators. Four examples of recent projects are outlined below.

Video to illustrate ways to use new school buildings

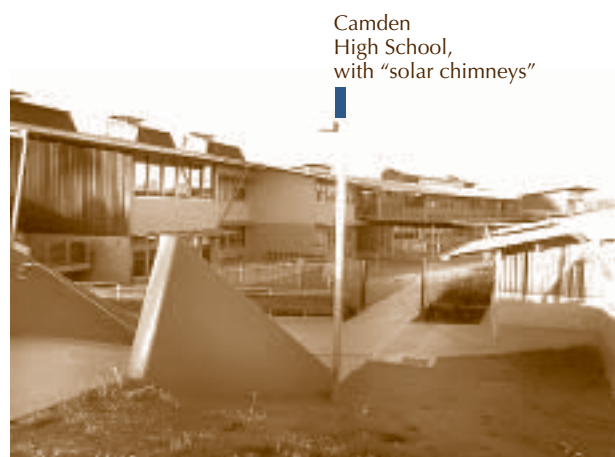
New secondary schools currently being built in New South Wales (NSW) not only look different but are conceptually different from those with which many parents and teachers are familiar. These new facilities have been designed with the latest understandings of effective pedagogy and student engagement. For many adults their very concept of a classroom or a staff room may well be challenged by the new designs.

For some teachers the new facilities shift them out of their comfort zone. They require them to change the way in which they teach, from the teacher-centred approach to the role of "facilitator of learning/coach/mentor" which recognises and caters for the different learning styles of students.

To encourage taking up new ways and to ensure that best use is made of new facilities, the NSW Department of Education and Training has created a video to inform the school community about the new designs. The video, "Built to Teach: Designed to Learn", highlights school organisational issues which need to be addressed, allays the fears of staff, encourages and promotes cross curricula dialogue and supports teachers in maximising the learning experiences of all students.

Energy management

In New South Wales the government has set goals in energy reduction for all government agencies at 15% of the 1995 level by 2001 and 25% of the 1995 level by 2005. As part of the government's energy management policy each agency has to formulate an energy management strategy.

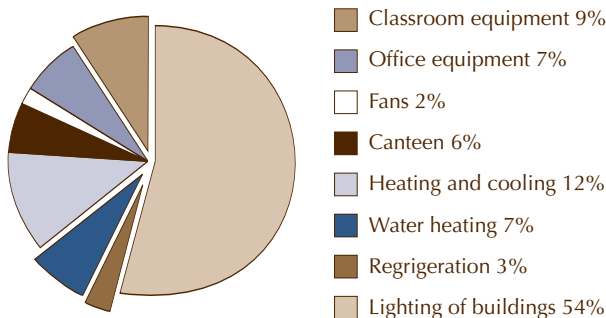


Camden High School, with "solar chimneys"

To assist the NSW Department of Education and Training to achieve these targets, a manual with energy management strategies to reduce operating costs and greenhouse gas emissions has been developed. Schools are provided with details of the areas in which energy is used and data about the energy consumption of specific items of equipment. With this information schools can undertake an energy audit to identify areas where energy may be saved.

The Energy Management Manual is complemented by continual improvements in school design and by ongoing research into thermal comfort and strategies for managing energy usage.

Average electricity usage in high schools



Typical energy consumption of schools

Landscaping design guide

To complement the school design and energy management programmes, a landscaping design guide has been developed to detail planning and performance requirements for specific areas of the school landscape. Guidelines are provided for planners, landscape architects and school management to illustrate the basic principles of good landscape design and suggest actions which will create appropriate passive, active and learning areas, reduce accidents, minimise maintenance and ensure that funds are spent on the areas of greatest benefit to the students.

Asset.gov

An important part of school planning is the involvement of the school and local community in the design and keeping the key stakeholders informed of the ongoing development and progress.

Chifley College, Senior Campus



The NSW Department of Public Works and Services has developed asset.gov as an online collaboration tool for capital and non-capital projects. This new electronic system which lets all stakeholders collaborate online, regardless of their location, is easily accessible and secure and facilitates the flow of project information. A centrally stored set of online documents reduces the risk of errors arising from outdated plans and also saves time and money while improving opportunities for community consultation.

Asset.gov allows people to access up-to-date information on the progress of the design and construction of their school. Local residents can become actively involved in the project by providing information on local issues and feedback on the design through Internet-based forums. This is especially important in Australia where distance can be overcome through the use of enabling technologies. For further information see <http://www.asset.gov.com.au>.

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REVIEW OF BUILDING QUALITY USING POST OCCUPANCY EVALUATION

Introduction

“Darkrooms should be dark” was the observation of a teacher reviewing school photographic facilities in a Post Occupancy Evaluation conducted by Chris Watson. Occupants’ indisputable, but unfulfilled, expectations of building quality are documented within the recorded opinion in Post Occupancy Evaluations. In this case, glazing in outer doors compromised the light seal of the darkroom lobby. Such gross errors in building production are relatively rare, but they serve a useful reminder of the importance of systematic review to reduce the likelihood of repetition and ensure their correction.

Post Occupancy Evaluation is described here in terms of its aims, principles, benefits, methods, timing and results. Three examples illustrating the evaluation of educational facilities are given, followed by a summary.

