

OHS Professional Education in Australia in 2004 and Beyond

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1 Introduction

Australia has a National OHS Strategy for the period 2002 – 2012. This strategy, which has been signed by all the state government ministers with responsibility for occupational health and safety, gives a vision, targets and priorities and lists areas requiring action and indicators of success.

One of the 5 national priorities is

to improve the capacity of business operators and workers to manage OHS effectively,

and one of the indicators of success is:

increased OHS knowledge and skills in workplaces and the community.

To date the national focus has been on

- addressing OHS in the transition from school to work
- incorporating OHS into the specifications (competencies) for vocational training
- defining the training specifications for OHS practitioners at the vocational level, and attention is now moving to
- OHS awareness in schools and incorporating OHS into professional education for managers, engineers and other design professions.

These strategies are essential in improving the capacity of business operators and workers to manage OHS effectively, but it is a bottom up approach and raises the question of education to ensure quality of advice to the workplace and ensuring that the approach and content to OHS in school, vocational and professional education is appropriate.

What of the quality of education of OHS professionals who are responsible for providing the advice to the workplace and, it may be assumed, providing input to the OHS education of others?

Research for this paper involved interviewing OHS course coordinators from 9 universities in Australia. In addition to collecting data on student numbers, staffing levels and mode of delivery, these coordinators were invited to comment on constraints and opportunities within the university and the broader environment that impacted on their delivery of OHS education. While there is a small but strong body of providers of OHS tertiary education in Australia, a number of concerns were raised that may threaten the availability and quality of OHS professional education in the future. This paper presents the outcomes from these interviews, identifies some implications from the findings and proposes a way forward.

2 *The Profile of OHS in Tertiary Education in Australia*

Prior to 1980 there were no tertiary OHS programs available in Australia, by 1990 there were 4 undergraduate qualifications and 6 universities offering post graduate courses in OHS. In 2003 there were 43 universities in Australia and a survey of web sites for 37 of

these universities (Winder and Abdullah, 2003) found that, of the universities surveyed, 17 (46%) offered at least one tertiary qualification in OHS.

Overall, interviewees report a steady increase in student numbers in OHS programs and the demand for OHS in other areas such as business and engineering is also increasing. Also, there appears to be a greater awareness among employers of the need for 'appropriate tertiary qualifications', although we still have a long way to go in achieving recognition of the need for tertiary qualifications in OHS.

Table 1 OHS student numbers, 2004
(approx as reported by course coordinators)

	Undergraduate	GradCert/GradDip	Masters	PhD
	10	54/ 71 ^{&}	43 ^{&}	6
	40 [#]	18/31 + 108 off/shore	36 + 30 off/shore	2
	80 ^{\$}	5/30	6	2
	---	22/8	2	--
	91 +45 off shore	31 onshore + 8 off shore	7	3
	--	5/35	1	6
	128	10/75	8	3
	--	15/15	5	2
	150 [@]	25 [@]	--	--
Estimated total Australian resident students	360 +- 50	140 +-25/310+-25	108	*24

No new students are being taken in this undergraduate program

\$ Includes 3 Honours students

& Excludes students specialising in Risk Management

@ Unconfirmed

* Some of these PhD students are being funded by off-shore countries and they will return to their own country on completion of the qualification.

But what does this represent regarding the profile of OHS in tertiary education?

Of the 9 tertiary providers of OHS qualifications interviewed, in only two did OHS or safety exist as a unit in its own right, and only three had a professor dedicated to the function (a fourth had a vacant professorial chair).

Five interviewees commented that their university favoured 'pure science' and that OHS was not seen as a science, it was not 'mainstream' and its multidisciplinary nature meant that it was not seen as an end in itself but rather something that was done in combination with some other function. In at least 3 cases, the interviewees commented that some personnel within the university considered that OHS education was more appropriate in the vocational sector than the tertiary sector!

