

COMPETENCY-BASED APPROACHES TO PROFESSIONAL EDUCATION PAUL HAGER, ANDREW GONCZI AND LIZ OLIVER FACULTY OF ADULT EDUCATION UNIVERSITY OF TECHNOLOGY, SYDNEY

1. What are COMPETENCY-BASED standards?

Terms such as 'competency' and 'skill' are used in a variety of ways in the literature. This section defines the way key terms are used in this paper, a way that seems to be best suited to the professions.

A competent professional has the attributes necessary for job performance to the appropriate standards.

This definition includes three key elements:

(i) attributes, (ii) performance, and (iii) standards. The following sub-paragraphs explain these elements.

(i) The competence of professionals derives from their possessing a set of relevant attributes such as knowledge, abilities, skills and attitudes. These attributes which jointly underlie competence are often referred to as competencies. So a competency is a combination of attributes underlying some aspect of successful professional performance. The combination of attributes involved in an aspect of professional performance can vary from the relatively specific to the relatively complex. The most highly specific combination would involve a single attribute such as knowledge (e.g. recalling the formula of sodium hydroxide) or skills (e.g. a manual operation such as filling a syringe). But even here things are not so simple - the professional has to know when and why the highly specific combination of attributes is being called for. These relatively specific combinations of attributes are specific (or simple) competencies. Relatively complex combinations would involve several attributes at once such as knowledge, abilities (e.g. judgement or posing questions), skills (e.g. interpersonal) and attitudes (e.g. patience or compassion). These highly complex combinations of attributes are higher level (or complex) competencies.

(ii) Competence is focussed on performance of a role or set of tasks. Within professions there are typically various roles e.g. hospital pharmacist, design engineer, etc. Roles comprise a multitude of tasks, which can be further divided into sub-tasks. Some tasks are relatively general, others are relatively specific. Examples are:

A relatively general task: A competent professional engineer is required to produce a mathematical model, using available experimental data and existing theories of material behaviour to predict the life of a cylindrical shaft operating under variable conditions of load and temperature. (Lloyd et al, 1989, p.151)

A relatively specific task: A competent pharmacist is required to maintain a system of recording all dispensed prescriptions.

Alternatively, competence is focussed on performance within a domain where a domain is an area of professional practice which requires a high degree of professional performance. So the domain concept focusses selectively on the more challenging aspects of professional work, whereas the role concept attempts to be comprehensive. Benner (1984), e.g.,

conceptualized

nursing into seven domains in which expert clinical competence is required. The domains include such things as the helping role, the teaching-coaching function and effective management of rapidly changing situations. Domains, like roles, can be divided into tasks and sub-tasks.

(iii) Since the performance of a role and its associated tasks can be judged competent or incompetent, competence requires that the performance be of an appropriate standards. Hence we need standards against which competence can be assessed and validated. Important issues concern the minimal level of performance that will be judged competent for a role or task and the criteria that will be used to judge whether this standard has been achieved.

When all this is done for a range of areas of practice within a profession, the result is a set of competency-based standards for the profession.

It is useful to compare our use of the key terms as defined above with the ways they have been used in competency-based analysis of trades and middle level occupations. This comparison will help to spell out the logic of our definitions of the key concepts and their aptness for analysing professional competence.

As it has been widely interpreted and implemented in trades and middle level occupations the competency-based movement has close ties to the more general behavioural objectives movement in education. That movement, which began in the 1950s and was popular in the 1960s and 1970s, promoted the detailed specification of the goals of educational courses as lists of observable behaviours that students are expected to demonstrate at the completion of a course. To facilitate the achievement of those objectives, educational programs were organised into discrete, sequenced modules and 'standard-based' or 'criterion-referenced' tests were used to establish whether or not students had mastered the objectives of each module. In a criterion-referenced test it is usual to match test questions to specific objectives and to treat success on an item (or on a fixed percentage of items relating to the same objective) as evidence that the objective has been 'mastered'.

So competency-based standards in trades and middle level occupations involve ~ the analysis of workplace tasks or roles; ~ the development of a list of tasks (sometimes called a competence schedule) and ~ the construction of education/training/assessment programs based on this list.

Because the focus is on behavioural aspects of job performance rather than attributes of the practitioner, 'tasks' are described interchangeably as 'competencies' or 'skills'. This approach to competency analysis is really little more than occupational analysis and has distinct limitations even for work that is essentially manual. It leads to a 'competency' checklist that can rapidly become unwieldy and impractical. A further doubt concerns the validity of such an analysis. Competence in an occupation appears to require more than mastery of a large number of discrete 'skills'.