Aims

Education depends on students being supported, not frustrated, by buildings and equipment. Classroom communication requires certain acoustic, visual and physical conditions, and feedback on efficient design is essential for improving future design. By understanding how existing buildings affect occupants, designers can minimise problems and capitalise on successful design features.

Post Occupancy Evaluation is a tool to account for building quality – essential when organisations are required to demonstrate that building programmes are being responsibly managed.

Participants in Post Occupancy Evaluation often identify ways to design and use buildings and equipment more efficiently and more cost-effectively. Dysfunctional or seldom-used building features can be identified and eliminated from future designs. Imperfections in new buildings can be fine-tuned and management practices adjusted. Often, minor changes to buildings and the ways they are used offer significant benefits to users.

Systematic analysis of buildings from all relevant viewpoints is also useful for negotiating between the various interest groups and assists them in realising the potential and limitations of their buildings. Post Occupancy Evaluation involves the building users in defining how buildings function for them. This participation has been shown to engender greater commitment to solutions and more willingness to accept shortcomings.

Evaluation is also an important tool in planning refurbishment of existing buildings. It helps clarify perceived strengths and weaknesses in order to focus resources where they are needed. It identifies where building design adjustments are needed to support changing practices, markets, legislation and social trends.

Principles

On the basis that buildings are socially negotiated solutions to human needs for shelter (and support for operations and equipment), no objective method of evaluation can be a complete test of building quality. Consequently, the evaluation compiles the subjective opinions from the complete set of interest groups.

Once all the relevant occupant groups have been identified, they collectively are the “experts” at knowing how the building affects their activities, needs and aspirations. The approach taken is then to capture as much opinion as possible about the subject building.

To ensure that buildings are interpreted in the manner appropriate to each occupant group and that the evaluation remains free of evaluator bias, participants are invited to respond directly to spatial experience in the building, rather than any evaluator representation of it.

Post Occupancy Evaluation reports are compiled to ensure easy review for the various parties who need to refer to different types of recommendations within it. The reports need to be transparent in their logic so all parties can understand and engage in healthy debate and negotiate on people-centred environments.

Lastly, evaluations are helpful when they are enjoyable and empowering to participate in, and when they deliver prompt results.

Benefits

Organisations that commission Post Occupancy Evaluations are generally experienced and competent to achieve satisfactory buildings, so evaluations are usually focused on fine gains of relatively few design issues.

These organisations employ Post Occupancy Evaluation to:

- account for building quality;
- save money;
- identify successful design features to repeat;
- identify problems to mitigate or reduce;
- fine tune completed buildings;
- identify redundant or unnecessary building features;
- empower users to negotiate building issues.

Methods

The first, and perhaps most crucial step, in evaluating buildings is to identify the people they affect. This group may include students, teachers, school managers, government education specialists, the project team and those who maintain and clean the buildings.

Groups of five to seven individuals with like interests are firstly given a ten-minute introductory meeting in preparation for a touring walkthrough interview. The walkthrough explores all parts of the facility the participants wish to comment on and typically takes 30-90 minutes. Priorities are established in a review meeting.

Participants' comments are documented and building features are photographed. Recommendations are then developed that are applicable both to future buildings and for fine-tuning the subject building.

Additional methods include structured discussion forums, observation studies (timed position plotting and tracking studies), questionnaires and expert scans.

Timing

A typical evaluation requires approximately two months, counting a couple of weeks to invite participants, up to one week for walkthrough interviews on site, followed by three to six weeks to prepare the report.

Post Occupancy Evaluation can occur at any time in the life of a building. An evaluation of one major building was undertaken two months before formal opening. Routine Post Occupancy Evaluation programmes review buildings six to 12 months after completion. Buildings are often reviewed as part of the programming/briefing for alterations.

Results

Each Post Occupancy Evaluation includes written and photographic documentation of participants' opinions about how the facilities affect them. These opinions, col-

lated in groups of emerging issues, are then presented along with the generated recommendations to allow transparent "logic" of evidence for each issue.

Recommendations can be one of four types, namely:

- "now" for actions recommended within three months;
- "later" for actions recommended within three years;
- "future" for actions or practices recommended on future buildings;
- "focus study" for technical studies or management decisions.

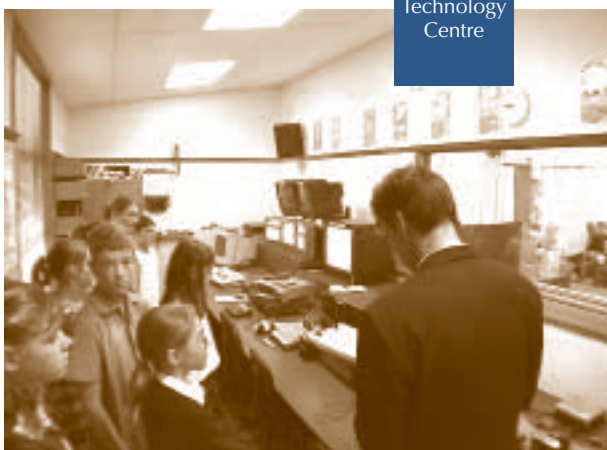
Example 1: School technology centre

Built in 2000, the Marlborough Technology Centre was the first school workshop building designed to support New Zealand's national technology curriculum. It is used by more than 1 000 school children from throughout the surrounding province for food, video, biology, textile and hard material technology. A Post Occupancy Evaluation was commissioned by the Ministry of Education to identify strengths and weaknesses before a similar design was replicated at schools in other regions.



