Competences in education: a confusion of tongues

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There is a growing interest in the concept of 'competence learning' in various areas of education, training and professional development. Competences are commonly assumed to represent more than the levels of knowledge and skills and to account for the effective application of available knowledge and skills in a specific context. But, with this trend, the term 'competence' is being used in many different ways. How are competencies thought to relate to knowledge, skills and attitudes, and what meaning and validity do various claims about competences have? The competence concept is quite troublesome, and it is argued that the term has no significance beyond that which is associated with the term 'skills'.

In recent years, the acquisition of 'competences' has become a central issue in post-secondary education. The traditional emphasis on factual knowledge no longer seems to meet the requirements of a changing society. Even training towards well-defined skills in applying factual knowledge in appropriate and productive ways seems to be inadequate as a basis for professional work (Kirschner et al. 1997). Employers demand graduates who are able to operate in complex environments, i.e. environments characterized by ill-defined problems, contradictory information, informal collaboration, and abstract, dynamic and highly integrated processes. The concept of competence is strongly associated with the ability to master such complex situations—and it is assumed that 'competence' transcends the levels of knowledge and skills to explain how knowledge and skills are applied in an effective way. As a result, the term has become attractive for both educators and employers because it is easily identified with valued capabilities, qualifications and expertise. What educator would not strive for 'competent' graduates, and what employer would fail to recognize such 'competent' newcomers?

Competences seen in this way are now being embraced by educators and personnel officers as a new standard for curriculum design, training and professional development. Thus, we have 'competence learning' and 'competence-based curricula'. But, unfortunately, the concept of competence is used in many different ways and it seems that its current meaning is based on common sense and ordinary language use rather than agreed definition—and this all too easily creates confusion of thought. In this paper, I will explore the concept of competence and discuss its meaning.

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and implications in education. First, I will review the topics of knowledge, understanding and cognitive skills and then I will discuss some current interpretations of the competence concept. Finally, I will discuss the important characteristics of competences and consider the supposed differences between competences and cognitive skills.

**Knowledge and understanding**

In common usage in education and training, 'knowledge' is associated with the representation of facts, procedures, principles and theories in a particular domain. In addition, information gained from observations, experiences, beliefs and prejudices in everyday life is referred to as knowledge, e.g. one may have the knowledge that yesterday was a rainy day, or that dogs are dangerous. In the research literature, knowledge is referred to using a variety of terms (Kirschner et al. 1997): 'conceptual knowledge' (Posner and Keele 1973), 'substantive knowledge' (Gardner 1975), 'declarative knowledge' (Anderson 1980), 'knowing that' (Olson 1976, Salomon 1981), and 'propositional knowledge' (Greeno 1980). In all cases, 'knowledge' is regarded as a stable entity that is the subject of learning, remembering, and reproducing.

It is an important characteristic of knowledge that it is easy to test whether or not a person possesses a specific body of knowledge. If someone fails to reproduce the knowledge at hand in a test situation, it is concluded that the person lacks the knowledge. Note that here the assessment of the learner is expressed in behavioural terms; however, failure to recall may be the simple result of an extremely large retrieval time: forgotten memories are supposed to be still available, but cannot be retrieved quickly (Nelson 1978). However, from an operational perspective, the idea of behavioural testing seems to be reasonable, because irretrievable knowledge is not available to a person's cognitive system.

Knowledge, however, should not be confused with understanding. The ability to reproduce information does not necessarily presuppose understanding of the information; it is unlikely, for example, that a computer displaying a recipe has any understanding of cooking. Understanding represents an intellectual capability to use information in a sensible, meaningful way and understanding is assumed to emerge when existing knowledge is brought to bear on a new situation. For example, if smoke emerges during cooking, we use our knowledge about cooking, fires and risks to evaluate the situation: we understand that something is going wrong and we draw the conclusion 'Take action'.

However, although understanding seems to arise from interrelating various kinds of knowledge, it is not a typical human characteristic. It would not be too difficult for a computer program to provide 'meaningful' information about smoke related to cooking. Indeed, intelligent, adaptive behaviour of computer programs can be observed more and more. Rather than anthropomorphically ascribing the computer an 'understanding' of the world, the existence of such programs puts the idea of human understanding into the perspective of automated behaviour. Thus, human
understanding should not be mistaken for an intellectual process of supernatural dimensions; it arises from an extended knowledge of the world and an ability to interrelate this knowledge in new situations far better than any automaton.

