Competency-Based Education and Assessment for the Accounting Profession: A Critical Review*

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ABSTRACT

In recent years many professional accounting associations have become interested in establishing competency-based professional requirements and assessment methods for certifying accounting professionals. A competency-based approach to qualification speci- fies expectations in terms of outcomes, or what an individual can accomplish, rather than in terms of an individual's knowledge or capabilities. This idea has an obvious appeal to many practitioners and administrators of professional qualification programs. However, there is limited knowledge about competency-based approaches in the accounting profes- sion and among accounting academics, which is constraining discussion about the value of these approaches and about the strengths and weaknesses of the different competency models that have sprung up in various jurisdictions.

In this paper we review and synthesize the literature on competency-based approaches. We identify a number of theoretical benefits of competency-based approaches. However, we also find many alternative definitions and philosophies underlying competency-based approaches, and a variety of visions of how competencies should be determined and assessed. We note that there is limited evidence supporting many competency-based approaches and we identify 14 research questions that could be used to help policy makers to more effectively address policy matters related to competency-based education and assessment.

Keywords Competency; Education; Accounting; Assessment

N.B. Le condensé français de l'article qui suit commence à la page 35.

In recent years many professional accounting associations have become interested in using competency-based professional requirements as a basis for certifying accounting professionals. Competence is commonly viewed as being able to perform a work role to a defined standard with reference to real working environments (IFAC, 2001: 5). A compe- tency-based approach to qualification specifies expectations in terms of outcomes, or what an individual can accomplish, rather than in terms of an individual's knowledge or capabilities.

This idea has an obvious appeal to many practitioners and administrators of professional qualification programs.

Proponents of competency-based models cite the following benefits of such approaches: the increased transparency of qualification processes and the profession's accountability; improved monitoring of professional education and its linkages to practice; the freedom of students to pursue educational programs best suited to their own needs, so long as they can eventually demonstrate the required competencies for certification; a clearer understanding on the part of all stakeholders of the required abilities to perform particular jobs; and improvement in the ability of graduates to apply their knowledge to work situations. Given these potential benefits, competency-based approaches seem like a panacea for many of the problems of linking educational goals and professional practice.

However, there are many difficulties with a competency-based qualification program that can lead to costly and ineffective implementations of this seemingly simple and attractive concept. Detractors point out that there is very limited empirical evidence about the efficacy of competency-based approaches compared with the efficacy of more traditional education methods, despite several decades of experimentation with competency-based education. A number of difficulties can be encountered when performing objective evaluations of competencies, and these difficulties are compounded by the many alternative visions of how competency requirements should be specified and assessed. Even the definitions and underlying philosophies of many competency-based approaches differ. The definitions of competencies range from cognitive skills to workplace outcomes to personal attributes. Indeed, the "competency" label has been applied to such a wide range of concepts that it is hard to define the meaning of this label and to make useful comparisons among competency-based approaches.

Some competency-based implementations have also produced complex and detailed, or atomistic, lists of skills and tasks for competency assessment that have proved unworkable in practice. While some proponents of competency-based models emphasize the need for such detailed documentation in order to make the models useful in assessment, critics suggest that such detailed lists are unmanageable and ultimately infeasible to implement.

Although the underlying objectives of competency-based approaches are laudable and are supported by many educators and practitioners, the apparent face validity of competency-based approaches has tended to result in arguments based on ideology rather than on an objective analysis of their actual merits. Indeed, evidence about their efficacy is hard to find. We hope that by reviewing and synthesizing the literature on the ideas and experiences underlying competency-based education and assessment, we can contribute to the objective evaluation of the merits of this approach for professional accounting qualification.

The next section discusses the method used to carry out the literature review documented in this paper. This is followed by brief summaries of the different definitions of competency and of the approaches to determining and documenting competency requirements. We also discuss the most difficult aspect of competency-based approaches — assessing competencies. Then, we briefly outline the development of competency-based approaches in the United Kingdom, Australia, and the United States and summarize the key attributes of competency-based approaches to education. We review competency-based

approaches in the accounting profession and discuss the competency models established by the three Canadian professional accounting bodies. On the basis of our review of competency literature, we identify 14 research questions that should be investigated in order to provide information on the value of competency-based education and assessment. We conclude the paper with a brief summary of our findings.

RESEARCH METHOD

To carry out the literature review, we first performed searches of online educational and business literature indexes. Articles and monographs, from the mid 1970s to the present, from a variety of North American, British, and Australian academic and professional sources were retrieved. Many of the articles focused on competency approaches to vocational education, but a number of articles also considered competency approaches for several different professions such as primary and secondary education, management, dentistry, and accounting. Our review covers competency literature in fields outside accounting, as well as accounting, because there have been decades of experimentation with competency-based approaches in these other fields.

The papers and monographs found through the initial search were then used to identify additional materials to acquire. This process was repeated until the same papers were repeatedly showing up in the references of the new material, suggesting that the majority of the key references related to competency-based approaches had been identified.

DEFINITIONS OF "COMPETENCY"

As noted in the introduction, a competency-based approach specifies performance expectations in terms of outcomes, or what an individual can accomplish, rather than in terms of an individual's knowledge or capabilities. Our literature review found that most authors refer to the idea that competencies must contribute in some way to performance and must be outcome-focused. Outcomes are the larger results of many detailed actions and the application of specific skills. Defining competencies as the results of activities or skills, rather than the activities or skills themselves, appears to be partly motivated by an attempt to keep competencies more holistic than atomistic (Watson, 1993, quoted in Harris, Hugh, Hobart, and Lundberg, 1995).

However, while some accounting bodies have adopted this view, it is by no means universal. For example, the International Federation of Accountants (IFAC) (IFAC, 2001) distinguishes between the outcome-based *functional analysis* approach favoured by some accounting bodies (e.g., the Association of Chartered Certified Accountants (ACCA)) and the input-based *capability* approach (where the inputs include knowledge, skills, and professional values) favoured by others (e.g., the American Institute of Certified Public Accountants (AICPA)), but accepts both as examples of competency-based approaches. Our literature review indicated that differences such as these are fairly common in defining competencies. These differences are important because they ultimately affect the elements that are included in competency-based standards, and the effort required to communicate and measure achievement thereof. Figure 1 shows some of the dimensions across which definitions of competencies differ, while Table 1 lists various

FIGURE 1 Competency definitions — differing dimensions
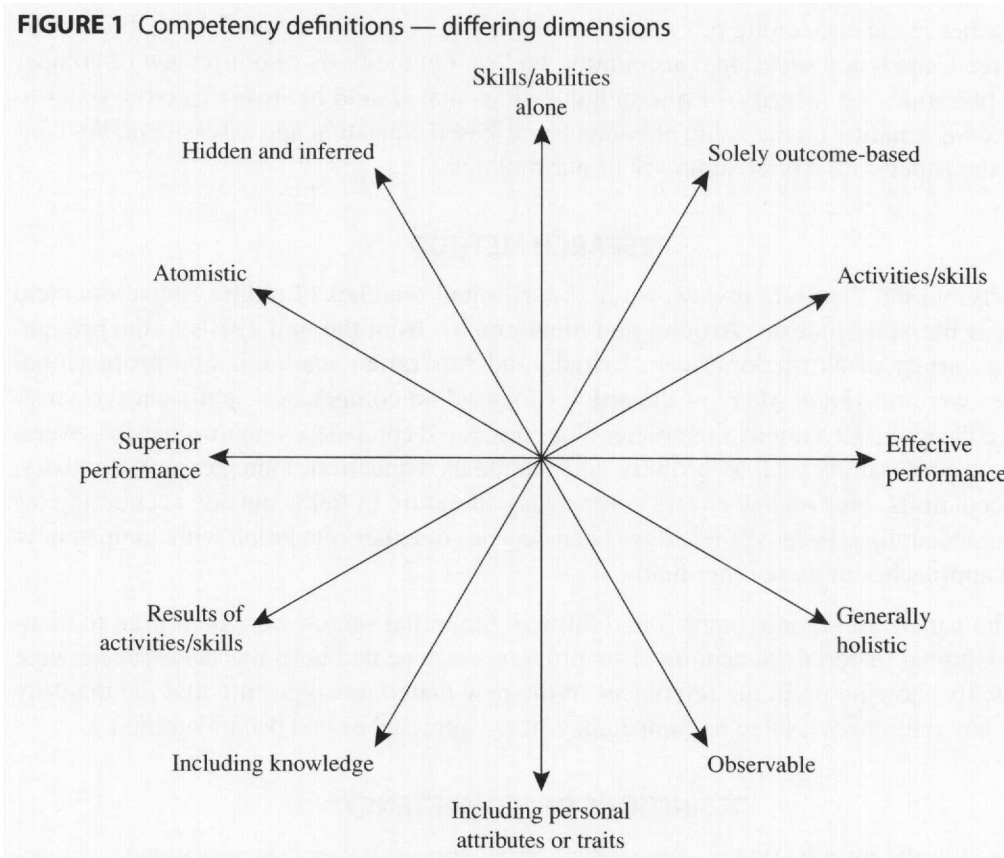
papers that have addressed these dimensions: (1) competencies as skills/abilities alone versus also including personal attributes or traits; (2) competencies as solely outcome-based versus also including knowledge; (3) competencies being activities/skills versus the results of activities/skills; (4) competencies as necessary qualities for effective performance versus superior performance; (5) competencies being generally holistic (high-level) versus atomistic (detailed); and (6) competencies as observable qualities versus hidden and inferred qualities. It is clear that these six dimensions provide for many permutations and varieties of competency approaches.

Why do the differences in definitions exist? Why is there not a single universal understanding of competency? One factor is the context in which competencies are considered: in a general education context, in a vocational education context, or in a professional or employment role. For example, in a general educational context, the emphasis tends to be on abilities and skills because these can presumably be taught or acquired. In contrast to educational contexts that aim to develop abilities and skills, the emphasis in an employee recruitment and retention context is on screening for required or attractive attitudes and personality traits rather than on developing them. Therefore, even though such attributes are acknowledged as being inherent qualities of individuals rather than skills, they have been labeled as competencies in employment models.