Marlborough
Technology
Centre





Groups of students, teachers, the project team and education specialists were interviewed using the touring walkthrough method. On the second of the two-day Post Occupancy Evaluation, selected participants developed their ideas further in a planning forum.

The evaluation found that the centre successfully supports student learning, and it produced three key recommendations. The first of these is related to problems associated with the building's multiple uses, including noise control. The consultant and participants identified relatively simple design modifications to solve these issues. Secondly, the new technology curriculum and building model required changes in teaching culture and inter-school co-operation. Another important recommendation was the need for input from a wide range of stakeholders when similar buildings are being planned.

For the Ministry, Post Occupancy Evaluation represented a systematic way to identify the effects of the new facility on student learning. "Post Occupancy Evaluation definitely helped us identify a measurable link between building quality and educational outcomes, which is notoriously difficult to show," said John MacDuff, District Manager of the Ministry of Education. "The evaluation was a very helpful way for the local management team and me to bed-in systems, and crucial in preparation for designing the next technology centre."

Example 2: Student accommodation building

The Railway Campus opened in 1999 in the extensively restored former central railway station and can house up to 630 students in 230 residential apartments. Uni-Accommodation Limited, a wholly owned trading subsidiary of The University of Auckland operates the accommodation and food and beverage activities of the strata titled development. In 2001 the university undertook a Post Occupancy Evaluation to improve the ongoing operation of the complex and to help plan future accommodation initiatives.

Building users were generally pleased but saw scope for improvement in areas including security, computer facilities, bird-proofing, ongoing restoration and repair, and tenancy agreements.

Design and management strategies were recommended to address problem areas. The Post Occupancy Evaluation also identified several important issues for consideration when planning future student accommodation, including the need for level access and good acoustic conditions. The evaluation was subsequently used as the basis for a review of another 800-bed student accommodation proposal.





Railway Campus
University
of
Auckland

Stewart McElwain, Group Manager of Student Affairs at the university, said Post Occupancy Evaluation delivered three key benefits: “Firstly, it was a fantastic opportunity for student residents to communicate their experiences and perceptions first-hand, and for them to see we were prepared to make design and management improvements. The Post Occupancy Evaluation also helped us in our ongoing relationship with the building investors who own the apartments. And finally, we were able to apply our better understanding of the building’s strengths and weaknesses to decisions we were making about a new student accommodation facility.”

Example 3: Multiple school building Post Occupancy Evaluations

During 2000-2001 a set of 20 Post Occupancy Evaluations were conducted on typical small to medium building projects managed by schools, including site services, refurbishment of a few rooms, a new administration building, renovation of small schools and new libraries. Each school self-managed its own project with local consultants and received government funding.

Evaluation of these projects was commissioned by the Ministry of Education to assist schools to learn from others that have previously undertaken similar work. Schools working on building projects can now download the evaluations of relevant projects from the Internet.

The matters raised in the evaluations include both project issues and design issues that became apparent after using the project for a few months. An important feature for the Ministry of Education was the satisfaction rating participants applied to the project and the completed building.

One of the particularly successful projects was the Kai-korai Primary School administration/library facilities that were found to have been well tailored to integrate with existing buildings. The highly-resolved design solution provided flexible and cohesive support for learning.

In a further development of this evaluation programme, the first school has piloted a do-it-yourself Post Occupancy Evaluation. This first evaluation, of a science block, had mixed results. The school experienced some difficulties with participation and presentation but was able to establish fine tuning priorities to its new building. Further monitoring of this process will be ongoing.

Summary

As design is a socio-political process rather than an absolute science, Post Occupancy Evaluations are managed as communication forum in support of design to negotiate the relationship between people and buildings. With changing and increasingly complex building requirements, good communication is essential to align facilities with learning requirements.

Building users, designers and owners profit from Post Occupancy Evaluations. Building users say they benefit directly from being empowered to comment on their built environment. If designers have building users’ opinions in an appropriate format then they can reduce the “second guessing” about what is important to occupants. Building owners report that occupant participation helps them accept facilities and adjust their practices to suit new buildings.

Post Occupancy Evaluation provides a systematic way of learning from successes and mistakes of previous buildings. It then offers that information in a timely and appropriate way to improve future buildings and to account for design quality of educational buildings.

Chris Watson is an architect with specialist experience in approximately 100 Post Occupancy Evaluations since the early 1980s. He has conducted reviews of schools, universities, apartments, courts, banks and museums, together with facilities for the military, petrol retailing, prisons and archives. In 2000, he advised PEB delegates at the Paris conference on Post Occupancy Evaluation. Further information about his international practice is available at <http://www.PostOccupancyEvaluation.com> or by e-mailing: chris@PostOccupancyEvaluation.com.