Cognitive skills

While knowledge refers to static entities that can be stored in and retrieved from memory, cognitive skills are associated with the mental operations that process this knowledge. Such cognitive skills are referred to in a variety of different ways: as ‘procedural knowledge’ (Anderson 1980), ‘intellectual skills’ (Gagné 1977, White and Mayer 1980), ‘mental processes’ or ‘mental operations’ (Snow 1980), ‘knowing how’ (Salomon 1981), ‘strategic knowledge’ (Renner and Marek 1990), or ‘cognitive strategies’ (Gagné 1977). Although these terms may have slightly different connotations, they all refer to mental processes that occur in the mind (or rather, in the brain) while using, transforming or supplementing available knowledge. Furthermore, cognitive skills are highly associated with higher-order activities like problem solving, reasoning, thinking, assessing, concluding, and include the mental processes of analysis, synthesis and evaluation (Bloom et al. 1956) to produce a re-ordering or extension of the existing cognitive structure.

Cognitive skills are, by definition, restricted to internal (mental) processes. It is, therefore, essential to disconnect cognitive skills from observable interactions with the outside world. Indeed, some cognitive activities have no behavioural consequences whatsoever. For instance, solving a mathematical (or the like) problem can be undertaken—and completed—while gazing motionless out of the window or while lying in bed. However, cognitive skills do play an important role in the way humans interact with reality. Cognitive processes may give rise to various observational behaviours, causing a person to intervene in the environment while performing planned operations and applying available knowledge. In reverse, the continuous flow of external stimuli produces new experiences and new knowledge that causes an ongoing adaptation and alteration of internal, cognitive structures.

In skills-training, substantial repetition, which allows learners to gradually improve their performance levels in terms of speed, precision and fluency, is usually involved. As a consequence, skills-performance becomes more and more automated: experienced drivers, for example, are hardly aware of the complex cognitive tasks they perform, while their inexperienced counterparts must consciously think about almost any operation they carry out. Unfortunately, such patterns of increasing automatism or fluency tend to obscure the distinction between cognitive skills and the associated behaviours.

In contrast with knowledge, cognitive skills are difficult to test directly. Direct observation of the brain during cognitive processes is hindered by technical and ethical obstacles. But, even if these obstacles would be bypassed, it is unlikely that the monitoring of billions of nerve cells would
give a satisfactory explanation for sophisticated cognitive processes. The only way to test the mastery of a cognitive skill is to provoke observational behaviours that can directly be linked to the skill. For this reason, learning objectives for cognitive skills are usually described in operational (behavioural) terms. Clearly, this linkage creates confusion. Observational behaviours, like crossing a street, are easily mistaken for cognitive skills. In such a context, the relationship between cognitive skills and observational behaviour has a causal, or more precisely a sequential, character. First, there is a mental process: the observation of the green light is connected with the existing knowledge that a ‘green light’ means ‘safe crossing’. Consequently, a decision is taken, that it is safe to start crossing. Next, this cognitive process gives rise to the actual behaviour of crossing the street. Note that this idea of ‘thinking before doing’ is prototypical for modern rationalism. In practice, however, we should acknowledge that behaviour is often likely to precede the cognitive processes (first doing, than thinking), which—of course—may have tragic effects when crossing a street. Reversal can also be observed in various learning models that start from the premise that material operations precede the acquisition of cognitive skills (Gal’perin and Leontjev 1972), e.g. abstract counting is learned best by using the abacus.

Furthermore, in many cases, the relationship between cognitive skills and behaviour appears to be simultaneous rather than sequential. This may hold for speech, which is supposed to represent the ability to construct meaningful sentences that are instantaneously operationalized: here the behaviour is close to being a carrier for the mental operations. The process of ‘thinking aloud’ also illustrates the idea of simultaneity. Naturally, such strong interdependence of cognitive skills and behaviour causes confusion about the essential and different meanings of the two concepts. Chomsky (1965) recognized this problem and distinguished between the actual act of speaking (‘linguistic performance’) and the associated cognitive skills (‘linguistic competences’).

**Ideas about competence**

Many definitions of competence are available. An exhaustive inventory—if possible—wouldn’t make much sense. Instead, I try to identify the most significant characteristics of ‘competences’ to be found in the literature. Many authors follow Chomsky’s (1965) approach, by distinguishing between competences and performances (Cohen 1983, Evans et al. 1993, Langford and Hunting 1994). According to Chomsky, the concept of ‘linguistic competence’ represents the cognitive structure and rules that are necessary to produce speech; in contrast, ‘linguistic performance’ represents the way speech actually functions in practice when it is contaminated by external factors. For instance, a limited capacity of the working memory may cause a long sentence to end ungrammatically because the speaker has forgotten the sentence’s initial set-up. Here, linguistic competence may be perfect, while linguistic performance is much less than perfect.
Chomsky, adopting a functionalist perspective, assumes linguistic competence to be general and invariant, while—in contrast—linguistic performance is strictly individual and variable. Evans et al. (1993) extended Chomsky’s approach to the domain of human reasoning; they define competence as the ability of subjects to reason logically under ideal conditions, i.e. the reasoning competence is not disguised by performance factors; they go on to describe the difficulties of eliminating such performance factors in order to uncover competences.