## 2. Why COMPETENCY-BASED standards are useful

Competency-based standards offer a number of advantages to professions whilst at the same time furthering important national objectives, particularly maintenance of professional standards, labour market efficiency and equity.

(a) Maintenance of professional standards Competency-based standards provide explicit statements of what people need to be able to do to successfully practise as a professional. Having clear sets of standards helps to remove misunderstandings both inside and outside the profession. Competency-based standards offer a sound basis for judgements about entry to and progression within the profession.

(b) Labour market efficiency There are a number of recent international developments which will significantly affect the market for professional services. The most important of these is the Uruguay round of GATT negotiations, a major object of which is the creation of an international framework for trade in services. Two key obstacles to achieving this objective are the need to reach agreement on rules ensuring non-discriminatory treatment of foreigners and uncertainty about professional standards. Competency-based standards would provide protection for national consumers of foreign supplied professional services and help to reduce discrimination.

Other interactive developments and forums such as the UNESCO convention on recognition of Studies, Degrees and Diplomas, the Universal Convention on Recognition of Studies and Qualifications in Higher Education, the Closer Economic Relationship with New Zealand, and the ASEAN Australian Forum are all moving towards international recognition of qualifications. At the very least competency-based standards would be a useful basis for negotiation in these arenas. Recent microeconomic reform processes in Australia (industry restructuring, award restructuring, restructuring of education and training) all partly address the removal of unnecessary barriers to free movement of labour. Competency-based standards are of great assistance here because they encompass all forms of achievement of competence, rather than simply relying on formal indicators i.e. paper qualifications. But because the concept of competence can incorporate various levels of competence, from entry level through proficiency to expert level, a competency-based system would enable professionals to enter the profession at an appropriate level as, for example, in teaching or nursing or in public sector medicine. This allows maximum use of the skills present in the community. It would also provide a basis for professionals already in practice to have their higher competency levels recognized in an appropriate manner as for example the putative "master" teacher category proposed for primary and secondary teachers. It would also facilitate the recognition and subsequent employability in an allied field of those who attempt but fail to obtain professional qualifications.

Likewise competency-based standards are very suited to career structure development. The recently registered metals industry award, on which most other awards will be based, has shown it is possible to devise a career structure on the basis of levels of competence in association with formal qualifications. The metals career structure includes professional and paraprofessional levels. A competency-based system has the potential for facilitating progression from trade to paraprofessional to professional status in a number of broad occupational areas.

(c) Equity By focussing on competence regardless of how it may have been developed, competency-based standards will help certain groups whose skills may not at present receive due recognition. Some overseas qualified professionals believe that Australia's current entry procedures rely too much on testing for knowledge. They may be right or they may be wrong. A move to competency-based testing would make for a more objective testing procedure. Addressing equity issues in education and training and skills recognition is really just another part of promoting labour market efficiency. These issues are of particular importance during times of labour shortage. Shortages in a number of professions have occurred during the 1980's. These labour market shortages

have been through a range of professions, including accounting specialisations, electrical and electronic engineers, and some of the health professions. Some of these shortages could have been lessened with a competency-based system to facilitate recognition of skills.

As well as helping professions plan curricula, assessments and career structures, competency-based assessment offers a number of other advantages. The identification of competencies promotes discussion of professional practice within the profession. Drawing attention to the complexity and richness of professional knowledge has the potential to encourage excellence and boost morale. Facilitating the recognition of professionals with skills and experience gained overseas is of great value, given the expanding trade in services beyond national boundaries.

### 3. APPROACHES TO COMPETENCY ANALYSIS OF PROFESSIONS.

There have been three broad approaches to conceptualizing the competency analysis of professions. These are: 1. Analysing professional work in terms of roles, (or, alternatively, domains), and thence tasks and sub-tasks. This approach focuses on the performance aspect of our definition of a competent professional. 2. Analysis of the knowledge, skills and attitudes required by the individual professional. This approach focuses on the attributes aspect of our definition of a competent professional. 3. Analysis of professional knowledge, skills and attitudes in the context of the performance of realistic professional tasks. This approach integrates both attributes and performance into a single framework.