TABLE 1

Dimensions of competency — supporting research

Competency dimension	Papers that use a competency definition closer to the first part of dimension	Papers that use a competency definition closer to the second part of dimension
1 Competencies as skills/ abilities alone	Evers, Rush, and Berdrow (1998); Fletcher (1991); Parry (1998)	
versus		
Also including personal attributes or traits		Hayes (1979); Sims and Sauser (1985); Klemp (1979); Hager et al. (1994); McLagan (1997); Hendricson and Kleffner (1998); Brown (1993); Burgoyne (1989); Zemke (1984)
2 Competencies as solely outcome-based	Sims and Sauser (1985); Jessup (1991); Fletcher (1991)	
versus		
Also including knowledge		McLagan (1997); Hayes (1979); Klemp (1979); Hager et al. (1994); Hendricson and Kleffner (1998)
3 Competencies being activities/ skills	Sims and Sauser (1985); Evers et al. (1998)	
versus		
The results of activities/skills		Klemp (1979); Fletcher (1991); Mansfield and Mitchell (1996)
4 Competencies refer to what is necessary for effective performance	Klemp (1979); Hager et al. (1994); Hendricson and Kleffner (1998)	
versus		
Superior performance		Hayes (1979); McLagan (1997)
5 Competencies being generally holistic	Mansfield (1989); Hager et al. (1994); Harris et al. (1995)	
versus		
Atomistic		Jessup (1991)
6 Competencies as observable qualities	Jessup (1991); Fletcher (1991); Evers (1998)	
versus		
Hidden and inferred qualities		Griffin (1993); Gonczi et al. (1993)

In a vocational context (e.g., plumbing), competencies can often be readily inferred by observing outcomes. In contrast, in a professional context (e.g., medicine), it is often difficult to rely on outcomes alone to signal intellectual competencies. In fact, this difficulty is one of the reasons for the existence of professional self-governance and rigorous certification and/or licensing processes designed to assure the public that certified professionals possess the intellectual competencies required to practise their profession. Another difficulty with relying on outcomes is that some fields are more process-based than product-based (Tuxworth, 1989); for example, some professional contexts (e.g., law) may emphasize the problem-solving *process* rather than a particular problem *solution*.

As competency-based approaches were applied to more complex occupations and more dynamic environments, the difficulties of observing and assessing professional competencies solely on the basis of outcomes became increasingly apparent. Accordingly, today's discussions of competency have drifted away from the purely outcome-based approach that was traditionally associated with competency-based assessment. Instead, competence is treated as "knowledge, skills, abilities, and attitudes displayed in the context of a carefully chosen set of realistic professional tasks which are of an appropriate level of generality ... [with] the emphasis ... on selecting key tasks or elements that are central to the practice of the profession" (Hager, Gonczi, and Athanasou, 1994: 4). This broad definition makes it possible to sweep virtually any set of desirable features into a set of training/assessment programs and still call the overall approach a competency-based approach.

APPROACHES TO DETERMINING AND DOCUMENTING COMPETENCY REQUIREMENTS

As mentioned in the previous section, competencies should relate to a set of realistic professional tasks that are of an appropriate level. This implies that they should be elicited from practitioners in a particular occupation, rather than from educators or other stakeholders. According to Gonczi, Hager, and Oliver (1990), the following techniques can be used for collecting data about competency requirements in a given field:

1. Interview methods: interview; competencies interview; critical incident technique.

2. Surveys: general survey; Delphi.

3. Convened group techniques: nominal group technique; DACUM (develop a curriculum); search conference.

4. Miscellaneous techniques: functional analysis; Comprehensive Occupational Data Analysis Programs (CODAP); observation; job competency assessment (McBer).

A discussion of these methods is outside the scope of this review, however, Gonczi et al. (1990) provide a useful summary of these techniques and a table rating their suitability according to requirements such as budgetary constraints, time constraints, sample/population size, the scope of the analysis (entire profession versus subset), confidentiality requirements, the likelihood of conflict, the rapidity of change in the profession, and the desire to perform the analysis in-house in order to minimize the reliance on outside resources such as consultants and facilitators.

In addition to determining competencies, it is necessary to document the competency requirements in order to communicate them effectively to students and other stakeholders. Chambers and Gerrow (1994) suggest that competency statements be written in a three-part structure with a verb, direct object and qualifying conditions, special circumstances, limitations, and explicit outcomes. A glossary should be developed to define specific verbs because they are used in the competency statements to indicate that actions have to be carried out in a specific manner. Performance criteria for each competency element must also be provided. This approach is the one most commonly linked with outcome-based competency requirements.

Another approach is to document the most general attributes of practitioners that are "crucial to the effective performance of professional tasks" (Gonczi et al., 1990: 21). Unlike the previous approach, this "attributes" approach focuses on the knowledge, skills, and attitudes required for a competent performance. This approach tends to be more holistic and is the one most commonly seen in connection with capability-based competency requirements.

A third approach is an integration of the previous two approaches. The attributes and tasks form a two-dimensional matrix, with a possible third dimension for different areas of practice. Each cell of the matrix contains standards of practice, performance criteria, and assessment techniques. A number of accounting competency models have used this approach, as will be discussed later.

A somewhat different approach (Monjan and Gassner, 1979) identifies the following four components: (1) the competency the student is required to have; (2) an example of the type of tasks the student will be asked to complete in order to demonstrate possession of the competency; (3) a description of the processes that the student will need to engage in during the demonstration of the competency; and (4) the conditions that must be met to demonstrate competency achievement.

APPROACHES TO ASSESSING COMPETENCIES

Once competency requirements are identified and documented, the next logical step is to assess whether the required competencies are possessed by a particular candidate. Assessments should be valid, reliable, and cost-effective. This requires collecting sufficient and appropriate evidence about candidates' outcomes or capabilities, and judging whether specified performance criteria have been met. According to Jessup (1991), such assessments should be made for every element of competence under conditions as close as possible to those under which it would normally be practised. The evidence should directly relate to the activity described by the competency element, clearly indicate whether the candidate meets the performance criteria, and be sufficient for assessment purposes. The granting of a competency qualification should be determined solely by the attainment of the competency and not the mode of learning, age limits, or prior time spent in education, training, or work. However, these stringent requirements are rarely, if ever, met.

Suggested sources of information for assessment purposes include: samples of work from the workplace; evidence from prior learning; multiple-choice tests; written responses (short answer, extended answer); oral questioning; project reports; assignments; log books, portfolios; self-reports; simulations (e.g., competency tests, skill tests, proficiency

tests, projects/assignments); direct observation of work activities; indirect observation; and supervisor assessments/ratings (Gonczi et al., 1993; Eraut, 1994). Clearly, these sources of information will have varying degrees of applicability to the assessment of professional competencies and capabilities such as knowledge, skills, attitudes, and other attributes. A number of these approaches also are somewhat removed from the ideal of assessment under workplace conditions.

A discussion of specific assessment techniques is outside the scope of this review; however, an analysis prepared on behalf of the Institute of Chartered Accountants in England and Wales (ICAEW, 1991) evaluates competency assessment methods along the following dimensions: reliability, discrimination, content — knowledge, content — analysis, content — original, complexity, teachability, competency-map coverage, resource needs/cost, crammability, technique needs, communication needs, and interactive potential.

After studying competency-based assessment approaches for vocational education teachers, Harris (1993) recommended:

1. Competency assessment should integrate knowledge and skills with their practical application.

2. Competency assessment should be made on evidence gathered on a number of occasions and across a variety of contexts.

3. Assessment practices need to be monitored and reviewed to ensure consistency in the creation and interpretation of evidence.

ATTRIBUTES OF COMPETENCY-BASED APPROACHES TO EDUCATION

Our preceding discussion gives a sense of what competencies are, and how competency requirements are determined and assessed. When these various aspects of competencies are brought together and applied in an educational context, the result can be referred to as a "competency-based education program". According to the U.S.-based National Consortium of Competency-Based Education Centers, a number of criteria define such programs (Burke, Hansen, Houston, and Johnson, 1975; Wolf, 1995), including:

- Competencies are based on an analysis of occupational roles or on a theoretical formulation of occupational responsibilities. Put another way, most competency-based educational approaches have attempted to define successful performance in a particular occupation rather than success in a broader educational or societal context (Kearney, 1994; Wolf, 1995).

- Competency statements or maps describe outcomes expected from the performance of profession-related functions, or those skills and attitudes thought to be essential to the performance of those functions (as opposed to inputs such as information or knowledge).[1] This implies that competency is determined by the person's ability to

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1. This approach to competencies is also often referred to as a "behaviourist" approach. While later writers such as Hager et al. (1994) suggest that this view of competency is discredited, other writers cited in Kerka (1998) state that it is the most influential, and thus is the one referred to here.

achieve the specified outcomes, not the length of time spent in any program or institution. One implication of this is that completion of or enrolment in *any* particular program may not be required, instead, the focus is on demonstration of competence as acquired through whatever means the learner has chosen.

- Competency statements facilitate criterion-referenced rather than norm-referenced assessment — in other words, whether the person can achieve the specified outcomes, not his or her performance relative to others.[2] This also usually means that students are assessed in a binary manner as either "competent" or "not competent".

- Competencies are treated as tentative predictors of professional effectiveness and are subject to continual validation. This implies that competency assessments should preferably be done either in the work environment or in a context that simulates the work environment.

- Competencies are specified and made public prior to instruction.

- The instructional program is derived from and linked to specified competencies.

- Instruction that supports competency development is organized into units of manageable size.

- Instruction is organized and implemented so as to accommodate learner style, sequence preference, pacing, and perceived needs.

- Learner progress is determined by demonstrated competence.