In the last 5 years several universities have undergone restructuring and in a number of cases the OHS teaching function has been threatened with closure. This is despite the OHS teaching function being a significant income earner¹. At least 3 people interviewed

¹ Graduate certificate students pay fees of around \$5000 with graduate diploma students around \$10,000

commented that the role and profile of the OHS function in the faculty, and its survival, depended on the personal position taken by the head of the faculty!

Some further interesting comments on the profile of OHS in universities were that, in at least one case, when appointing people to the function managing OHS within the university there was no requirement for any OHS qualifications; and another was that the skills of personnel in the OHS education area were not sought for OHS courses in other programs such as management. ('Anybody with a bit of background can teach it!')

OHS education is not valued within universities.

This attitude within universities is out of step with the increasing attention to OHS in the community where there is an increasing attention to OHS, possibly stimulated by increasing activity by the OHS regulators and evidenced by the increasing demand for student places. The reason for this attitude by universities relates to the nature of the performance measures or priorities for measuring success of a department or function within a university – student entrance scores and research activity.

OHS is predominantly offered as a post graduate qualification but, where undergraduate degrees are offered the entrance scores for the students are significantly lower than for mainstream science subjects or for professional courses such as law and engineering. However the employability of the OHS graduates is extremely high, with the vast majority employed either before they complete the course or within 1-2 months of completion and at higher than average graduate salaries. While there have not been any formal studies done, it appears that the standard university selection criteria are not good predictors of successful OHS graduates.

3 OHS as an Undergraduate Study

According to the study of web sites conducted by Winder and Abdullah (2003) 10 of the 17 providers of OHS offered an undergraduate qualification in OHS. Since the time that the research was undertaken by Winder and Abdullah;

- 5 of the 9 people interviewed reported ongoing undergraduate programs (one of these was not reported by Winder and Abdullah, 2003)
- One of these 5 have been threatened with closure of their program in the last 12 months
- Two universities (one interviewed and one other) have ceased admitting new students (one is offering OHS as a major in other qualifications)
- Of the remaining universities noted as providing undergraduate qualifications by Winder and Abdullah, a web check conducted in March 2004 found no reference to OHS in undergraduate qualifications for two of the universities while the third provided a full fee paying diploma to degree upgrade.

Thus, it appears that there are only 5 universities offering undergraduate qualifications in OHS in 2004.

As noted above, OHS is not seen as 'real science', other comments are that it is a 'small service course' which is not seen to bring great kudos to the university, especially as the entrance scores are often quite low. As the Commonwealth government funds universities by allocating a number of undergraduate student places per university, which the university then allocates to qualifications, a number of OHS course coordinators have

reported pressure to reallocate the relatively small numbers of OHS student places to other qualifications, especially where there may be staff who are underemployed.

The majority of interviewees raised this issue of the low number of OHS degree programs as the implications were:

- lack of profile of OHS as a worthwhile activity
- the perception that OHS is simplistic and that knowledge and skills can be obtained in a short course
- the perception that OHS is not a profession with a career structure
- that as there are few people with a discipline-specific OHS degree there are fewer people positioned to take on further academic work leading to research and appropriate qualifications required for educators in OHS

The demise of OHS degree programs threatens the acceptance of OHS as a profession and the availability of researchers and future OHS educators.

4 Qualifications and Content

The web site review by Winder and Abdullah also examined the range of qualifications available. Of the 17 universities surveyed that offered at least one OHS qualification the masters and graduate diploma qualifications were the most frequently offered². When considered with the student numbers listed in Section 2 it can be seen that the Graduate Certificate/Diploma is the predominate tertiary OHS qualification in Australia. This reinforces some comments that, as OHS is often studied after a qualification is obtained in another discipline, OHS is not seen as a profession or an end in itself. According to the response from the 9 universities interviewed undergraduate OHS degree students only make up 38% of all OHS students.

Table 2 Range of OHS qualifications offered by Australian Universities

Qualification	Universities surveyed by Winder & Abdullah (2003) offering the qualification n=37
Degree	10 (27%)
Graduate Certificate ³	10 (27%)
Graduate Diploma ⁴	13 (35%)
Masters	14 (38%)
PhD	9 (24%)

The low number of undergraduate OHS degree students and the study of OHS as a secondary discipline by mature age students contributes to the perception that OHS is not an important field of study in its own right.