#### 3.1 Analysing Professional Work into Roles (or Alternatively Domains), Tasks and Sub-tasks.

Using this approach, the profession is viewed as a series of roles (i.e. a comprehensive analysis of the professional work is attempted) or alternatively domains (i.e. a selective analysis focussing on the more challenging aspects of the professional work is attempted). The tasks that a practitioner is required to perform in each of these roles or domains are then identified. For each task a corresponding competency is posited. Since tasks can be further divided into sub-tasks, competencies and sub-competencies rapidly multiply. As noted above this approach is inspired by a view of competency analysis that has been popular at trades level and in less skilled work. The specific competency approach has been used for competency analysis of professions where there is a desire to have a comprehensive list of roles and tasks. An example of this approach will illustrate its strengths and limitations.

**Pharmacy** The pharmacy profession has made significant use of the approach of conceptualizing competence in terms of roles, tasks and sub-tasks, particularly for its pre-registration year. Before adoption of a competency-based scheme, pre-registration students typically worked for one year for a supervising pharmacist whose satisfaction with their progress was a condition for registration. As well students were required to attend lecture courses and satisfactorily complete assignments. Criticism of this sort of arrangement centred on its not paying enough attention to "performance in 'true to life' situations" (David et al., 1989 p. 850). Hence competency-based programs were gradually adopted in order to ensure that the pre-registration year focussed on the things that a competent professional pharmacist needs to be able to do.

New Zealand implemented a competency-based scheme in 1985, Western Australia (the only Australian state in which the local Pharmaceutical Society has the legal authority to register pharmacy graduates) followed suit in 1988 and Britain expects to do the same in 1991. In New Zealand a training programme of

197 competencies to be "attained or confirmed" during the pre-registration year was developed. The 197 competencies are divided into 16 broader competency areas. For example, one such area is Over the Counter Sales of Medicines where the broad competency is "Be able to evaluate, supply and advise on a range of products available over the counter". This broad competency is divided into 19 more specific competencies. "Be able to produce clear and complete labels for dispensed medicines sold over the counter" is an example of the more specific competencies. The Western Australian scheme is based on 12 clusters of specific competencies, e.g. cluster one is Dispensing consisting of twenty specific competencies. Some competencies have to be attained to a high degree, others to a basic degree.

The Western Australian example has apparently encouraged others to think of applying competency analysis to pharmacy beyond the pre-registration year. The Pharmaceutical Society of Australia in 1989 released A Set of Competencies for Australian Community Pharmacy Practice. The purpose of this document is "to provide a resource which can be used to plan pharmacy curricula at undergraduate, postgraduate and continuing education levels and as a guide for individual self-development". It lists 93 specific competencies for general community practice, 24 for hospital and institution practice and 61 for management of resources.

Despite the apparent popularity of this approach to competency analysis in pharmacy, it has encountered a number of problems. One of these, which is of significance for the professions generally, concerns the setting of standards. This issue will be discussed in detail in section 5, but the problems noted there are magnified by there being large numbers of specific tasks to be assessed. Improving the current fairly vague pharmacy standards would be an enormous undertaking due to the sheer number of specific tasks. Certainly the present system has resulted in some practical dilemmas for the Pharmaceutical Council of Western Australia. Ideally they would like a staff pharmacist of the Council to observe each pre-registration graduate going about their normal work so as to assess whether the competencies are demonstrated to the required standards. However the costs of doing this are prohibitive. This in turn suggests that the supervising pharmacist should be more involved in the assessment. However research has shown that most of the pharmacy trainees believe that the supervisors need a training course to better understand how to use the programme. So in the absence of better alternatives, the assessment has been carried out by a panel of practitioners using assignments throughout the year, a short answer exam in the middle of the year, and an oral exam just prior to registration. David et al. (1989, p.852) point out that this assessment scheme has proved to be far from ideal for a competency-based programme.

Nursing As noted in section 1, Benner (1984) conceptualized nursing in terms of seven domains in which expert clinical performance is required. She focussed on the most challenging aspects of nurses' professional work to avoid the problem of too lengthy a list of tasks,. This resulted from research which sought to record and categorise the immense knowledge and expertise involved in the performance of expert clinical nursing. For each domain there was an associated set of competencies. Benner's methodologies included surveys, interviews on critical incidents and participant observation. (These methodologies are detailed in Gonczi, Hager and Oliver, 1990).

Benner's work has been very influential in the nursing profession. Its results not only ennoble the profession, but they are seen as valid because they derive from an analysis of actual nursing performance rather than (say) the views of armchair experts. In Australia the current shift of nurse education from hospitals to the higher education sector has led to an interest in new methods

for assessing nursing competence for registration purposes. Not surprisingly some have turned to Benner's work, e.g. the Queensland Board of Nursing Studies (Williams, 1989), using a similar mix of methods to Benner, found 9 domains for beginning level nurses. These were subdivided to produce 61 competencies (tasks) which were further divided into about 143 sub-competencies (sub-tasks).