PROJECTS (continued)

TWO VOCATIONAL TRAINING SCHOOLS IN QUEBEC

In Quebec (Canada), vocational training is delivered in special centres supported by the Ministry of Education. Here are two recent projects: a school of forestry and wood technology and a steelwork training centre.

Duchesnay School of Forestry and Wood Technology

The Quebec City School Board has received a substantial subsidy from the Quebec Ministry of Education (MEQ) to build a national school of forestry and wood technology, just a few kilometres from the ecotourism resort of Duchesnay with its renowned Ice Hotel, rebuilt every year for the winter season.

Inaugurated in 2001, the new premises are located on the site of an old saw-mill and are part of the MEQ's major reform plan for vocational education. The school was founded in 1935 by the Ministry of Forestry. It was not until 1969 that responsibility for vocational training in forestry was transferred to a school board reporting to the MEQ. In 1993, a new partnership lent flexibility to the school structure, enabling industry to become more closely involved in education. This is how the Duchesnay School of Forestry and Wood Technology (*École de foresterie et de technologie du bois de Duchesnay*, or EFTBD) came to be working with numerous partners today.¹ The forestry and lumber industry in Quebec, which employs some 35 000 workers, contributes significantly to the province's economy. No less than 150 towns live directly off this industry, and a total of 250 towns have related activities. In 1999 Quebec exported 6 billion Canadian dollars in transformed wood; that same year, the lumber industry invested CAD 337 million in fixed assets.



The school, comprising two buildings (see photo above), required CAD 14.3 million in investment from a range of partners. The main one is the MEQ which provided 60% of the overall cost, while 10% came from the federal and provincial infrastructure programme, 10% from the Ministry of the Regions, 8% from the School Board itself, 7% as discount from building suppliers and finally 3% from the hardwood industry, the sale of used equipment and the local municipal corporation.

The building in the foreground houses classrooms, small laboratories, an assembly hall and the administration service.

In the central building are the training centre with its sawmill, an annex for tool-sharpening and timber-grading, a drying hall and a mechanical engineering workshop for the heavy machinery used in the wood harvesting programme.

The equipment is the most recent on the market, much of it computerised. Students train in the kind of work environment they would find in a modern sawmill, where safety is an ever-present concern.



This architectural ensemble is the only one of its kind in North America. Not content with that, the school is going to develop an entirely new concept in the form of a virtual saw-line simulator to enhance and optimise all the training and investment that have gone into the project. This will be a major breakthrough for Quebec's wood industry, as it is quite conceivable that this machine will bring virtual education to the client, wherever he or she may be, even outside the Province of Quebec.

1. Quebec Ministry of Education, Ministry of Natural Resources, Laval University, Sainte-Foy College of General and Vocational Education (CEGEP), Forintek Canada Corp., Association for Lumber Producers of Quebec, National Hardwood Lumber Association, *Club des Bois Francs de Montréal Inc.*, Canadian Lumbermen's Association, Quebec Federation of ZEC (controlled harvesting zone) Managers, RESAM (association of conservation authorities) and Quebec's leading equipment manufacturers. These represent a highly specialised field with a strong foothold on world markets, given the high Nordic standards to be met by Quebec forest managers.

Given the specific profile of some of the partners, including Laval University, the CEGEP in Sainte-Foy and Fortitek Canada, the Duchesnay School of Forestry and Wood Technology will also serve as a research centre and/or test-bed for research institutions and the industry.

*For further information, contact Cyrille Thibault, Director École de foresterie et de technologie du bois de Duchesnay 147 Route Duchesnay, Sainte-Catherine-de-la-Jacques-Cartier, Quebec, G0A 3M0, Canada
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CFMA, A STEELWORKING TRAINING CENTRE

Since 1998, Quebec has had a vocational training centre that is the only one of its kind. The *Centre de formation des métiers de l'acier* (CFMA) is a steelwork training centre run by the School Board in Pointe-de-l'Île and provides four training programmes aimed at the steel industry.

20

The four courses are in boilermaking, installing rebars, structural steel installation and steel structure assembly. The first three are aimed at jobs in the construction industry, as students usually go on to work on major construction projects such as hydro-electric dams, aluminium works, refineries and office towers. The fourth course, on steel structure assembly, trains students for jobs in the manufacturing of steel structures for the building trade.

With a total area of 4 000 square metres and workshops 13 metres in height, the CFMA provides hands-on learning activities that recreate a work environment.

The premises were built in 1998 with the help of a large subsidy from the Quebec Ministry of Education, which contributed 5.5 million Canadian dollars towards the total cost of CAD 7.5 million, while CAD 1.5 million came from the School Board and CAD 0.5 million from the steel industry. Since the training centre opened, the industry has continued to invest in equipment and tools as well as funding training courses.



It should be noted that the building of the centre prompted the municipality of the time to develop the area further, with the addition of a prestigious industrial park and a golf course.

The initiative to set up a steelwork training centre stemmed from a solid partnership linking the world of education and the world of work. Over the ten years preceding the opening of the CFMA, labour-market partners were involved in developing training-course specifications, training programmes and other teaching-related documents, as well as defining the centre's policy and mission. Industry and organised labour have played a major role in the CFMA's expansion by making donations, loaning equipment, sharing expertise and following up on former students.