Winder and Abdullah also analysed the information available on the various web sites for content. The findings are summarised in Table 3 and rearranged to identify any common core of content.

² Graduate certificate is usually 'embedded' as the first year of the graduate diploma

³ Students usually mature age, have work experience and often a qualification in another discipline, usually one year part time and taken

⁴ Also referred to as Post Graduate Diploma, students mature age, have work experience and a tertiary qualification on another discipline, 2 years part time

Table 3 Summary of Commonality of Qualification Content at the Post Graduate Level

Course	% of universities who offer OHS qualification with this course n=17
Overarching topics	
OHS Management	71
OHS Law	71
Workplace Disease/Injury and Prevention	47
Occupational Epidemiology and Biostatistics	47
Current Issues, System and Ethics in OHS	47
Risk Management	35
Safety Technology	35
Psychological/Effective Behaviour	29
Current Practice in OHS	17
Critical Appraisal of OHS Information	12
Health, Safety and Economics	12
Health, Safety and Industrial Relations	12
Compensation and Rehabilitation	12
Workplace Training and Information	12
Worksite Health Promotion	12
Hazard and control topics	
Ergonomics/Human Factors	94
Occupational Health	41
Occupational Hygiene/Workplace Assessment	59
Chemical Hazards	29
Biological Hazards	29
OHS Hazards and Controls	29
Physical Hazards	18
Research and other	
OHS Research/Project	71
Environmental Management	59

Source: Winder and Abdullah (2003)

While there are significant limitations in this data as it is extracted solely from web site information and there is probably considerable overlap and variations in interpretation, it does raise some questions regarding the core content of OHS tertiary qualifications in Australia. It appears that OHS law may not be included in all qualifications, nor is OHS management or risk management! Knowledge of statistics, the ability to interpret trend information and to critically analyse information does not appear to have a profile. The approach to hazards and controls seems to vary and there is little attention to identification and management of emerging trends. There is no mention of organisational behaviour and skills in influencing key decision makers! There is some reassurance that the majority of qualifications include some research or a project.

Anecdotal information suggests that content and approach may vary depending on the 'home faculty' for the OHS education function. Of the 9 providers interviewed 5 were located in a faculty of health/health science/public health, 3 in faculties of science/applied science and one in a faculty of engineering. During the interviews a number of people commented the university academic boards often did not know where to site the OHS academic stream, is it science, is it health or is it management?

While it is suspected that the level of commonality is greater than that shown in these findings, it appears that a key problem in OHS tertiary education is that:

There is a lack of an agreed core body of OHS knowledge and skills.

There is currently no external facility for accreditation of OHS courses⁵. The Safety Institute of Australia developed criteria and a process for course accreditation in 2000 but it was never effectively implemented.

5 OHS Education and Research

One of the main measures of success for a university department and for staff is the amount of research funding. While research is important, it is of concern that the importance of quality teaching appears to be a very second rate consideration.

Departmental budgeting processes seem to focus on research requirements with research projects having dedicated budgets for staff and equipment but budgets for teaching staff and equipment (including planning for equipment replacement and consumables) being global with little or no strategic approach.

Criteria for staff promotion may include quality teaching at the lower levels but senior promotion can only be achieved through a record in research and publication. Senior university lecturing positions, almost without exception, require a doctoral qualification, there is no requirement for an educational qualification!

But what of the role and influence of OHS research in education of OHS professionals?

There is almost no funding for OHS research in Australia. In 1986 the National Occupational Health and Safety Commission provided funds to establish OHS research laboratories at the School of Safety Science at the University of New Wales. The Commission also managed a research grant program until the middle 1990's when a change of policy by the Commission closed this program. In 2004 OHS personnel in universities are attempting to access other funding sources but currently there is reduced funding of doctoral student places, funding by the National Health and Medical Research Council (NHMRC) is very 'health' based and grants by the state OHS regulators are only made to consortiums of unions and employers who may choose to contract a university to a project, but in this case the university is not a primary partner in the funding agreement.