- The extent of the learner's progress is made known to him or her throughout the program.

These criteria describe how to define, disseminate, instruct, assess, and evolve competencies. It is not clear whether it is possible to take only a few of these elements and still characterize the approach as being competency-based education. But, as we will describe in this paper, there are few, if any, examples of a complete implementation of this list of requirements, and even fewer examples of clear success, particularly in professional education and accreditation.

A BRIEF REVIEW OF COMPETENCY-BASED EDUCATION APPROACHES IN THREE COUNTRIES

The literature indicates that three countries have the most experience with competency-based education approaches: the United Kingdom, Australia, and the United States. In the United Kingdom as well as Australia, competency-based education has been primarily implemented on a nationwide basis for vocational training, although vocations have been interpreted quite broadly. In the United States, competency-based approaches have been adopted primarily at the state level with federal agency incentives, and have been mostly

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2. Competency-based approaches, as originally conceived, went somewhat beyond this and required that all of the specified outcomes be achieved in order for a candidate to be viewed as competent.

used to reform education at the high school level or lower, although Wolf (1995) also notes efforts at the postsecondary level, particularly with respect to teacher education.

United Kingdom

Starting in the 1980s, competency-based approaches were implemented nationally in vocational training in response to large increases in youth unemployment, as well as government concerns about the quality of education, a preference for market-based approaches to reform, and a desire for improved national competitiveness. The resulting system has five levels of qualifications or awards, with the lowest level corresponding to entry-level positions, and the highest level corresponding to professional and managerial certifications (Wolf, 1995). The system involves nationally recognized standards identified by employers for each sector or occupational group (Wolf, 1995; Harris, Hugh, Hobart, and Lundberg, 1995). These standards form the basis for awarding national vocational qualifications (NVQs) to students who meet the standards.

An NVQ is intended to provide certification for individuals who wish to demonstrate fitness for a particular career. The NVQs view competence as being contextual to a particular role rather than solely the demonstration of technical skills. It is assumed that an industry consensus can be achieved and elicited for each occupational role as to what competent performance entails (Wolf, 1995).

The UK competency-based approaches originally adhered to a strict outcome-based definition of competency. However, over time, other elements, such as the knowledge underpinning every competence element, were added in response to criticisms that students were able to perform but did not understand what they were doing (Wolf, 1995: 26). As a result, under the NVQ approach, competencies in a domain are organized into units, which are further subdivided into elements. For each element, key topics for the demonstration of knowledge and understanding are listed, as are performance criteria, range statements (which explain the context in which the competencies apply), and the types of evidence that will indicate the achievement of each competency.

Other issues related to the implementation of the NVQs were raised in the early 1990s, but overall the competency-based approach in vocational education at the lower levels of the NVQs has been judged a qualified success. For example, an evaluation of the Scottish system, focusing on the use of competency-based education in vocational training, concluded that the competency-based approach had succeeded in changing the approach to teaching, learning, and assessment; increased access to vocational qualifications; and provided a flexible and progressive system of awards (Gunning, 1993, as cited in Hall, 1994). The evaluation noted that effective competency-based education depended on staff development, quality assurance mechanisms, and regional and local networks. By the mid-1990s most vocations in the United Kingdom had implemented or were implementing competency-based models (Jessup, 1991; Eraut, 1994), and NVQs continue to be based on a competency-based approach.

The use of NVQs in the professions has evolved somewhat differently. According to Mansfield (1989), a narrow view of competence dominated the training infrastructure in the United Kingdom, which in turn drove a development of narrowly focused performance

standards and assessment systems. This may have hampered the creation of competency-based approaches for professions, whose outcomes are often less tangible. Support for this view comes from the statistic that as of 1999, nearly 97 percent of NVQs awarded were for the lower levels of 1–3 (roughly corresponding to entry-level through skilled vocational positions), with relatively little progress in level 4 and 5 NVQs (corresponding to professional education) (Lester, 2000). Lester notes that some changes to the competency-standards design were made in 1999 by the NVQ governing body in an effort to accommodate professional programs, but it is too early to evaluate the success of these efforts. As Lester (2000: 409) states:

> In practice, there is evidence to suggest that NVQs and occupational standards can be effective in capturing some aspects of higher-level work ... provided they are approached holistically rather than in an instrumental or piece-by-piece fashion. Nevertheless, there are issues in applying occupational standards both per se and specifically to "professional" work. ... Higher-level NVQs have been most successful in management, where they have been incorporated in some organizations' management development strategies as well as appealing to some managers as a means of obtaining a practical qualification based on their work rather than on a course or learning programme. Although some professional bodies have been involved in standards development projects through QCA [Qualifications for Curriculum Authority, the UK NVQ standards accreditation and monitoring body] and through the sector-based National Training Organizations that develop the occupational standards, few have made direct use of NVQs and standards for professional accreditation.

Australia

Competency-based approaches to education gathered momentum in Australia in the mid-1980s and the formal introduction of competency-based approaches began in the early 1990s (Harris et al., 1995). In Australia, the National Overseas Office for Skills Recognition (NOOSR) assesses competencies and provides guidance in developing standards, because there is a need to assess the qualifications of the many immigrants Australia receives (Wolf, 1995). The National Training Board is responsible for the endorsement of vocational competencies that are developed by the competency-standards bodies that represent specific industries. Several bodies develop curricula. Education and training providers are registered, have their courses accredited, and are awarded credentials within the National Framework for Recognition of Training and the National Qualifications Framework. As in the United Kingdom, vocational training has been the primary focus for competency-based education, but research on incorporating competency-based approaches in various professions has also taken place by NOOSR for nursing, engineering, and veterinary science, among others. However, universities are explicitly not included in the national plans for competency-based education, and competency-based approaches have had little influence on general courses in schools associated with university preparation, or university education in general, with only a few exceptions (Harris et al., 1995).

The structure of competency standards in Australia is broadly similar to that in the United Kingdom, but curriculum issues were more explicitly considered in the Australian

implementation, and Australian competency standards have tended to be slightly less atom-istic (Harris et al., 1995). Although there was little Australian research on competency-based assessment (Hall, 1994), a number of professions in Australia were moving to competency-based standards, including pharmacy, nursing, architecture, accountancy, engineering, dietetics, occupational therapy, veterinary science, and physiotherapy. However, not all of these implementations have been successful. An analysis of competency requirements for nursing in Australia resulted in such a large number of competencies that assessment proved impractical. An evaluative study of vocational students found that while competency-based training was accepted, there were staff morale issues, and additional time was needed for staff development, testing, and student evaluation (Harris, Barnes, Haines, Hobart, and Candy, 1987).

A Web site maintained by the National Centre for Vocational Education Research (NCVER), Australia's national vocational education and training research and development centre, managed by the state, territory, and federal ministers responsible for vocational educa-tion and training in Australia, states the following:

> Competency-based training (CBT) is now ten years old, but is still a fundamental component of the Australian [vocational] system. NCVER commissioned five projects looking at its effects on course development processes and approaches to delivery, learning processes and the outcomes achieved, providers and workplaces, the work of teachers and trainers and assessment practices. Six publications produced so far cover aspects of this important topic. The reports found that CBT has proved to be a valuable bridge between industry and providers and has significant support from many within industry. It has helped in teaching technical, operational trade skills. It is also effective in imparting procedural knowledge and teaching routine skills. However, its capacity to develop "soft skills" such as flexibility, adaptability and capacities to innovate and accept change, as well as developing transferable skills in learners have been questioned. CBT has raised concern amongst teachers because it has been seen to reduce professional autonomy. Professional development during its intro-duction has also been seen as generally poor. Assessment continues to be a significant issue.

United States

The origins of competency approaches in the United States go back to the 1920s, although the roots of the current movement date back to the mid-1960s, influenced by the work of Elam (1971). The medical profession was the first profession to seriously apply compe-tency-based approaches to both initial training and continuing professional development. However, competency-based approaches have been used primarily for elementary and high school education and for teacher education and certification. This evolved into mini-mum competency testing to ensure that graduating students had specific abilities. Because education is primarily a state and local concern in the United States, competency-based efforts have varied depending on the geographic area. However, through preferential fund-ing, the federal government has been involved in a variety of competency-based initiatives (Wolf, 1995). The somewhat hasty implementation of competency-based approaches in the 1970s led to a backlash that resulted in legal cases that ultimately slowed down the imple-mentation process (Tuxworth, 1989). The variety of definitions and criteria for competency-

based approaches also led to confusion over what constituted competency-based education. Nevertheless, competency-based approaches continue to be used in the United States, especially in vocational education. By 1993 there were 42 states involved in some form of competency-based reform, although not necessarily on a statewide basis (Evans and King, 1994).

Several studies of competency-based education in the United States have been carried out, with mixed findings. For example, some studies of competency approaches in teacher education showed serious problems in the approach, including assumptions that each task should be carried out the same way, and too much focus on discrete items of knowledge and skill, rather than on a holistic approach, in which knowledge and skills must be integrated in order to teach (Scheeres, Gonczi, Hager, and Morley-Warner, 1993). Grant et al. (1979) reviewed nine education programs, and found problems with the specification of competence, the teaching of competence, and assessment. However, their meta-analysis of mastery learning studies (in which students are required to relearn and reattempt areas in which they have not yet attained competence, and which is often incorporated as part of a competency-based education program) showed significantly increased student performance, although students in mastery-learning classes completed fewer courses than those in a control group. Also, an outcome-driven model used in Johnson City, New York since the early 1970s resulted in significant improvement in student performance on standardized tests relative to the test scores of students in counties using different approaches (Evans and King, 1994). In Utah, statewide efforts with an outcome-driven development model also showed improvement in student performance, although projects carried out in Minnesota indicate that low-achieving students appear to benefit more than high-achieving students. Ironically, the successful projects emphasized the learning process to achieve the outcomes rather than the outcomes themselves (Brogan and Brogan, 1994).