Today, the CFMA is successfully fulfilling its role as a national provider of vocational and further training for people from all over Quebec. The centre takes in 200 full-time students every year and more than 500 workers for further training. Over 50% of its clientele come from outside the Montreal area, and some from over 1 500 kilometres away. The CFMA provides training for young natives from the Mohawk Nation living near Montreal. Thanks to training in structural steel installation, some 15 native students from the centre have found work on construction sites in major U.S. cities.

Another feature of the CFMA is that most of its management board members are from industry – either employers or trade unionists – who share their expertise with officials from the Quebec Ministry of Education and the School Board. And the teaching staff are all steelworking specialists. For the CFMA, this ensures that the standard of its courses matches the industry's skill requirements, and that its students are able to work efficiently as soon as they enter the labour market.

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Web site: <http://www.cspi.qc.ca/cfma>*

AUSTRALIA'S OAK VALLEY ABORIGINAL SCHOOL

In the Australian desert, a new school has been built for an Aboriginal community, replacing their previously transient school services. The design took into account the difficult site limitations and the community's needs and traditional values.

Background

The Oak Valley school is the second most remote in South Australia, and the community lacks basic services such as a sustainable supply of water and electricity. The settlement of Oak Valley was established in 1984 in an area of tribal significance to the Anangu people of the Greater Western Desert. Oak Valley is approximately 550 km northwest of Ceduna which is a small town 700 km west of Adelaide; the final 350 km is dirt road. The area has an extreme climatic range from in excess of 50° C to below freezing.

Initially community services were provided from mobile vans on a part-time basis, and, as the Oak Valley community would move about for cultural or family reasons, a "walk-about" school was taught three times a week on a tarpaulin until about 1990. Once the community became established in one area, schooling was provided under a shelter structure; furniture and resources were brought to Oak Valley by the teacher, who would come from over 300 km away. In the early 1990's the school moved into two caravans while waiting for a new school to be built.

The school's aim is to provide quality "ngapartji ngapartji" which is the Anangu concept of equal and reciprocal giving and sharing for everyone's benefit. The learning environment is one where two distinct cultures are given equal respect, and where a free flowing exchange of ideas, skills, knowledge and understandings flourish between Anangu and non-Anangu.

The school's concept statement underpins all the school's actions and decisions, and impacts on teaching methodologies and design. Methodologies based on Anangu students' preferred ways of learning rather than mainstream schooling translates, for example, into teaching spaces that allow room for working on the floor as well as at desks.

Developing the brief

The brief for the new school was developed over a substantial period of time, taking into account current

directions in curriculum, small school facilities, community consultation, student surveys, Government Children's Services requirements and Aboriginal education expertise. Much consultation occurred between the school staff, community members, the Education Department and the Department for Administrative and Information Services on the proposed new facility. Students were asked for input and sketched and listed their preferences. A scale model of the school was constructed so that the community could more easily understand the proposal.

In addition to the formal briefing requirements, a number of site limitations had to be taken into account including:

- a pre-determined site location near the town generator and the subsequent noise problem;
- lack of water for building purposes and site amenities;
- the effects of prevailing winds and the prevalence of dust;
- the difficulty and high cost of transporting building materials and of on-site labour;
- the non-availability locally of spare parts and consumable items, such as non-standard wattage light bulbs, requiring careful consideration of the types of equipment used;
- the proliferation of temporary buildings on the site over the course of the project.

From the community's viewpoint it was crucial to develop and deliver "holistic" community-based care, health and welfare programmes. This meant providing appropriate kitchen, bathing and sleeping facilities.

Resulting design

The resulting design balances the brief and site limitations. The required layout and large windows precluded good orientation for part of the school, and prevented grouping buildings to create cooler, less dusty microclimatic conditions between them. This was discussed with the community during the design stage, who understood the concerns but felt that their priorities overrode these considerations. The design incorporated these factors and now provides an open, welcoming face to the community, whilst effectively turning its back on the prevailing winds and generator noise to the rear of the site, and achieving good orientation for all but one of the new buildings.

The enclosed outdoor areas, water tanks and remaining transportable buildings are grouped to help create microclimates and internal routes between the buildings. Out-buildings such as pit toilets were located some distance away for hygiene reasons.



Rear vista in construction

Due to the severe water, power and other limitations at Oak Valley, standard services responses such as evaporative air conditioning for arid and remote locations were not possible. All climate control operates on electricity with an interactive energy management system to minimise consumption and waste, and ceiling fans help reduce air conditioning use. The school has acknowledged that the performance of this air conditioning system may be less than optimum under extended severe conditions (such as 50° C days).

Construction

The successful tenderer proposed building the school as transportable buildings in Adelaide then pouring concrete in at ground level on the site, as this method would greatly reduce the need for on-site labour and shorten the construction period. Further community consultation was required to gain acceptance of this proposal, as transportable buildings were strongly rejected during initial community consultation. During the off-site construction period, the school and community were regularly kept apprised of progress. When advised that the buildings were on their way at last, the students and staff waited down the road for two hours to catch their first glimpse of the new school.