The groups who do have some money for research appear to be government and semi-government bodies related to road safety, public health, the environment and rural issues with the result that most research occurring in university OHS-related departments is only indirectly related to occupational health and safety. The most successful model for OHS-related research appears to be where there is a focus on developing a centre of excellence in a single topic issue such as sleep, fatigue and shift work at the Centre for Sleep Research, University of South Australia.

In summary, no funding for OHS research leads to no doctoral students, no profile in the university, no new OHS educators, no new OHS leaders! There are also issues for the currency of OHS content and approach in OHS education.

⁵ In Australia, universities are directly funded by the federal government but the nature of qualifications offered and the content of those programs is set by the individual university. There are no external course accreditation requirements, although some qualifications such as those in engineering and applied chemistry, are accredited with the relevant professional body.

Lack of OHS research funding is threatening the viability of OHS education in universities by giving the perception that OHS is not important, by closing off the supply of new OHS educators and possibly impacting on the currency and contemporary nature of OHS education.

Is a research background necessary to be a good OHS educator? This question will be taken up below.

6 Quality of the Outcome of OHS Education

In order to assess the quality of outcome we need some measures against which to evaluate the output, such as an agreed body of technical knowledge, skills and attributes of the person. We do not have such agreement in Australia, although we are currently working on a strategy to develop this through the OHS Educators Chapter of the Safety Institute of Australia and, in this early stage, with the support of the National Occupational Health and Safety Commission, which we trust will continue.

In the absence of such performance measures, the feedback from the interviewees provides some insight and this is examined under the headings of:

- mode of delivery of OHS qualifications
- staffing
- student background and expectations.

6.1 MODE OF DELIVERY

The 9 providers of OHS professional education interviewed were asked to describe the mode of delivery of their programs. Of the 5 who provide undergraduate qualifications:

- 3 are traditional on campus modes (one providing on-campus mode for Australian students and mixed mode for off-shore students.)
- one off-campus (with the option of the first year on-campus for school leavers)
- one total external (which does not target school leavers).

There was considerable variation in the response regarding post graduate qualifications.

Table 4 Mode of delivery of OHS post graduate education programs

Mode	No of Providers N =9
Choice of on-campus or external mode (students select option at enrolment)	2
External only	2*
External with optional on-campus sessions	1
External with compulsory on-campus sessions	3*
Block release	1
On campus only	1

* The number does not total 9 as one provider has a different model for overseas programs where tutorials and workshops are provided compared with Australian programs by that provider that are external mode.

External education has become a key feature of the postgraduate OHS education scene. This was initially to meet the needs of those living in remote areas but is now preferred by those students who want the flexibility of fitting study around demands of work and family.

External education is also seen to benefit the student as it is student-centred rather than teacher-centred learning. But are there issues associated with external education and resultant knowledge, skills and attributes of the OHS graduate?

The effective OHS professional must be able to interact with a broad range of people, have good communication skills, be analytical, capable of critical thinking and be able to explain technical issues to others and defend their position on a matter. These skills are often developed and assessed through intellectual discussion with peers and mentors and workshop-type activities. A concern was raised with each provider of external mode as to whether consideration was given to whether there are any deficiencies in the OHS education for students who study externally and how this was counteracted in their programs. Gardner and Hall (2001) also raised concern about distance education programs specifically noting limited opportunity for students to interact with each other including cooperative projects work and the development of motor skills such as those required for use of equipment.

Another outcome was that, for some universities, there appeared to some issues of retention of students in the wholly external courses and possibly a drift of students who obtained a graduate certificate by total external study to a more interactive option for the graduate diploma. In balance, the comment was also made that the best students are often those who have taken the external mode (Is it that they have to be more committed, or that they survive against the odds?)

There was a board range of approaches to external OHS education among those interviewed.