COMPETENCY-BASED APPROACHES IN THE ACCOUNTING PROFESSION

In this section, we review competency-based approaches initiated in several countries for either the education or the accreditation of accountants. The approaches reviewed are those implemented in the United Kingdom, Australia and New Zealand, the United States, the Netherlands, and Canada.

United Kingdom

As noted previously, in the United Kingdom, a government project on NVQs was the origin of much of the interest in competency-based approaches, although its relevance to professional-level qualification was unclear. While level five of the NVQ was intended to apply to the professions, its implementation was delayed. There are many critics of the NVQ approach and the ICAEW has indicated that it would not adopt competency-based assessment, despite carrying out a project in this area (Mallinson, 1997).

The Association of Chartered Certified Accountants (ACCA, 1998, 2001) commissioned a competency map based on functional analysis following the NVQ approach. This approach focuses on the roles, tasks, and subtasks performed by accountants in the workplace

(IFAC, 2001: 1). Thus, the ACCA competency map consists of nine key areas subdivided into 68 elements. Of these 68 elements, 4 are mandatory management competencies, 26 are key technical elements, and 38 are nonkey technical elements. To satisfy the ACCA's minimum competence requirements for membership, students must achieve all 4 mandatory management elements, at least 6 of the 26 key technical elements taken from at least two key areas, and 6 additional elements. One departure from the pure functional-analysis approach is the explicit recognition of knowledge and understanding in the functional map. The underlying competency definition appears to focus on competencies as observable skills, with less consideration of personal attributes.

Australia and New Zealand

In Australia, one of the leading proponents of the competency approach in accounting is W. P. Birkett of the University of New South Wales (e.g., Birkett, undated). The Institute of Chartered Accountants in Australia, the Institute of Chartered Accountants of New Zealand, and the Australian Society of Certified Public Accountants (ASCPA) are applying Birkett's work in their competency projects (e.g., ASCPA, 1996). Their framework identifies about a dozen content areas (courses) covering general education, accounting, and business-related areas, and five skill areas, including routine,[3] analytic/design,[4] appreciative,[5] personal,[6] and interpersonal skills.[7]

This model appears to be a hybrid approach. The underlying competency definition appears to include both skills and personal attributes, but the documents developed to date appear to take a fairly atomistic view of competency, and provide a secondary role for knowledge.

United States

In July 1999 the board of the AICPA endorsed the development of an online competency framework for academic use, called the AICPA Core Competency Framework for Entry

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3. Routine skills include written communication and information technology skills.
4. Analytic/design skills include: identify, find, evaluate, organize, and manage information and evidence; initiate and conduct research; reason logically and analyze and conceptualize issues; solve problems and construct arguments; interpret data and reports; and engage in ethical reasoning.
5. Appreciative skills include: receive, evaluate, and react to new ideas; adapt and respond positively to challenges; make judgements derived from one's own value framework; think and act critically; know what questions to ask; engage in lifelong learning; recognize own strengths and limitations; appreciate ethical dimensions of situations; apply disciplinary and multidisciplinary perspectives; and appreciate processes of professional adaptation and behaviour.
6. Personal skills include: commitment to think and behave ethically; flexibility in new/different situations; act strategically; think and act independently; be focused on outcomes; tolerate ambiguity; and think creatively.
7. Interpersonal skills include: listen effectively; present, discuss, and defend views; transfer and receive knowledge; negotiate with people from different backgrounds and with different value systems; understand group dynamics; and collaborate with colleagues.

into the Accounting Profession (AICPA, 1999). This model adds to competency-based frameworks already created by the AICPA for use in self-assessment and career planning. The framework identifies core functional, personal, and broad business perspective competencies that are considered universally applicable to a diverse and expanding set of accounting career options. To be flexible, course listings are not prescribed and competencies are not ranked in any way. This is phase one of a multiphase project. Subsequent phases are intended to produce sample strategies and best practice classroom techniques that can be used to help develop the desired competencies and curriculum evaluation tools.

The model includes six units of functional competencies, seven units of personal competencies, and eight units under the heading of broad business perspectives.[8] For each unit a number of elements are identified. The underlying competency definition appears to consider both skills and personal attributes as competencies, with no explicit role for knowledge. Competencies are regarded as the skills themselves rather than outcomes from applying the skills. The approach appears to take a more holistic view of competencies, although this may be due to the preliminary nature of the framework.

The Netherlands

In the Netherlands, the Limperg Institute (1999) developed a framework incorporating generic,[9] cognitive,[10] and behavioural[11] skills into competencies for accounting professionals. The underlying competency definition explicitly considers knowledge and personal attributes as competencies, views competencies as activities and/or skills rather than the results of activities and/or skills, and is relatively holistic. A noteworthy aspect of the cognitive competencies is that they go beyond knowledge and understanding, the two lowest levels in Bloom's (1956) taxonomy of learning objectives, to embrace the higher objectives of application, analysis, synthesis, and evaluation. These higher cognitive levels are particularly suitable for incorporation into competency models in the professions, as suggested by Eraut (1994) and others. The framework was tested in an accounting context using focus groups, but to our knowledge it is not actually being applied in practice.

Canada

The Canadian Institute of Chartered Accountants (CICA, 2001) has a project in place to re-engineer its accounting education system. A competency map has been published including lists of specific competencies, range statements defining normal circumstances to which the competencies apply, and three levels of performance (comprehends, detects, performs) that appear to be an adaptation of the six levels in Bloom's (1956) taxonomy. The framework consists of two broad categories: pervasive qualities and technical expertise/ specific competencies. Pervasive qualities contains three subcategories: (1) CA ethical

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8. The complete model can be obtained from http://www.aicpa.org/edu/corecomp.htm.
9. Professional values and learning.
10. Knowledge; understanding; application; analysis; synthesis; and evaluation.
11. Achievement and action; personal effectiveness; helping and service competencies; interpersonal impact and influence; and organizational competencies.

behaviour and professionalism, comprising 7 units; (2) personal attributes, comprising 8 units; and (3) professional skills, comprising 10 units, totaling 47 elements. Technical competencies are divided into six areas, with 5 to 7 units in each area, totaling 109 elements.

While some have classified the CICA competency map as an outcome-based competency approach (e.g., IFAC, 2001; CICA, 2001), to us the competency map appears to be a complex hybrid of several other models described previously. The underlying competency definition includes personal attributes as well as skills, proposes that knowledge plays a secondary role, views competencies as observable skills rather than skill outcomes, and takes an atomistic view of competencies.

The Society of Management Accountants of Canada (SMAC) is in the process of updating its competency standards. A 1996 document (SMAC, 1996) views competency as a three-dimensional framework, with technical and personal competencies making up two of the dimensions, which can be demonstrated in the third dimension involving operational, management, and leadership situations. This competency framework has been incorporated into the SMAC entrance examination syllabus and the entrance examination, which has been designed to test cognitive and behavioural skills (viewed as personal competencies) and technical competencies (such as treasury management, tax management, and advanced management practices). The SMAC has also provided online tools to CMAs to conduct self-analysis of personal and technical competencies after accreditation. The online tools suggest actions individuals should take to develop the competencies required for their career goals that the self-analysis suggests are lacking.

The Certified General Accountants of Canada has also adopted a competency-based approach (CGA Canada, 1999). CGA Canada has provided Web tools that suggest competencies for particular career paths, assist members in performing self-analysis for those competencies, and provide guidance as to the resources available to strengthen competencies that might be lacking. The goal is to facilitate the ability of members to self-assess and create a career-development plan. As envisioned by CGA Canada, the competencies are clustered into four areas: (1) functional expertise (such as taxation, auditing, and information technology); (2) applied business/management skills (such as communications and problem solving); (3) personal management skills (such as motivation, networking, and interpersonal skills); and (4) leadership skills (such as negotiation skills, coaching, and integrity and trustworthiness). Each competency has three associated proficiency levels that describe superior performance at that level of proficiency. The most basic level of proficiency describes the level of competencies expected at entry into the profession, while the third level of proficiency demonstrates mastery of the competency area. CGA Canada has provided some templates for common career paths, along with the suggested competencies and expected proficiency of each competency for the particular career. It is not necessary to achieve the third level of proficiency for every competency; rather, the degree of proficiency required is job-specific.

By way of summary, we see that most of the competency models proposed by accounting associations include personal attributes, interpersonal skills, and professional skills, as well as outcomes. Several models incorporate cognitive skills based on, or derived from, Bloom's (1956) taxonomy. In addition, many of the competency models

maintain traditional content areas such as accounting, auditing, and taxation. The models are targeted at accreditation rather than education, and so tend to be difficult to evaluate relative to the competency-based education program criteria we described earlier. However, a review of the materials related to these models suggests that few, if any, of the associations currently plan to entirely decouple the accreditation process from specified education programs; and it appears likely that assessment will be based primarily on written responses. Thus, virtually all of the models could be considered hybrids rather than purely outcome-based competency approaches. These hybrid models are very comprehensive, but also very complex, with numerous interacting dimensions.

RESEARCH QUESTIONS

This section identifies a number of questions that we have developed based on our review of the existing literature on competency-based approaches. Questions 1–4 relate to the overall utility of competency-based approaches for professional education or accreditation, while questions 5–14 relate to competency specification and assessment. For each question, we provide some discussion of the issue on the basis of our synthesis of the available literature, but empirical data to strongly support any conclusions is lacking. We believe that these questions need to be rigorously investigated to objectively evaluate the strengths and weaknesses of competency-based education and assessment for the accounting profession.