The Australasian Nurse Registering Authorities' Conference (ANRAC) in 1986 established a committee to develop a set of competencies which could be used by the nurse registering authorities as the minimum standards for registration. The competencies were developed around concepts associated with the role of the newly registered nurse and of the newly enrolled nurse. These concepts were referred to as the integrated components of clinician, care co-ordinator, change agent, counsellor, health teacher, client advocate and clinical teacher/supervisor. The ANRAC competencies were prepared by a group of expert nurses, but the competency list is clearly influenced by Benner. ANRAC has subsequently adopted (May 1990) a national set of competencies for these groups. This consists of 18 areas of practice which divide into 75 competencies for registered nurses. For enrolled nurses there are 6 areas of practice forming 20 competencies. In both cases the competencies are expressed as 'behaviours'.

Advantages and limitations of conceptualizing competence in terms of roles, tasks and sub-tasks

Advantages

- ~ Helpful for course design especially where the emphasis is on practical tasks e.g. in a professional or pre-registration year.
- ~ Multiplicity of tasks enables some to be designated essential, other desirable.
- ~ Multiplicity of tasks enables different levels of competence to be specified: entry level, expert, etc. This may be important for setting pay scales and the like.
- ~ Enhances self-concepts of those in the profession to see the complex range of their competence.

Limitations

- ~ Tends to either ignore or take for granted higher level competencies.
- ~ Lengthy checklist of competencies hence expensive and time consuming for comprehensive testing.
- ~ Unwieldy for testing overseas skills.
- ~ Tends to assume that all people in a role would carry out a task in the same way. In professional work there may be a variety of ways to satisfactorily carry out the task.

These limitations point to a more general problem for this approach to professional competence. By concentrating on discrete pieces of knowledge and skill, there is a distinct danger of only dealing with fairly superficial aspects of professional practice, whilst ignoring the holistic way in which such knowledge and skill is integrated and coordinated in actual professional practice

### 3.2 ANALYSING PROFESSIONAL WORK IN TERMS OF THE KNOWLEDGE, SKILLS AND ATTITUDES REQUIRED BY THE PRACTITIONER

This way of conceptualizing professional competence focuses on the most general attributes of the practitioner that are crucial to the effective performance of professional tasks. This approach seeks to specify competence in terms of demonstration of these general attributes. The following examples will illustrate these points.

Law There is significant evidence from the United States and Canada that professional education in law schools has failed to develop the competencies required in the practice of law. Some legal educators have investigated "lawyering skills" in order to develop mechanisms to ensure adequate professional competence is developed, or to develop ways of teaching law.

At the Antioch School of Law, a model of lawyer competence was developed. This model divides legal practice into 6 general competencies: (1) Oral competency -

proper and effective use of language, skills of listening and persuading; (ii) written competency; (iii) legal analysis competency - analysing facts, law, and formulation of legal theory; (iv) problem solving competency - problem diagnosis, selection and implementation of strategy; (v) professional responsibility competency - identification of conflict with professional norms and values and acting consistently with decisions; (vi) practice management competency - proper use of time, working efficiently with others. A different but similar model is in operation at the University of Montana Law School. (See Gonczi, Hager and Oliver, 1990).

In Australia, Ayling and Constanzo (1984) identified 15 skills which were regarded as fundamental to competence in professional practice. These skills include: Three basic skills : organising information; using acceptable grammar & language; ability to listen, read, observe & investigate. Four legal decision making skills : design & implement a plan of action; analyse & select appropriate options; identify & evaluate legal issues efficiently; identify & evaluate relevant facts. Five interpersonal skills : respond & react skillfully to others; create conditions for effective communications; question effectively; analyse & interpret people's behaviour; explain, describe & instruct. Finally, three general cognitive skills: ability to manage; perform with insight and the capacity to deliver/produce.

These skills and knowledge combine with attitudes to produce professional competence. Attitudes include such things as knowledge of practice and ethical issues as well as a desire for self enhancement. This conceptualization of lawyers' competencies suggests that the criticism made of some practical training courses, that they emphasise too much the detailed procedures of particular tasks, at the expense of providing instruction in general legal techniques, need not apply.