Table 5 Learning and support strategies in external education to

<i>Learning and support strategy</i>	<i>Options noted in interviews</i>	<i>Number of providers n =7</i>
<i>Base learning materials</i>	Hard copy text based	7
	Currently provided on CD or moving to CD	4-5
	On line	1 -2 (some courses only and minimal)
<i>Library support</i>	Electronic access to library, reserve references and journals	2* (1 currently developing OHS portal)
<i>Strategies to support student interaction</i>	Extensive and effective use of 'WebCT'/'Blackboard'	2
	Trialling WebCt, issues with student involvement	3
	Using or considering chat rooms either real time asynchronous	2

* There may be more as the question was not specifically asked

Issues raised in implementing electronic strategies to support student interaction among those studying externally included:

- it is resource intensive
- requires discipline by the lecturer (or other support persons) to frequently access the web system to respond to questions and promote discussion
- development of the systems required appropriate technical support

- student interaction has to be 'encouraged' by making involvement an assessment criteria.

Gardner and Hall (2001) also comment on the issues associated with the use of electronic resources in education. They note that, while there are substantial positive effects for the distance learner, including promoting interaction, there are also challenges including the demands on the instructor in terms of time and skills for developing materials and the issue of motivating students to use electronic resources.

It is interesting to note that, of the providers interviewed, the two having the most extensive range and making the greatest use of strategies to support student interaction:

- have significant technological support
- provide full electronic access to the library for external students
- make involvement in the student interaction activities an assessment criteria
- also have compulsory on-campus requirements of students.⁶

A number of people interviewed commented that there was pressure from the university hierarchy to provide totally external options with online learning. The reason for the pressure was not necessarily clear but was thought to be a combination of cost saving and being seen to be 'contemporary'.

One university reported that they were attempting to research the most appropriate educational philosophy, approach and strategies for OHS education but were hampered by teaching workload and lack of resources – any research that was occurring was largely in the staffs' own time.

Poon (1998) laments the lack of research and reporting in safety education and queries the 'discipline' approach to OHS education proposing a problem-solving, issues-based approach as being more appropriate in developing the skills required by an OHS professional. Toft et al (2001) pick up the issue of a discipline approach to OHS education and describe a project-based approach to address the multi-disciplinary knowledge and skill needs of the OHS professional.

Current modes and strategies in OHS education may not be the most appropriate for equipping OHS professionals to address current and emerging issues and to operate in a changing business environment.

6.2 STAFFING

As noted earlier, universities generally require a doctoral degree for academic lecturing staff, yet feedback from students in course reviews and anecdotal consensus is that an effective OHS educator also requires practical experience so as to be relevant to student needs. Thus the requirements of an effective OHS educator are technical knowledge and expertise, demonstrated ability to apply the knowledge and an understanding of educational principles. Within the university environment it appears that only one of these requirements is especially valued.

Perhaps the ideal OHS educator would have a high level of knowledge, say at the masters level, have considerable experience, either broadly-based or in a speciality, and

⁶ A key aspect in the success of this approach for one of the providers may be that the Enterprise Bargaining Agreement (EBA) addresses the needs of external education in the workload calculation by including an allowance for liaison with external students and updating of learning materials that is in addition to the normal student contact allowance.

be able to move from industry into OHS academia and education and, possibly return to industry. However the university salary structure is designed for a lifetime career in academia. Course coordinators report significant difficulty in obtaining 'suitably qualified' and experienced staff. Not only are there few PhD holders in OHS related areas, those that are 'qualified' can earn significantly higher salaries in industry. At the highest levels, the recruitment field within Australia for any OHS professorial position, would be extremely small. This is evidenced by a current vacancy that has not been filled.⁷

These difficulties in obtaining staff should also be considered in the context of the comments of all but one interviewee who noted staff workload as a problem, with high teaching and administrative loads contributing to staff 'burnout', job dissatisfaction and, possibly resignations.

The number of staff in the various OHS education centres is small with the largest having 8 professional staff, the smallest 1.2 and the median being about 3.5 plus sessional staff. These small numbers create issues of 'critical mass' that is required for a reasonable range of expertise, intellectual support and exchange between staff, and back up for staff absence or leave.