Research Questions Regarding the Overall Utility of Competency-Based Approaches for Professional Education

1. Will a Competency-Based Approach Lead to Improved Linkages between Education and Practice?

Historically, competency-based approaches in education and training were often implemented in response to documented problems with the existing education system's development of students to fit a given occupational role. While the bias of educators is to certify expertise on the basis of educational rather than vocational performance, the assessment of theoretical knowledge to determine fitness to engage in the behaviours required by a particular vocation is highly suspect and lacking in face validity (Wolf, 1995). A meta-analysis by Samson, Graue, Weinstein, and Walberg (1984) of studies performed since 1950 that examine the correlation between performance in degree courses and occupational performance found a mean correlation of 0.155 and a median of 0.10. The highest correlations (for nursing and civil service/military occupations) were less than 0.27. Priestly (1982), Lindquist (1951), and Nuttall (1987) all note the importance of assessing the skills or attributes directly related to the relevant behaviour.

In general, the desire to improve both the accountability of the education system and international competitiveness has been a key impetus for the introduction of competency-based approaches in the countries that have adopted them (Harris et al., 1995). Spady (1994) felt it was crucial that students be educated and assessed according to clear criteria that reflected the expectations of what they should be able to accomplish by graduation.

He argued that this approach would improve education by ensuring that students and teachers clearly understood what was required of them. Comparisons of graduates' performance in competency-based assessments could also provide useful information for improving the quality of courses. Scheeres et al. (1993) express sentiments similar to those of Harris et al. (1995) and Spady (1994), in an Australian professional education context, and also note advantages for continuing professional education.

The involvement of industry in setting the competency standards is intended to result in students who are better equipped for their vocation. The interaction between industry and educators should provide better communication between educational institutions and employers as to what knowledge and abilities are currently relevant in practice.

In many approaches to determining competencies, input is solicited only from practitioners. This has both good and bad aspects. A good aspect is that competency requirements based on such methods are realistic and reflect actual practice, rather than being imagined or purely theoretical. However, the resulting competency requirements can be unduly limited by what practice is, rather than what it ought to be.

Another concern expressed by some writers such as Hyland (1994) is that the exclusively practitioner/industry approach may give a high degree of control over job specification and function exclusively to these groups. Other papers such as Schwarz and Cavener (1994), Griffin (1993), and Spady (1994) have noted the need for a number of stakeholders to be involved in the competency determination process, including educators and students. In the case of a profession, members of the public whose interests are to be protected may also have legitimate rights to be included in the determination of competencies.

In addition, the emphasis on focusing solely on what is required for success from a particular occupational role could be an issue for professions such as public accounting, which has an orientation toward the public interest. For example, demonstration of certain accounting competencies (e.g., clever "creative accounting practices") could be constrained by ethical considerations. However, ethical considerations can be complex and difficult to observe in outcomes related to specific tasks in a competency framework.

2. Will a Competency-Based Approach Lead to Greater Student Satisfaction?

Competency-based approaches attempt to find out what people are capable of doing, rather than focusing on what people cannot do (Bailey, 1993, quoted in Hall, 1994). The emphasis is on working with students to achieve the competencies, rather than treating success or failure on examinations as a goal itself. The transparency of the assessment standards may result in students feeling that assessment is fairer and less subject to "trickery" than some traditional approaches. The link of competency approaches to mastery learning, whereby students must master certain skills before being able to proceed further, can result in students having improved overall understanding and performance, as well as a more rewarding learning experience (Owen, 1995).

3. Will a Competency-Based Approach Lead to Improvements in Professional Performance?

Part of the difficulty in assessing improvements in overall professional performance is defining how that performance should be measured. Depending on what aspect of performance is being considered, evidence of improvement resulting from competency-based approaches is mixed. Owen (1995) indicates that educators question the ability of students to transfer knowledge to new situations. An evaluation done during 1988–90 of one component of the Scottish competency-based education system, based on the views of students, staff, and employers, found that core skills such as communication, problem solving, interpersonal skills, numeracy, and information technology improved (Harris, 1993). There have also been studies that found improved student performance in the United States.

4. Will a Competency-Based Approach Increase Access into the Canadian Accounting Profession for Those with Alternative Qualifications (e.g., Practitioners without Formal Education in Some Competencies, Immigrants, Cross-Over by Other Professionals)?

In the United Kingdom, the move to a competency-based approach was seen as important in improving access to education and moving control over education away from elite educational and professional groups to industry and employment-based government groups (Owen, 1995). Individuals would earn qualifications on the basis of demonstrable performance rather than on the basis of logged time spent following any particular curriculum or exam results unrelated to employment requirements. The competency approach removed the need for students to attend particular institutions or training programs, since the awarding of competencies was based on outcomes rather than on particular study programs.

The Australian method of using competencies to assess the qualifications of immigrants is similarly motivated: the idea is that as long as the candidate can demonstrate the required skills, the program or route by which they acquired those skills is irrelevant (Scheeres et al., 1993).

Competency-based approaches may be helpful in certifying atypical applicants by helping to clarify the requirements of a particular profession, and by helping to assess the relevance of existing qualifications with respect to professional requirements. Throughout the world there are numerous accounting bodies, and professional accountants often wish to transfer membership from one body to another. Competency maps may represent an alternative method for qualifying such membership transfers.

Research Questions Regarding Competency Specification and Assessment

5. Can Competence Be Reasonably Inferred from Performance?

In a purely outcome-based competency approach, formal assessments should be performed in the work environment or, alternatively, in a context that simulates the work environment, focusing on the observed performance of the individual in carrying out a particular task. Such performance evidence is often assumed to offer the most valid indicator of competence

and seems reasonably suited to vocational training. There is a general consensus among measurement experts that work samples, simulations, and what the competence movement refers to as "performance assessments" will be better at measuring and predicting vocational skills than will paper-and-pencil tests (Wolf, 1995).

However, the applicability of these findings to professional training is questionable. Smith's (1991) study of the relationship between work sample tests and subsequent performance found that such tests are best suited to predicting performance in specific applied fields and are less likely to be appropriate in selecting people for general training or for occupations in which outcomes cannot be defined in a highly specific fashion. This suggests that outcome-based competency assessment may have poor predictive validity for professional competence assessment. Eraut (1994) documents case studies of 11 professional groups in four categories: engineering and construction, health and caring professions, teaching, and business and management. He finds that performance-based evidence is not a sufficient basis for assessment of competencies. Some reasons for this included:

- The most available evidence was not self-sufficient evidence.

- The wide knowledge base expected from a qualified professional may not be evident in a small number of cases that can be observed directly in a short period of time, and professional responsibility may not be evident for the same reasons. Thus, observed situations need to be extended to a wider range.

- In a professional context (as opposed to a vocational one) many outcomes develop over time and are not readily observable.

- Important facets of multidimensional outcomes are not observable at the same time as other facets of those outcomes.

- Competencies involve inferences about cognitive processes and knowledge beyond that observed or observable in a specific instance.

- Professional competencies often involve consideration of and judgements about ethical issues that may not be easily converted into performance measures.

The available performance evidence could thus result in judgements of professional competencies that are invalid, unreliable, and lacking in credibility.

Eraut (1994) recommends supplementing performance evidence with *capability* evidence, which includes knowledge and understanding of concepts, theories, facts, and procedures; personal skills and qualities required for a professional approach to the conduct of work; and cognitive processes that constitute professional thinking. In addition, Eraut (1994) defines a professional's competence as having at least two dimensions: scope and quality. The scope dimension concerns the range of roles, tasks, and situations for which competence is established. The quality dimension concerns the progression through several levels, from student to novice to proficient practitioner to specialist and, ultimately for some, to being an acknowledged expert in an area of practice. This is termed *capability* assessment by Eraut (1994) to distinguish it from *outcome* assessment.

Messick (1984) further distinguishes between competence and performance. He believes that competence refers to what a person knows and what he or she can do under ideal circumstances, whereas performance is what is actually observed under existing circumstances. Ideal circumstances provide an even playing field for all those being assessed, whereas existing circumstances create highly variable settings that can unfairly prevent some students' competence from being revealed. This possibility creates a competence–performance gap that must be bridged by assessment methods robust enough to distinguish whether the observed performance is indicative of the competence of the candidate whose performance is being assessed or is actually determined by particular circumstances. If circumstances rather than candidate abilities lead to the failure to achieve one or more competency standards, the resulting designation of the candidate as "not competent" raises validity issues about the assessment process.

Another problem that may arise in assessing professional competence if individual performance is assessed is that problem solving in practice often involves teams, consultative processes, and so on. Focusing on individual performance in such a work environment can be misleading.

6. Can Knowledge Be Omitted from Professional Accounting Competency Maps?

Inconsistent definitions of what constitutes a competency have led to various problems and conflicts among proponents as to what should and should not be considered a competency. One particular issue that has proven troublesome for competency-based approaches is whether knowledge should be included within the competency standards.

It is widely recognized that knowledge by itself does not guarantee competent professional performance; for example, Klemp (1977) found that the amount of knowledge of a content area is generally unrelated to superior, or even minimally acceptable, performance in an occupation.

The original tendency toward a strict behavioural analysis in competency approaches led to a serious downplaying of knowledge and understanding, as well as any other cognitive aspects of performance (Ashworth, 1992). Earlier approaches to competency thus eschewed inclusion of knowledge because it diluted the desired "outcomes-based" approach to specification. As a result, it is often unclear how knowledge fits into a particular competency model. While Jessup (1991: 121) claims that "knowledge may be elicited as an abstraction from behavior", it is not obvious that all relevant knowledge can be inferred in this manner, particularly in judging professional performance.

Carr (1993), in discussing competency approaches to the education of teachers, argues that professional competence must start from accepting that education begins with knowledge and understanding, which in turn are applied appropriately to professional problems by the candidate. In this view, knowledge must precede ability. Carr goes on to note that knowledge in a competency context is more likely to be of a practical kind (in the sense of being able to improve) rather than a theoretical kind (in the sense of determining truth). In Carr's view, "professional competence stands to be evaluated just as much in terms of a [practitioner's] understanding and judgment concerning what she is doing as in terms of the bare causal efficacy of what she does" (Carr, 1993: 270).