These examples are typical of attempts to focus the course on the most general attributes needed by a competent lawyer. Note that teaching and assessing the general attributes as much as possible in the context of actual legal practice is important. So, e.g., a course in problem solving may not, by itself, make much difference. Students need the extra step of practising problem solving as it applies in the context of legal practice.

This approach to conceptualising professional competence has also been used in medicine by, e.g., the Association of American Medical Colleges, in planning for medical education in the 90's and the twenty first century. (Gonczi, Hager and Oliver, 1990).

Advantages and limitations of conceptualizing competency in terms of attributes of the practitioner

Advantages	~	Concentrates on a relatively small number of key competencies that are essential for performance of appropriate standards.
~		Allows for variety in ways of completing a given task via different combinations of higher level competencies.
~		Suggests ways of improving professional degree courses.
Limitations	~	Teaching and assessing general attributes in isolation from actual professional practice is fairly ineffective in terms of future professional performance.
~		Tends to neglect specific competencies.

### 3.3 Analysis of Professional Knowledge, Skills and Attitudes in the Context of the Performance of Realistic Professional Tasks

The analysis of professional work into roles and tasks was found to be useful for course design but its long lists of specific tasks were impractical for testing whilst at the same time neglecting higher level competencies. On the other hand, analysis of professional work in terms of attributes required of

the practitioner focuses on a relatively small number of higher level competencies but does so in isolation from the specifics of day to day professional practice. This third approach to conceptualizing professional competence seeks to integrate both previous approaches. The aim is to identify those areas of professional practice in which it is essential to demonstrate minimum competence. These are then analysed in terms of knowledge, abilities, skills and attitudes displayed in the context of realistic professional tasks. This third approach to conceptualizing professional competence will be referred to as the integrated approach. The following examples will illustrate this approach.

Applying the integrated approach to medicine Burg, Lloyd and Templeton (1982) developed a conceptualization of clinical competence in medicine by adapting an earlier model that the National Board of Medical Examiners in the United States used as the basis for its Comprehensive Qualifying Evaluation Program at the end of medical school. According to them there are five abilities/behaviours (or, in the terminology of this paper, attributes) that are required to perform eight key tasks in clinical medicine. The abilities/behaviours are knowledge, problem solving, attitudes, interpersonal skills and technical skills. The eight key tasks or functions that a physician must perform include history taking; physical examination; use of laboratory tests, radiography and other investigative techniques; defining clinical problems; management; record keeping; employing special sources of information; and monitoring health status. The abilities/behaviours and key tasks can be conceived as a two-dimensional matrix. Burg, Lloyd and Templeton point out that a third dimension could be added to the matrix to represent different areas of medical practice, e.g. well patients and ill patients and within each of these different kinds of medical cases could be identified.

A similar three dimensional model for family medicine was adopted in 1984 by the Australian Family Medical program. (Fabb and Marshall, 1984). There are five basic attributes (knowledge, interpretive skills, problem solving skills, etc); five basic functions or roles in which the abilities are applied (understanding the individual, the family and the community; analysing and defining health problems, etc) and nine areas of medical practice (pregnant woman, neonate, infant, etc).

While it would be impractical to assess for every cell of these three-dimensional matrices, these two conceptualizations of clinical competence in medicine nevertheless offer a possible basis for competency analysis and assessment. To assess a candidate's competence, key clinical situations could be chosen so that a representative selection of tasks and attributes was thereby included, i.e. a manageable number of testing situations would be selected whilst at the same time ensuring that the major kinds of tasks and attributes are also represented. This sampling of both tasks and attributes would help to overcome the limitations of the earlier two approaches whilst at the same time retaining their advantages. A judicious sample could be expected to be feasible in both cost and time.

Having selected key clinical situations so as to representatively sample tasks and attributes, the next step would be to develop standards for each of the areas. Once the standard of practice for an area is specified, one or more assessment tasks would be developed. So, for example, particular cells of the matrix could be identified as providing key areas of performance. Suppose 'analysing and defining health problems' for an infant patient suffering measles is chosen. The next step would be to decide on the essential attributes required for competent performance in this area, i.e. the knowledge, interpretive skills, problem solving skills, etc, underlying competent performance. Then the level of achievement for minimum competence would be

specified as performance criteria. These would be stated in terms of the attributes and their representation in performance. The final step is to select appropriate assessment techniques for deciding whether standards have been met. Typically this will involve a range of methods. In this way a manageable test of competence could be devised with key specific tasks being assessed as well more general attributes that underlie a range of tasks that are not being directly assessed. (See Gonczi, Hager and Oliver, 1990, Section 5 and Masters and McCurry, 1990).