Some questions have been raised as to whether, for a small country like Australia, we have too many providers of OHS professional education thus contributing to the issues of small centres of OHS education and the difficulty in obtaining appropriately qualified specialist staff. Where there is high reliance on sessional staff there may be some concerns about quality control and integration, and cross referencing across specialist areas.

The availability of appropriately qualified staff and the implications of small centres of OHS education have implications for the quality of education outcomes.

6.3 STUDENT BACKGROUND AND EXPECTATIONS

The majority of OHS students are mature age with previous exposure to OHS through short courses and sometimes acting in an OHS role without qualifications. While this provides valuable life and working experience it can lead to simplistic and superficial concepts of OHS that have to be replaced with new learning and new ways of thinking.

Post graduate OHS students are usually paying full fees, about \$10 000 for a two year part time post graduate diploma. While these students are articulate and challenging they also see themselves as buying a service and so demand 'quality'. The student perception of a quality service includes access to technology, availability of staff and resources at times to suit them and information and materials provided rather than having to search and access themselves. The availability of large amounts of information without leaving their desk through the internet and OHS regulators contributes to the simplistic view that the answers are available at the touch of a button. Some OHS educators report that the opportunity to think, challenge and explore in order to arrive at their own concepts and models appears to be devalued in favour of the quick answer. For some, the destination of the qualification appears to be more important than the journey of education!

⁷ The pay scales also make it difficult to employ well qualified sessional staff with many current sessional staff doing it because they 'want to give something back', are semi retired, desire the kudos or respond to entreaties by the course coordinator.

One comment contrary to this was made by an external mode provider who offers considerable flexibility in the units undertaken and considers themselves 'managers of learning' rather than educators and they encourage students, when selecting study programs, to build on their strengths rather than fill the gaps.

Some of the 'service' attitude may also arise from the demands on mature age students. Increasingly students are funding their own OHS education where previously employers paid or made a significant contribution. Also, employers, supported by technology, are demanding continual access to their employees, even when they are completing on-campus components of their courses. A few interviewees commented that, while on-campus sessions are designed to maximise student interaction, intellectual challenge, cooperative planning and completion of tasks, and networking, this was being inhibited by the escape to the mobile phone during breaks and in some cases attendance to work related email interfering with evening sessions.

The student focus on answers in favour of intellectual rigour has implications for life long learning and the ability of the OHS professional to adapt to continually changing environments and be able to effectively address new OHS issues.

This potential outcome may be counteracted by emphasising the 'science' of safety and requiring students to continually apply analytical and scientific discipline to their student learning activities.

7 The Way Forward

This paper has identified 8 problems that may threaten the viability and effectiveness of OHS professional education in Australia and, in the long term the effectiveness of Australia to ensure that business operators and workers have the capacity to manage OHS effectively.

These 8 threats and the contributing factors are summarised in Table 6.

A strategy for addressing these threats is proposed that focuses on 5 of the 8 identified threats being:

- no agreed core body of OHS knowledge and skills
- lack of OHS research funding threatens OHS education
- current modes and strategies in OHS education may not be the most appropriate for equipping OHS professionals to address current and emerging issues and to operate in a changing business environment
- availability of qualified staff and small centres of OHS education have implications for the quality of education outcomes
- student focus on answers in favour of intellectual rigour has implications for life long learning and adaptability of the OHS professional to continually adapt to changing environments.

The key activities proposed are:

- conduct the ENSHPO questionnaire
- conduct a consultative research activity to define the core knowledge and skills of the OHS professional
- establish a course accreditation process and criteria

- conduct an OHS educators' summit to initiate discussion and research on educational strategies in OHS professional education
- develop a national approach to OHS education with centres of excellence and collaboration.

This strategy addressing 5 of the 8 threats is presented in Table 7. The strategy is already underway. The ENSHPO questionnaire is about to be circulated and a workshop, attended by key OHS educators, was held in March 2004 to discuss course accreditation, a national collaborative approach and research issues.

It is believed that by initially addressing these 5 key threats significant progress will be made in addressing the other identified threats of:

- OHS education is not valued within universities
- the demise of UG degree courses threatens the acceptance of OHS as a profession and the availability of researchers and future OHS educators
- low number of UG OHS degree graduates and the study of OHS as a secondary discipline.