Over time, even such purist approaches as the United Kingdom's NVQ standards aimed at vocational education have added knowledge and comprehension to their competency specifications. This may be due in part to views such as those of Carr (1993) and in part due to the limitations and costs of performance-based assessment approaches, causing a partial retreat from purely outcome-oriented approaches.

7. Must All Competencies Identified in a Competency Map Be Assessed?

Some authors believe that to provide assurance to the public and employers that candidates are capable of meeting expectations in all areas, formal competency assessment should ensure that all mandatory competencies have been achieved for the candidate to be certified as competent (Jessup, 1991; Wolf, 1995: 21). While the list of mandatory competencies could be much shorter than the list of comprehensive competencies possessed by many practitioners, the desire of numerous stakeholders to see their favoured competencies reflected in a competency map will lead to longer lists of competencies. A comprehensive, but holistic, competency statement may satisfy all stakeholders without overwhelming them with detail.

An approach to keeping competency models manageable is to identify only those competencies that are most crucial to getting the results required; the model may not need to be complete, but should be highly relevant to much of the work required (McLagan, 1997). IFAC (2001) notes that the work accountants undertake is very broad and expanding; thus, one candidate is unlikely to possess all the competencies found in practice. This implies that only a subset of the identified competencies would be assessed for any individual. A version of this approach that has been recently adopted by the ACCA (2001) identifies a few (4 of 68) mandatory competencies and many (64 of 68) optional ones.

Griffin (1993) argues for the use of judgement to deal with and synthesize the volume of context and assessment information, suggesting that it is better to focus on more complex tasks and identify levels of competence defined by a candidate's performance of increasingly complex tasks. This approach suggests using tasks ranging in degrees of complexity so that an individual's performance of each task does not need to be assessed to understand an individual's progress. Rather, a person can be assessed by selecting particular tasks from those on the continuum of tasks to indicate the level of competence or proficiency reached, depending on which tasks are adequately performed.

8. If the Goal of a Competency Map Is Assessment of Candidates' Qualifications, Is a Holistic Approach to Specifying Competencies Preferable to the Atomistic Approach?

The most common problem mentioned in the competency literature is the tendency to create atomistic, overly detailed lists of tasks and subtasks in order to completely specify each competency (e.g., Hyland, 1994; Gonczi et al., 1990; Ashworth and Saxton, 1990; Scheeres et al., 1993; Tuxworth, 1989; Wolf, 1995). One reason for this is that competency assessment requires the collection of evidence by one or more means and the judgement of that evidence to infer whether a person is competent (Mitchell, 1989). Many

competency-based approaches have therefore continually added detail in an effort to improve reliability of assessment judgments.

However, critics suggest that the resulting detailed lists are unmanageable and ultimately infeasible to implement. As Wolf (1995: 55) notes, "[t]he attempt to map out free-standing content and standards leads, again and again, to a never-ending spiral of specification". There are several reasons stated by critics for their concern. One is that excessively detailed standards are confusing to the reader and they miscommunicate the essence of the competency (Monjan and Gassner, 1979). In particular, Monjan and Gassner caution that breaking down competencies into detailed lists of tasks may distort the original behaviour by disrupting interrelationships. It also leads to a focus on behaviour components rather than the behaviour itself, and thus result in students who can demonstrate components but not the integrated skill. Klemp (1977) and Ashworth and Saxton (1990) note that it is often the case that individual competencies need to be integrated to provide effective performance, and recommends testing of competencies in a form that enables compensatory competencies to operate. The presence of functionally equivalent outcomes, rather than the level of individual competencies, should be measured because the pattern of results and not the sum of scores provides the best picture of overall individual competence.

Another reason stated for critics' concern is that long, detailed lists of competencies encourage a check-off approach to competency assessment rather than a more holistic evaluation. Such an approach may be suited to competency assessment in occupations where direct observation and checking off task performance are possible and meaningful, but it may not be well suited to the assessment of professional work (Gonczi et al., 1990).

Finally, Monjan and Gassner (1979) suggest that overly detailed lists decrease students' understanding of the evaluation process. Students may also feel overwhelmed by what they perceive as an unreasonable amount of material, and faculty may end up being defensive and write standards to try to prevent students from "getting around" the curriculum, when standards prescribe what can be evaluated. The creation of atomistic standards may ultimately degenerate into legalistic haggling between students and faculty.

One approach to resolving this issue is proposed by Hager et al. (1994). They argue that some degree of atomism is acceptable if it is accompanied by a suitable degree of holism. For example, competence may be inferred from the performance of a few relatively complex and demanding activities rather than checking off many detailed competencies. Hager et al. (1994) suggest that a typical profession should involve no more than 30–40 key professional activities. They also recommend that competency standards involve an integration of the key professional activities and the desired attributes of the individuals.

9. If the Goal of a Competency Map Is Communication with Stakeholders Rather than Assessment, Should the Map Be Holistic or Atomistic?

If competency-based assessment is not the goal of creating a list of competencies (for example, if the list is used primarily for communication with stakeholders or curriculum design), then there may be less incentive to add levels of detail in an attempt to facilitate

reliable assessments. If the importance of competencies as a communication tool is emphasized, then developing voluminous documents that are both time-consuming and difficult to comprehend is likely to be viewed as counterproductive. On the other hand, if the competency map is to be used for curriculum design rather than assessment, then detailed lists can be used for effective planning without imposing excessive costs upon workplace assessment, as will be discussed later.

10. Will Workplace Assessments Be Reliable?

As noted previously, the preference for workplace settings or simulations thereof is based on the belief in the superior validity of workplace-related evidence, such as observations of workplace performance and evaluations of work portfolios. However, evaluations of workplace assessment methods have tended to be highly critical, identifying many reliability problems (Mansfield, 1989). For example, a study by Johnson (1995) of the level of consistency achieved when judging NVQ competencies for a specific business administration course found that the outcomes based on the same evidence for the same students awarded by experienced and qualified assessors varied considerably. Assessors were found to interpret the definition of competence provided in the official standard differently, and to judge the sufficiency and acceptability of the evidence pertaining to the competency differently. Assessors also seemed to make use of idiosyncratic competence elements in their judgements that were not part of the official standard, and on occasion they used an assessment approach more appropriate for a norm-referenced approach than for a criterion-referenced approach. (Recall that the section on attributes of competency-based education approaches indicated that competency-based assessment should be criterion-referenced.) Johnson (1995) notes that the role of an internal verifier was added to the assessment approach to provide greater quality control and improved consistency. However, the time required to fulfill this role, in addition to the effort required to perform the basic assessment, added to the assessment cost or reduced the time available to teach. A 1993 employment department evaluation of NVQ assessment also reported a concern with the reliability of assessment by the assessors themselves (Hyland, 1994). Wolf (1995) similarly comments on numerous problems with inconsistencies in competency assessment. Also, in some cases assessors were not in fact assessing candidates across the entire domain.

11. Is a Binary ("Competent/Not Competent") Assessment Acceptable?

The inherent nature of professional endeavour requires lifelong learning and continual improvement. Therefore, a competency certification approach that has some means to measure and reflect this continual improvement in performance may be preferable to a dichotomous "competent/not competent" approach. This view is echoed by Hyland (1994), who notes the need for a model that recognizes continual development as a crucial part of professional performance.

Eraut (1994) recommends use of Dreyfus and Dreyfus's (1986) five-level model, comprising the levels: novice, advanced beginner, competent, proficient, and expert. This model is more in keeping with the view that professional learning is continual and lifelong

(Hyland, 1994). Such models have been applied in other professional fields such as nursing, teaching, medicine, and social work. As Hyland (1994) notes, a significant part of professional education is concerned with improving practice given a changing environment rather than focusing on current skills. Pottinger (1979) has similar views, and notes that the domain of performance for professions is dynamic. He suggests that the knowledge, skills, abilities, and other characteristics that form competence at one professional level may be quite different at another professional level. For example, the competencies expected of entry-level professional accountants could differ dramatically from those of practitioners with three years of post-qualification experience in a particular area of accounting practice.

Another issue relates to Bloom's (1956) well-known taxonomy of learning, which identifies six discrete levels on a continuum of cognitive competencies: knowledge, understanding, application, analysis, synthesis, and evaluation. On the basis of our review, there has not been any empirical calibration of these competencies against performance requirements in the accounting profession. For example, as noted previously, the CICA (2001) competency map identifies the following three levels of competency: comprehends, detects, and performs. These levels appear to represent the three lower levels of Bloom's six competencies. However, the descriptions of specific competency elements suggest that for many competency areas the two highest levels of Bloom's taxonomy, synthesis and evaluation, could actually represent the lowest cognitive competency levels acceptable for entry into the accounting profession.

12. Will the Cost of Workplace Assessment Undermine the Competency-Based Approach?

The popularity of knowledge-based assessment is at least in part due to knowledge being relatively easy and cheap to assess on a mass scale. Written tests and their assessment can be standardized, and they can be administered in an apparently fair manner. Objectivity and fairness are important considerations because candidates whose entry to vocations and professions is prevented by test results have recourse to the courts.

The costs of collecting evidence on workplace performance tend to be higher than the costs of standardized-knowledge testing. Attempts to exhaustively enumerate all of the criteria for evaluation can be extremely time-consuming. Workplace assessment can be costly and disruptive. The performance assessment system may require an expensive infrastructure of trained assessors since workplace supervisors often do not have the time, incentive, or training to perform reliable assessments. Hall (1994) notes in this context that the costs of switching to a competency-based approach in Australia have never been calculated.

Some evidence about these costs comes from a survey of assessors involved in NVQs (Hyland, 1994). The assessors surveyed noted that logging the evidence was very time-consuming and the assessment load was heavy, with a correspondingly heavy load of paperwork. Costs may also be borne by the students, who must collect evidence to show that they have satisfied the requirements of the NVQs, which may also curtail their learning choices, because some approaches are more conducive to assessment than others. Similar problems were reported in connection with the implementation of outcome-based education

(OBE) in one U.S. school: large increases in time spent grading and regrading work; problems in motivating students to complete work within a reasonable time period when deadlines were removed; hostility from parent groups; and insufficient time to meet the needs of remedial students in order to help them achieve the standards. The majority of teachers did not feel that the OBE approach had improved results (Schwarz and Cavener, 1994).