Verandahs, covered outdoor areas and site works were completed on site over a period of two months, and the school was finally occupied in early August 2002. Water had to be carted in from 350 km away for the concrete. Laying floor coverings was delayed to ensure the concrete that had to be poured *inside* the buildings had dried sufficiently. In the interim, loose carpet mats were used to enable occupation of the buildings as soon as possible. Ongoing landscaping by the school and community will continue to enhance its amenity.

End result

The end result is considered most successful by all involved and a great asset for the school children of Oak Valley. The community is proud of its uniquely designed school that fits in with their needs. The new school delivers many of the benefits visualised over its long conception, including:



Front of the new Oak Valley School from under verandahs

- vibrant new facilities that blend in well with community buildings; the finishes are similar to those of the community housing which make students and the community feel more at home at the school;
- attractive interiors with hard wearing finishes, including plywood walls and ceilings that require little maintenance and provide acoustic attenuation;
- a design which is compact yet provides appropriate spaces for staff and students;
- bulk rainwater storage tanks (sevens tanks providing storage of nearly 100 000 liters);
- maximum flexibility in all areas; already Oak Valley has been able to accommodate additional administrative staff, building change of use and a proposed change of emphasis in its outdoor recreation areas;
- multi-purpose covered outdoor learning areas, which can also be accessed by the community for after-hours classes;
- good day-lighting (important as the power frequently fails).

A number of these features will be useful in the design of other Aboriginal schools in the ongoing programme of Aboriginal school redevelopments in South Australia.

The new school buildings at Oak Valley cost AUD 1.5 million, approximately AUD 2 300 per square metre.

Authors

Graeme Allen, Major Projects Coordinator for the Department of Education and Children's Services (DECS), has worked extensively in the Aboriginal Lands and has developed a strong rapport with local communities.

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(DAIS) and responsible for the building design of the project, has longstanding experience in the Aboriginal Lands.

Noelene Cox, a dedicated teacher with 11 years' teaching experience and currently Acting Principal of Oak Valley Aboriginal School, has a strong interest in Aboriginal Education and places importance on forming partnerships with the community to achieve educational outcomes for their students.

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PEB is keen to hear of other facilities designed to meet the educational needs of cultural and ethnic minority communities. If there is sufficient interest it is hoped to organise an international experts' meeting on this topic in 2004 or 2005.

PUBLIC/PRIVATE PARTNERSHIPS IN QUEBEC

For some time now in Quebec (Canada), the Treasury Board Secretariat (TBS) has been promoting public/private partnerships (PPP) as a solution to the need to rehabilitate the public building stock. The TBS describes this as the best value-for-money solution for liquidating the maintenance and operating deficits of public buildings such as schools. It also elaborates on the main benefits of this solution:

- savings across the board;
- a reduction in costs over the duration of the project/service;
- financial participation by the private sector;
- better risk spreading;
- faster project delivery;
- more creative or innovative solutions;
- long-term contracts;
- performance measurement and performance incentives;
- enhanced public management.

The distinctive feature of the Treasury Board Secretariat's solution is the scale of the proposed partnerships. Rather than setting up PPPs for more classic types of subcontracting, the idea is to extend the principle to every aspect of public building management. The correct term is therefore outsourcing. The idea is to manage one contract rather than several. Are our organisations ready to meet the challenge? What will the impact of PPPs be on existing collective agreements reached by regular employers,

or on current laws and ministerial directives? Is the solution cost-effective? How can management performance be assessed before and after a PPP?

Contracts between public organisations and private firms

The first step in answering these questions is to look at types of service delivery other than in-house provision. They fall into three main categories:

- Contract of supply: the client merely specifies the kind of service required and agrees on a price with the supplier.
- Subcontracting: the client requires work that is more complicated or not entirely standard. Subcontractors are left relatively free to decide how the work will be carried out.
- Outsourcing: this implies a close link between the client and the outsourcing company, two important factors being networks and the duration of the contract (clan-type link between strategic allies).

Public building managers should study the situation closely before choosing the best type of public/private partnership for their organisation. Their choice must be based on an analysis of the situation as it stands compared with the situation they would like to see. How do they proceed? By looking at the production costs and information costs of the service that might be outsourced.

When it comes to production costs, there are two basic questions:

- Does the public organisation have the right technology? Specialisation by private firms usually means cost savings through learning, innovation and economies of scale.
- Can the public organisation deliver more economically? Vertical integration or in-house delivery may ensure that subcontractors do not "cream off" profits. A degree of organisational inefficiency may even be tolerated to ensure that the organisation is not exploited.

As for information costs, it is important to take an holistic view. What are the transaction costs for the resources used or foregone by managing the work involved in the services to be outsourced?

- Upstream costs of service provision: research and information costs, cost of negotiating, making decisions and drawing up contracts.
- Downstream costs of service provision: inspection and monitoring costs (performance indicators), cost of adjusting to unforeseen events, cost of disputes and litigation, liability costs and residual losses owing to insufficiently or inappropriately co-ordinated performance.