Table 6 Summary of threats facing OHS tertiary education and contributing factors

Threat	Contributing Factors
1. <i>OHS education is not valued within universities</i>	<ul style="list-style-type: none"> • Lack of identity (OHS not separate unit or identified discipline, few professorial 'chairs') • University criteria for recognition and perception of OHS leads to OHS not being valued (not 'pure science', not 'mainstream', little research funding, Few UG programs, low entrance score for UG programs, no professional accreditation of courses)
2. <i>The demise of UG degree courses threatens the acceptance of OHS as a profession and the availability of researchers and future OHS educators</i>	<ul style="list-style-type: none"> • OHS education not valued within universities
3. <i>Low number of UG OHS degree graduates and the study of OHS as a secondary discipline</i>	<ul style="list-style-type: none"> • Contributes to the perception that OHS is not an important field of study in its own right
4. <i>No agreed core body of OHS knowledge and skills</i>	<ul style="list-style-type: none"> • No professional accreditation • Content influenced by 'home' faculty
5. <i>Lack of OHS research funding threatens OHS education</i>	<ul style="list-style-type: none"> • Contributes to perception that OHS not important • Closes off the supply of new OHS educators • Possibly impacts on the currency and contemporary nature of OHS education
6. <i>Current modes and strategies in OHS education may not be the most appropriate for equipping OHS professionals to address current and emerging issues and to operate in a changing business environment</i>	<ul style="list-style-type: none"> • Little study on education strategies appropriate to the OHS • Introduction of DE mode without adequate resources • May not be implemented with required support processes
7. <i>Availability of qualified staff and small centres of OHS education have implications for the quality of education outcomes</i>	<ul style="list-style-type: none"> • University criteria for staff promotion (lack of recognition of industry experience and educational qualifications and achievements) • High workload among OHS educators • Higher salaries in industry • Small size of OHS units
8. <i>Student focus on answers in favour of intellectual rigour has implications for life long learning and adaptability of the OHS professional to continually adapt to changing environments</i>	<ul style="list-style-type: none"> • 'Purchasing' service • Demands on student time

Table 7 Strategy to address key issues and contributing factors inhibiting education of effective OHS professionals

Problem/contributing factors	Action	Outcome	Suggested Coordinating body	Suggested funding body
<i>4 No agreed core of required knowledge and skills</i>	Conduct ENSHPO task questionnaire	Clarification of range and frequency of tasks	SIA	NOHSC and CCH ⁸
	Consultative research activity to define the core knowledge and skills of the OHS professional whose activities have been defined in the outcomes of the ENSHPO questionnaire	Core knowledge, skills and attributes of OHS professional	SIA (College of Fellows)	?
	Establish course accreditation process and criteria	OHS qualifications that meet criteria are recognised and demanded by prospective students and employers	SIA	SIA and participating universities
<i>5 Lack of research funding</i>	<i>Strategy to be developed as an outcome from discussions among OHS Educators (April 2004)</i>			
<i>6 Education modes and strategies may not be appropriate to OHS professionals (incorporating item 8 Student focus on answers in favour of intellectual rigour)</i>	Conduct an OHS Educators' Summit with a special focus on educational strategies that promote thinking and analytical skills especially with consideration of distance education and issues of student interaction as it applies to the identified knowledge, skills and attributes of the OHS professional	Clarification of current practice, sharing of knowledge and identification of what is known and what needs further research	SIA (OHS Educators) and NOHSC	NOHSC
<i>7 Availability of OHS educators and small size of centres of OHS education</i>	Develop a national approach to OHS education with centres of excellence and collaboration	Reduction in current workload for staff, reduction in duplication of course and resource development across universities, direction of staff energies and time to capitalise on their specific skills and expertise, improved quality of OHS education	SIA (OHS Educators) and NOHSC together with DEST ⁹	

⁸ Funding already confirmed and project underway

⁹ Department of Education, Science and Training

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