Another issue that can add to the cost of workplace assessment is the need to create incentives for the most appropriate assessors to actually carry out the assessments. Actual supervisors would be ideal, but the assessment takes time and training, and requires consistency and equity, with the result that the most desirable assessors are often unwilling or unable to perform the assessment. Providing appropriate incentives to overcome such obstacles can add significant costs to workplace assessments.

13. Are a Variety of Assessment Techniques Required?

As a consequence of the attempts to deal with the complexities and costs of assessment, there have been many compromises made in the evidence-gathering part of the assessment process. The problems with the validity, reliability, and cost of a workplace assessment approach, or simulations thereof, lead to the conclusion that they cannot be exclusively relied on to the degree that proponents of competency-based assessment might suggest.

This does not mean that performance assessment should be abandoned completely in favour of traditional pencil-and-paper–type tests. Rather, as Eraut (1994) and Hager et al. (1994) recommend, it may be that a variety of assessment techniques should be used, including simulations of the workplace, traditional testing techniques, and other methods. However, this argument can be taken too far and ultimately degenerate into retaining only traditional assessment techniques. For example, Hager et al. (1994) and Ramsay (1993) note the need to go beyond assessing outcomes, and call for a hybrid approach that takes into account competence, learning objectives, and problem-solving objectives. Such approaches should consider the processes by which the outcomes are achieved; tests of relevant knowledge, especially application and synthesis tests, may be quite appropriate. Hager et al. (1994) also suggest that attitudes and values may constitute performance criteria. Continuing this line of reasoning, Mitchell (1989) notes that knowledge is a form of evidence that is used to address the difficulties of collecting evidence across all the situations in which competence is to be demonstrated. By relying on this chain of thinking, some group may justify using traditional knowledge-based testing as a form of "competency-based assessment".

14. Will a Competency-Based Approach that Emphasizes Learning over Assessment Be More Successful?

One of the early objectives of competency approaches was to enable students to complete their qualifications anywhere, and in any way, so long as they achieve the assessment standards. Another key objective was to improve the quality of the resulting students. Some successes were achieved. However, the limited resources available in many educational and training contexts, combined with the need for assessment across all competency elements, resulted in a tendency to emphasize assessment over learning and curriculum

(Hyland, 1994). In other words, the competency approach as implemented in a number of cases has focused exclusively on the ends and ignored the means. Hyland's (1994) survey of educators involved in NVQs found a belief that there had been a lowering of standards. He attributes this problem to the tendency of some competency approaches to lead to a "teaching to the test" focus. The overemphasis on assessment at the expense of learning was noted early on in examining competency-based approaches. For example, Madaus and Airasian (1977) note that any objective-based certification has a tendency to result in too much focus on the starting and ending points of instruction, with insufficient concern for the process of education.

It is somewhat troubling that this underlying philosophy of emphasizing outcomes rather than the learning process incorporated into many competency approaches is at odds with the industry trends for quality improvement, which focus on improving process as the key mechanism for improving outcome. This focus also conflicts with other theories of adult learning, especially that of experiential learning (Hyland, 1994), whose key features are: (1) an emphasis on learning as a continuing process grounded in experience; (2) the holistic process of adaptation through reconciliation of conflicts and opposing viewpoints; and (3) the idea that learning should be regarded as the creation of knowledge rather than simply the recall of facts and norms (Kolb, 1993). Other models of professional education such as the "reflective practitioner" (Schon, 1983) are noted as having similar principles.

A related problem to the "ends over means" issue may be an overemphasis on the observable because of the emphasis on performance evidence in many assessment techniques — that is, to focus on teaching those aspects of behaviour that are readily defined and measured and to exclude less tangible, but potentially equally important, aspects of schooling (Madaus and Airasian, 1977). Related criticisms include a lack of theoretical knowledge in the knowledge components of competency standards (Hyland, 1994).

One consequence of downplaying the learning process is a view that students should be free to choose whatever approach they wish to acquire the necessary competencies. While this has some desirable aspects, not all students are autonomous learners. As a result, some students may take long periods of time to complete certification because of procrastination. Other students may have difficulty in structuring their learning to achieve the competency standards (Hyland, 1994).

These issues suggest that learning and curriculum considerations could, but should not, take a back seat to the primary goal of competency achievement (that is, they could if ends rather than means are emphasized, but may not if learning and curriculum development are given due consideration). Hall (1994) suggests that assessment should be regarded as part of the learning process rather than separate, and in this sense should make up part (but not all) of the curriculum. Challis (1993, as quoted in Hyland, 1994) suggests that competencies should be treated as "learning objectives" rather than product specifications. Such an approach also leaves room for social and ethical values that are emphasized as being an important part of professionalism (Carr, 1992). Learning objectives should also take into account Klemp's (1977) finding that three cognitive skills were related to competent performance across many occupations: (1) the ability to see themes in diverse information and to organize and communicate differences among the information types;

(2) the ability to conceptualize the many sides of a controversial issues; and (3) the ability to learn from experience.

CONCLUSIONS

Although there is continued enthusiasm for competency-based approaches in many quarters, the literature reviewed to date indicates a number of weaknesses, including a variety of competency definitions, challenges in applying competency concepts to professional education, and assessment pitfalls. The cautions mentioned by even the advocates of competency approaches suggest that failure to clearly consider how the competencies will be defined, elicited, specified, and assessed will result in expensive frameworks that are unusable and unsupported by stakeholders.

The problem of specifying what students must be able to do, while at the same time avoiding the creation of documents that are so detailed that their volume makes them unusable, is a key challenge for most competency models. A small set of holistic competencies may be preferable to the atomistic approach, which can be unwieldy, impractical, counterproductive to learning, and expensive. However, although holistic competencies may be easier to communicate, they may be no easier to assess than atomistic competencies.

Similarly, the role of knowledge in competency-based approaches for professional education must also be carefully considered. Our findings suggest that knowledge and assessment thereof should be an integral part of competency specifications for professionals. However, this will tend to make competency maps larger, and a variety of assessment techniques must be used to ensure that accreditation does not simply revert to traditional testing methods that inadequately consider the ability of candidates to apply their knowledge.

Upon reflecting on the literature covered in this review, we question whether purely outcome-based competency models are sufficiently well developed to be used "literally" for candidate certification or curriculum design in the accounting profession because of the significant limitations of competency definitions and assessment processes. Much of the benefit of creating competency maps seems to flow from getting input from practitioners and other stakeholders to better inform academics, examiners, and assessors about the nature of current practice and performance criteria derived from practice. Better information can improve the linkage between such performance criteria and professional education programs, examinations, and other assessments. Thus, the development of competency statements or "maps", especially in a more holistic form, may be a very useful periodic checkpoint for stakeholders who are jointly determining what is important and communicating these findings.

According to Hall (1994), the move to competency-based education and certification parallels the move several decades ago to base education on behavioural objectives. There was little research support for the approach, but it resulted in the wholesale rewriting of curricula, the restructuring of assessment, and a multimillion-dollar industry. However, it also forced people to consider what they were trying to achieve, and allowed students the right to know how they would be evaluated. In the long run, the likely outcomes of the experimentation with competency-based approaches in accounting education will be better

communication among all stakeholders, greater transparency of qualification requirements, improved assessment techniques, and, hopefully, a revitalization of accounting curricula and improvements in accounting practice. However, in the interim, there are a number of issues that will need to be debated and researched.

CONDENSÉ

De nombreuses associations comptables professionnelles s'intéressent depuis quelques années aux exigences professionnelles basées sur les compétences à des fins d'accréditation professionnelle. L'on entend habituellement par *compétence* la capacité d'exécuter une tâche en respectant une norme établie, dans un contexte de travail concret (IFAC, 2001, p. 5). Aborder l'admission à une profession sous l'angle des compétences nous amène à définir les attentes en termes de résultats (c'est-à-dire ce que peut accomplir une personne) plutôt qu'en termes de connaissances ou d'autres aptitudes. Bien que les objectifs sous-jacents des méthodes basées sur les compétences soient louables et trouvent de nombreux appuis chez les enseignants et les praticiens, la validité apparente de ces méthodes, à première vue, tend à faire ressortir des arguments favorables à leur application qui reposent davantage sur l'idéologie que sur une analyse objective de leurs vertus réelles. De fait, les preuves de leur efficacité sont rares. Grâce à la recension des écrits portant sur les idées et les expériences sous-jacentes à la formation et à l'évaluation basées sur les compétences, les auteurs souhaitent contribuer à l'évaluation objective des avantages de cette méthode aux fins de l'accréditation comptable professionnelle.

Pour procéder à cette recension, les auteurs ont effectué des recherches en ligne dans les index d'ouvrages des domaines de la formation et des affaires. Ils ont retracé des articles et des monographies publiés depuis le milieu des années 70 jusqu'à aujourd'hui, provenant de diverses sources universitaires et professionnelles. L'analyse des auteurs porte sur les écrits relatifs à la compétence dans des domaines qui ont ou n'ont pas à voir avec la comptabilité, car les méthodes basées sur les compétences font l'objet d'expériences depuis plusieurs décennies dans de nombreux autres domaines. Les essais et les monographies recensés au fil de la recherche, au départ, ont ensuite été utilisés pour déterminer les écrits supplémentaires que devaient dépouiller les auteurs. Ces derniers ont répété le processus jusqu'à ce que les mêmes documents reviennent régulièrement dans les références des nouveaux écrits, indiquant que la majorité des principaux textes liés aux méthodes basées sur les compétences avaient été recensés.