If managers, after serious analysis, decide that it is beneficial to proceed with subcontracting or outsourcing, they should remain on their guard. The temptation may be to draw up the simplest form of contract in order to minimise production or information costs, but they should be warned that a highly uncertain transactional context (service delivery) will inevitably lead to asymmetrical information, parties less able to make credible commitments and a situation conducive to opportunist behaviour.

Contracts: flexible or not?

One way of dealing successfully with the interfaces and boundaries between private firms and public organisations is to draw up a full contract. This will set out details of guarantees, insurance arrangements and the reputation of each party to protect client and supplier against fraud; a cost-benefit analysis, and a description of the obligations on each party in every possible scenario, the purpose being to minimise costs and encourage private firms to make technological improvements.

However, there are serious constraints on the use of full contracts:

- It is impossible to identify every contingency (particular for long-term contracts, *e.g.* ten years).
- The likelihood of the various scenarios may be hard to assess.
- Once an agreement has been reached, the contract may prove too complicated to handle (some run to several thousand pages).
- It may be hard to verify transactions (how can a judge be given proof that the private firm has failed to meet its obligations?).

Another possible approach to interfaces and boundaries is to draw up a sequential contract. Its aims are twofold: to avoid the need for the parties to anticipate the future

and agree on their respective obligations and rights before services are delivered (lower transaction costs, validation of the situation as it arises to allow for mutual adjustment); and to reduce the risk of opportunist behaviour by selecting a private enterprise with corporate principles and values similar to those of the public organisation (checking the reputation of each party, relying on trust and cultural sanctions).

Sequential contracting is generally characterised as follows:

- Sequential contracts cover the lifespan of a component or sub-system (5, 10, 15, 25 years or more).
- Commitment is high in private firms, and driven by quality and the desire to expand.
- The negotiation procedure is consensus-based.
- Contracts are not detailed but contain adjustment clauses with respect to price and quantity.
- Public organisations agree to rely on private firms, in return for greater involvement by such firms and more organisational flexibility.
- Sequential contracting focuses on performance within a framework of omnipresent values and principles.

In conclusion, managers of public building stock should bear in mind the need to start with an in-depth analysis of the management approach and principles prevailing in their organisations so that they can assess as accurately as possible how services will be delivered in the future.

The information sources on which this article is based are available on request from the author:

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<i>Predominant transactional context</i>	<i>Not very dominant</i>	<i>Average</i>	<i>Very dominant</i>	<i>Extremely dominant</i>
Uncertainty about transactions required				
Complex transactions	Supply (full contract)	Subcontracting (full or sequential contract)	Outsourcing (sequential contract)	In-house (collective agreement)
Intellectual property hard to identify				
Opportunist behaviour				
Specific investments ("hostage")				
Performance hard to measure				

PUBLICATIONS

OECD PUBLICATIONS

Environmentally Sustainable Buildings: Challenges and Policies

The building sector has major impacts not only on economic and social life, but also on the natural and built environment. This book presents an analysis of its environmental impacts and of current policies to mitigate them, in particular with regard to reduction of CO₂ emission, minimisation of construction and demolition waste and prevention of indoor air pollution.

The analysis covers a wide range of policy instruments such as building regulation, capital subsidy programmes, energy tax, landfill tax, environmental labelling schemes and energy audit schemes, and indicates the direction in which environmental policies for the building sector should be developed.

Jan. 2003, 145 pages
OECD Code 972003011P1, ISBN 9264198253
EUR 40, USD 40, GBP 25, JPY 4 700, MXN 370

Education Policy Analysis: 2002 Edition

To meet a continuing growth in demand for learning, OECD countries seek to provide a wider array of education and training opportunities for learners in their earliest years through adult life. There are also pressures to ensure that resources are used efficiently and that opportunities are provided for the most disadvantaged. The five chapters in *Education Policy Analysis 2002* review the latest international experience on ways to meet these challenges:

- Eight key strategies for improving access to quality early childhood education and care are identified.
- The characteristics of countries and schools that achieve both high-level and equitable performance in reading literacy skills are analysed.
- Evidence on teacher shortages is reviewed, and policy options for overcoming shortages explored.
- The growth of education across national borders is documented, and its challenges for national policy-making discussed.
- A broadened concept of "human capital" is developed that helps bridge the gap between education's economic mission, and its wider social and personal benefits.

Nov. 2002 136 pages
OECD Code 962002041P1, ISBN 9264199306
EUR 20, USD 20, GBP 13, JPY 2 350, MXN 185

OECD Science, Technology and Industry: Outlook 2002

Science and technology increasingly contribute to economic growth, industrial competitiveness and the realisation of societal objectives. As countries continue the transition to knowledge-based economies, policy-makers seek effective ways to improve the ability to create, absorb, diffuse and apply knowledge productively, by stimulating business investments in research and development, reforming science systems and their links to industry, promoting the development of human resources and stimulating competition and industrial restructuring.

OECD Science, Technology and Industry informs policymaking by providing a broad, integrated assessment of these important issues. In addition to reviewing recent trends, the report identifies significant changes in science, technology and industry policies in the OECD countries.

Oct. 2002, 328 pages
OECD Code 922002141P1, ISBN 926419844X
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Responding to Student Expectations

Today's university students are drawn from a highly diverse set of backgrounds. Students appear in various guises as citizens, consumers and clients. They are fitting university study around increasingly busy lives, often alongside paid employment. In many countries, students are paying more for their university education and expect high levels of standards and service.