Procedures for deriving such conceptualizations and for refining and validating them are outlined in Gonczi, Hager and Oliver, 1990, Section 6.

Summary of the integrated approach	Advantages	Provides a balance between specific and higher level competencies.	Enables manageable testing procedures in terms of both time and cost.	Suited to designing courses in which higher level competencies are emphasised.	Helpful for articulation between different occupational levels leading up to professional.	Allows simultaneous focus on both essential tasks and essential competencies.	Adaptable to both entry level assessment and outstanding performance assessment.	Amenable to setting of different standards.
	Limitations	No major limitations not shared by the other approaches						

#### 4. Issues in Setting Standards

As already argued, in order to be able to judge a professional's competence, there is a need to establish both the competencies of the profession and a set of criteria against which to judge performance. In this the professions are no different to any occupation. However the nature of these standards is significantly different. In most occupations, standards (or "performance criteria" as they are often called) can be relatively precise e.g. in the trades the standard for measuring wire thickness with a micrometer can be 0.005 mm. It is true that certain specific competencies in the professions can have precise standards, e.g. in medicine, reading an ECG, and in engineering calculating the load bearing capacity of a girder, can be done to 100% accuracy. The essence of professional work, however, does not lend itself to this precision, e.g. the interpersonal competence of a lawyer, the capacity of a doctor to hypothesize about his/her patients. Clearly in these examples there can be no unambiguous precise standard.

It does not follow, however, that professional standards need be arbitrary or capricious. While the aim - setting minimum standards of competence as precisely and clearly as possible - is the same in all occupations, the professions face different issues when setting standards than do other occupations.

(i) Given the complex and dynamic nature of professional work, a decision must be made as to what combinations of tasks, attributes and contexts need to be examined to arrive at overall competence. Check lists of individual tasks where a person can demonstrate a skill, will be appropriate to some occupations but not to the professions. A doctor's competence in patient management, for example, consists of various competencies such as conducting physical examinations, ordering laboratory tests, prescribing medication. While it is true that doctors have to perform each of these activities competently, it would not be appropriate to determine competence in patient management on the ability to perform isolated tasks of this kind. Underlying these activities is a complex process of formulating hypotheses, responding to changes in a patient's condition and so on. Thus competence in patient management will be determined by a professional assessor exercising judgement in a holistic way in the competency area. Thus, standards must be set for areas of competency in

addition to specific competencies.

(ii) Once the competency areas have been identified, the professions need to spell out what is minimum competence in them. Where there is a discrete simple skill involved, the minimum level of competence is the ability to demonstrate that the skill can be undertaken. It is almost always an absolute level. In the complex areas of professional competency, however, there can be no absolute level. It must be accepted that there will be different levels of professional competence. To continue an earlier example, some doctors will be better at hypothesizing about patients' problems than others. A decision about what is good enough must be made. The professions must try to ensure that the standard is not too low since this would allow people to practise who are not competent, nor too high, since this would bar competent people from practice. In arriving at this standard a number of things will need to be considered.

It should rest on direct observation of what has been achievable in actual practical situations rather than on theoretical or idealized notions, i.e. there is a need to overcome the tendency of experts to forget that experience and continuing education are needed to reach high professional levels. There will be a need to maintain professional standards and public confidence in the profession. There is a need to consider issues of equity, i.e. it would be unfair to set standards so high that there are significant numbers who are competent, but barred from practice.

Obviously the decision on minimal standards will be a matter of judgement where many and possibly conflicting principles need to be balanced. The most satisfactory way of achieving this aim (of setting minimal levels of competence as explicitly as possible) is to develop a scale of competence. Such scales measure the different levels of competence which exist in complex work. Once the scale has been developed the profession will determine, on the basis of the sort of considerations outlined above, what level is minimal competence.

The importance of this approach is that it: articulates the standard(s) by describing them more fully allows flexibility beyond minimum provides guidance or the basis of guidance on - how to assess - what should be in the assessment Details on how to go about developing such a scale and the issues involved in assessing and interpreting the standards is outlined in Masters and McCurry, 1990.

## CONCLUSION

This paper has

- (i) defined what competency-based standards are in the context of professions;
- (ii) emphasised the significance of competency-based standards for professions;
- (iii) considered the advantages and limitations of various approaches to competency analysis of professions; and
- (iv) outlined some important considerations for the setting of standards.

All of these are relevant to those planning to follow international trends towards adoption of competency-based approaches to professional education.

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