Les résultats du dépouillement des écrits révèlent une grande diversité d'opinions quant à la façon dont il convient de définir, de constater et d'évaluer les compétences, ainsi qu'un désaccord au sujet de l'utilité des méthodes basées sur les compétences en matière de formation. Ainsi, les définitions des compétences varient selon les besoins de l'évaluateur et la nature de la discipline. Elles peuvent englober des attributs personnels, des connaissances et d'autres qualités qui doivent être supposées, faute d'être observables. Ces différences d'interprétation des compétences rendent difficiles les comparaisons entre les disciplines et les lieux géographiques. D'évidence, l'application des méthodes basées sur les compétences à des professions plus complexes et à des environnements plus dynamiques a augmenté la difficulté d'évaluer les compétences professionnelles en fonction des seuls résultats.

Le débat actuel sur les compétences professionnelles s'est donc éloigné de la méthode basée strictement sur les résultats auparavant associée à la formation basée sur les compétences. Les compétences sont plutôt considérées maintenant comme étant « [...] les connaissances, les aptitudes, les habiletés et les attitudes manifestées dans l'exécution d'un ensemble de tâches professionnelles réalistes soigneusement choisies, dont le degré de généralité est approprié, [...] une attention particulière étant accordée [...] à la sélection de tâches ou d'éléments clés indispensables à l'exercice de la profession » (Hager *et al.*, 1994, p. 4 [traduction]). Cette large définition permet d'intégrer presque toute famille de caractéristiques visées dans un ensemble de programmes de formation et d'évaluation, tout en conservant à la méthode ses propriétés de méthode basée sur les compétences.

La formation basée sur les compétences présente habituellement plusieurs autres caractéristiques, dont celles qui suivent : les compétences basées sur l'analyse des rôles professionnels ou une définition théorique des responsabilités professionnelles, telles que les envisagent les employeurs ou les praticiens plutôt que les formateurs ou les autres parties intéressées ; l'évaluation des compétences d'une personne en fonction de sa capacité d'obtenir des résultats précis et non du temps qu'elle a passé à suivre un programme ou à fréquenter un établissement ; l'évaluation des compétences d'une personne en fonction de sa capacité d'obtenir des résultats précis et non de sa performance par rapport aux autres ; et l'évaluation des compétences mises à contribution dans l'environnement de travail ou dans un contexte qui s'y apparente. Toutefois, les exemples de mise en application intégrale de ces exigences sont extrêmement rares, et les modèles de succès évident, en particulier dans la formation et l'accréditation professionnelles, plus rares encore.

En examinant les méthodes basées sur les compétences appliquées à la formation et à l'accréditation des comptables au Royaume-Uni, en Australie et en Nouvelle-Zélande, aux États-Unis, aux Pays-Bas et au Canada, les auteurs constatent que la plupart des modèles proposés par les associations comptables englobent des attributs personnels, des aptitudes aux relations interpersonnelles et des compétences professionnelles, ainsi que des résultats. Plusieurs modèles incorporent des compétences cognitives basées sur la taxonomie de Bloom (1956) ou dérivées de cette taxonomie. De plus, bon nombre des modèles basés sur les compétences portent sur des contenus traditionnels comme ceux de la comptabilité, de la vérification et de la fiscalité. Ils ciblent l'accréditation plutôt que la formation et sont donc généralement difficiles à évaluer à partir des critères de formation basés sur les compétences énumérés au paragraphe précédent. Toutefois, le dépouillement des écrits relatifs à ces modèles laisse croire que peu d'associations, s'il en est, prévoient actuellement séparer entièrement le processus d'accréditation et les programmes de formation définis ; en outre, il semble bien que l'évaluation sera fondée principalement sur des réponses écrites. Il semble donc que presque tous les modèles puissent être considérés comme hybrides plutôt que comme des méthodes d'évaluation des compétences exclusivement basées sur les résultats. Ces modèles hybrides sont très complets mais aussi très complexes, puisqu'ils présentent de nombreuses dimensions en interaction.

Les partisans des modèles basés sur les compétences en font valoir les avantages suivants : la transparence accrue des processus d'accréditation et de l'obligation redditionnelle des professions ; un meilleur contrôle de la formation professionnelle et de

ses liens avec la pratique ; la liberté laissez aux étudiants de suivre des programmes de formation mieux adaptés à leurs besoins, à condition qu'ils puissent démontrer qu'ils ont acquis les compétences nécessaires à l'accréditation ; une meilleure compréhension des habiletés indispensables à l'exécution de tâches particulières chez toutes les parties prenantes ; et l'amélioration de la capacité des diplômés de mettre à contribution leurs connaissances dans des situations de travail concrètes. Les détracteurs des modèles basés sur les compétences font remarquer, pour leur part, que les preuves empiriques de la supériorité de ces modèles sur les modèles traditionnels sont très minces, malgré plusieurs décennies d'expérimentation. Certains essais ont, en outre, débouché sur la production de listes complexes et détaillées, ou atomisées, de compétences et de tâches, aux fins d'évaluation des compétences, qui se sont révélées très peu maniables dans la pratique.

La formation basée sur les compétences pour des professions comme celle de la comptabilité pose aussi certaines difficultés particulières. L'observation en situation de travail, par exemple, est une technique recommandée d'évaluation des compétences. Or, l'évaluation des compétences professionnelles sera boiteuse si elle se limite à l'étude d'un petit nombre de cas sur une courte période, comme ce sera probablement le cas si l'on applique la technique de l'observation. Il se peut également que maints résultats pertinents à l'évaluation des compétences professionnelles ne soient pas observables à court terme. L'évaluation des professionnels fait habituellement intervenir la formulation d'hypothèses quant aux processus cognitifs et des connaissances supérieures à celles qui ont été observées dans un cas précis, et elle pourrait également soulever des problèmes éthiques qu'il ne serait pas facile de résoudre au moyen de mesures de la performance. Un autre problème découle de l'utilisation traditionnelle d'une méthode d'évaluation fondée sur la dichotomie « compétence/absence de compétence » qui entre en conflit avec la conception de l'apprentissage professionnel comme un processus continu qui s'étend sur la vie entière. L'accession progressive à des niveaux de compétence multiples concorde davantage avec les principes du perfectionnement professionnel.

La synthèse effectuée par les auteurs les amène à conclure que plusieurs questions demeurent sans réponse dans la documentation existante sur les compétences et que le sujet se prête donc à la poursuite des recherches. Parmi ces questions figurent celles-ci : Une méthode de formation basée sur les compétences assure-t-elle de meilleurs liens entre la formation et la pratique, une satisfaction accrue des étudiants, une amélioration de la performance professionnelle ou un meilleur accès à la profession comptable pour les candidats possédant des compétences non traditionnelles ? La performance seule permet-elle de tirer des conclusions judicieuses quant aux compétences professionnelles ? Vaut-il mieux employer la méthode holistique ou la méthode d'atomisation dans la définition des compétences aux fins de l'évaluation des compétences et de la communication avec les parties prenantes ? Quels sont les coûts de l'évaluation des compétences sur les lieux de travail ? Enfin, l'utilisation d'une méthode basée sur les compétences mettant l'accent sur l'apprentissage plutôt que l'évaluation est-elle souhaitable ?

En conclusion, bien que les méthodes basées sur les compétences continuent de susciter l'enthousiasme dans plusieurs milieux, les écrits dépouillés jusqu'à maintenant indiquent un certain nombre de faiblesses, notamment la multiplicité des définitions des compétences, les difficultés que pose l'application des notions de compétence à la

formation professionnelle et les écueils de l'évaluation. Les mises en garde des partisans des méthodes basées sur les compétences eux-mêmes donnent à penser que le fait de ne pas bien prendre en considération la façon dont les compétences sont définies, présentées, précisées et évaluées risque d'entraîner la mise en place de structures onéreuses qui seront inutilisables et n'obtiendront pas l'appui des parties prenantes.

Préciser ce que les candidats doivent pouvoir accomplir sans verser dans un excès de détails qui rendrait inutilisable la documentation ainsi produite est une exigence primordiale pour la majorité des modèles basés sur les compétences. Un petit groupe de compétences holistiques est parfois préférable à des compétences atomisées qui peuvent être difficiles à manier, peu réalistes, contraires à l'objectif d'apprentissage visé et onéreuses. Toutefois, bien qu'il puisse être plus facile de communiquer les compétences holistiques, ces dernières risquent d'être aussi difficiles à évaluer que les compétences atomisées.

Dans la même optique, le rôle des connaissances dans l'application des méthodes basées sur les compétences en matière de formation professionnelle doit également être pris en considération sérieusement. Les constatations des auteurs donnent à penser que les connaissances et l'évaluation de ces connaissances doivent faire partie intégrante des spécifications relatives aux compétences professionnelles. Cela risque toutefois d'alourdir les grilles de compétences et de nécessiter le recours à une variété de techniques d'évaluation pour éviter que les critères d'accréditation ne reviennent simplement aux tests traditionnels qui se bornent à évaluer l'habileté des candidats à appliquer leurs connaissances.

Les auteurs, après avoir étudié les écrits qu'ils ont recensés sur la question, se demandent si les modèles de compétences strictement basés sur les résultats en sont à une phase de développement suffisamment avancée pour être utilisés en l'état aux fins d'accréditation des candidats ou de conception des programmes à l'intention de la profession comptable, compte tenu des lacunes importantes des définitions des compétences et des processus d'évaluation. Les avantages de la création de grilles de compétences semblent provenir en bonne part de la participation des praticiens et autre intéressés en vue de mieux renseigner les professeurs, les examinateurs et les évaluateurs sur les réalités de la pratique actuelle et les critères de performance dérivés de la pratique. Une meilleure information pourrait améliorer l'arrimage des programmes de formation professionnelle, des examens et d'autres formes d'évaluation à ces critères de performance. L'élaboration de descriptions ou de « grilles » de compétences, en particulier sous une forme plus holistique, peut se révéler une activité périodique très utile pour les parties prenantes qui veulent déterminer ensemble les éléments qui importent et communiquer leurs constatations.

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