Universities are institutions with multiple roles, and must balance the needs and demands of their students with the expectations placed upon them by government, industry and the wider community, while facing increasing budgetary pressure. Effective action to meet student expectations therefore poses major management challenges for universities.

This volume arises from two seminars, held in Brisbane and Paris respectively, to examine some of the key issues facing universities as they confront these challenges. It offers perspectives and experience drawn from contributors from Australia, Europe and Canada, including the views of student leaders.

Sept. 2002, 152 pages
OECD Code 892002041P1, ISBN 9264198245
EUR 30, USD 26, GBP 18, JPY 3 500, MXN 240

OTHER PUBLICATIONS

“Do School Facilities Affect Academic Outcomes?”

How can we expect students to perform at high levels in school buildings that are substandard? After asking this question, a 24-page publication by the U.S. National Clearinghouse for Educational Facilities looks at which facility attributes affect academic outcomes the most and in what manner and degree. Research is examined in six categories: indoor air quality, ventilation and thermal comfort; lighting; acoustics; building age, quality and aesthetics; school size; and class size.

November 2002, 24 pages, USD 2

To download or order a copy, visit:

<http://www.edfacilities.org/pubs/>

Tel.: 1 888 552 0624 (toll free) or 1 202 289 7800

Indicators of School Crime and Safety: 2002

This report presents data on crime at school in the United States from the perspectives of students, teachers, principals and the general population from an array of sources. It also examines crime occurring on the way to and from school.

November 2002, 179 pages

To download or order a free copy, visit the Web site of the National Center for Educational Statistics at <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003009>

Fax: 1 301 470 1244

“International Students Housing Investigation”

This document gives the results of a survey conducted by the Delft University of Technology on the organisation of international exchange student accommodation at eight selected universities in various European countries.

August 2002, 29 pages

For an electronic copy, contact:

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Project Officer, International Programmes Section
TU Delft

Postbus 5, 2600 AA Delft, The Netherlands

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Cool Schools for Hot Suburbs: Models for Affordable and Environmentally Responsive Schools in Nairobi, Kenya

This doctoral thesis, by Dutch student René J. Dierkx, investigates the viability of an affordable as well as

environmentally responsive development of places for primary education in Nairobi, Kenya. It intends to open up new ways for those involved in developing educational facilities in Africa.

2002, 274 pages, ISBN 9068145673

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“Les grandes salles pour l'éducation physique et sportive”

The staff union representing physical education teachers in France published this booklet to define the functional needs of sports facilities in lower and upper secondary schools. Colour photographs and drawings illustrate the document.



Feb. 2001, 48 pages, EUR 14

To order, contact:

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76, rue des Rondeaux

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Safe School Design: A Handbook for Educational Leaders

Based on concepts and principles of Crime Prevention Through Environmental Design, this guide examines how the physical environment of schools affects the behaviour of students and staff. It provides school administrators and school board members with access to knowledge on innovations in the architectural design, use and supervision of space in schools. It includes a useful bibliography.

2000, 114 pages, ISBN 0865521484, USD 18

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March

24-26 – PEB will hold an international seminar entitled “Investing Educational Capital in IT and Physical Infrastructure” in Brisbane, Australia. The event will focus on the different ways in which capital investment in information technology, both hardware and software, interact with investment in educational buildings and equipment, particularly for upper secondary, vocational, higher and adult education. Experts will address how these two areas of investment can together lead to more efficient and effective ways of educational delivery. Contact: Isabelle Etienne, tel.: 33 (0)1 45 24 92 72, e-mail: isabelle.etienne@oecd.org.

April

9-11 – BEAR 2003 will gather international academics, industrialists, professionals and policymakers concerned with advances in the technology of construction and property education, research into educational pedagogy, and examples of leading edge collaboration between academe and partners from industry, the professions and government. Salford, United Kingdom will be the venue for this conference organised by the CIB Working Commission concerned with Building Education and Research. Contact: Mary Hamblett, fax: 44 161 2955011, e-mail: m.hamblett@salford.ac.uk.

28-29 – OECD Forum 2003 will be held in Paris. This international public conference offers business, labour and civil society the opportunity to discuss key issues of the 21st century with government ministers and leaders of international organisations. Web site: <http://www.oecd.org/forum2003/>, e-mail: oecd.forum@oecd.org.

May

28-30 – “Educating Design: Ensuring Facilities Empower Education” is the theme of a CEFPI conference to take place in Brisbane, Australia. Papers and presentations will address issues associated with renovation and renewal of older education facilities. Contact: Deidre Thian, 39 Suncroft Street, Mount Gravatt, Queensland 4122, e-mail: deidret@optushome.com.au.

June

16-17 – The OECD Programme on Institutional Management in Higher Education will organise a seminar on “External Funding and University Autonomy” in Oslo, Norway. Contact: Jan Karlsson, tel.: 33 (0)1 45 24 92 01, e-mail: jan.karlsson@oecd.org.

October

A PEB conference on “Safer Schools” will take place in Brussels, Belgium.

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