Anderson (1992) distinguishes between abilities and competences. Abilities represent the (operational) outcomes of tests, while competences represent the underlying cognitive functioning. Gronlund (1981), elaborating on competence-based tests, uses the word competences as a synonym for operational skills, i.e. writing skills, computational skills, reading skills, etc. Here, competences are not assumed to be fixed structures but individual abilities, that can be improved by training. Probably, the associated competence-based tests Gronlund (1981) advocates are equivalent to performance tests. Langford and Hunting (1994) used Chomsky’s definitions of competence and performance in deductive and inductive reasoning. Eliminating interference by performance factors, Langford and Hunting (1994) found evidence suggesting that the competence of deductive reasoning is constructed rather than activated. Differing with Chomsky, they conclude that competences, i.e. the basic cognitive structures, can be acquired by learning processes.

Others, starting from ordinary language, use the word ‘competence’ in a much broader sense. Competence is a highly-valued qualification that accounts for the effective use of knowledge and skills in specific, usually complex, contexts: The mastery of relevant knowledge and skills alone is no guarantee of successful performances in complex environments; individuals should be able to select from their available knowledge and skills in such a way that efficient and effective behaviour occurs. This requires special ‘abilities’ that take into account the characteristics of a specific context (Ferguson-Hessler 1989, Scheeres and Hager 1994).

Obviously, competences are needed to engage situations involving intricate, multidimensional problems in which no straightforward approaches to problem solving are appropriate. White (1959) refers to ‘effective’ behaviour and links competences with the idea of self-esteem: competence is regarded as an outgrowth of feelings after the successful completion of a task or course of study. It is interpreted as the result of ‘effectance’, that is the drive or motivation to have a manifest effect on one’s environment.

Stephenson and Weil (1992), in an attempt to cover self-confidence, motivation and persistence, assume that competences also include attitudinal components. Gagné (1977) refers to ‘strategic abilities’ rather than more or less automated routines. Barnett (1994) associates competences with unpredictable behaviours in unpredictable and unexpected situations: coping with new situations in a creative way is assumed to be a critical part of the concept of competence. He opts for an operational approach to the competence concept that covers skills, outcomes, transferability, enterprise, and credit accumulation. Finally, Kirschner et al. (1997) follow Barnett in
defining a competence as 'the ability to make satisfactory and effective decisions in a specific setting or situation'.

All of these considerations about competences as extended capabilities invoke the idea of conscious and intentional decision making rather than routine behaviours. Indeed, competences seems to include metacognition, because competent individuals are assumed to reflect upon their knowledge, their skills, and their functioning.

**Competence: the need for a distinct concept**

On the basis of this review, it seems that there are (roughly!) two distinct denotations of 'competences' in education. From a *theoretical* perspective, competence is conceived as a cognitive structure that facilitates specified behaviours. From an *operational* perspective, competences seem to cover a broad range of higher-order skills and behaviours that represent the ability to cope with complex, unpredictable situations; this operational definition includes knowledge, skills, attitudes, metacognition and strategic thinking, and presupposes conscious and intentional decision making. Figure 1 offers a schematic view of this common operational definition of competence, while taking into account the possibility that 'competence' may cover both mental performance and observational behaviour. In the next sections, I will focus on this broad, operational competence concept because of its present popularity in education.

![Figure 1. A competence model, according to common definitions.](image-url)
The general operational competence concept can be explained as follows. An individual's cognitive structures contain considerable theoretical and practical knowledge. This knowledge can be made available to the outside world by way of reproductive skills (i.e. speech, writing, pointing, etc.), or can become supportive to skills and the associated skilled behaviour. Human behaviour in standard situations is likely to become highly automated, although sometimes skills may demand conscious thinking. In complex, non-standard situations, competences are needed which combine knowledge (cognitive) skills and specific attitudes. Competences have a mental component representing thought and a behavioural component representing competent performance. Competent behaviour is always associated with conscious thinking.

The need for a distinct concept of competence that surpasses the levels of knowledge, skills and attitudes originates from the observation that something 'extra' seems to be necessary to ensure effective and efficient performance. Individuals should be able to make the right choice out of many different, possible behaviours by anticipating the effects of their interventions. But, in the end, is such extra ability significantly different from advanced, reflective, (meta)cognitive skills? Indeed, if competences differ substantially from skills, other questions emerge concerning the way competences should be learned, how competences should be assessed, how competences relate to knowledge and reflective skills, how competences should be specified, and so on. In the next sections, I will discuss various problematic aspects of the competence concept.

The problem of competence as a theoretical entity

When competence is directly linked with effective performance in complex situations, it is thought to serve as a causal factor for success. However, it must be concluded that the competence concept has no explanatory power because of its post hoc character; inasmuch as competence is a theoretical rather than an observational entity, 'the causal law takes the form of a definition: 'competent performance presumes competence'. Such a causal law is tautological because neither its truth nor its untruth can be determined. Whenever successful performance is observed, the word 'competence' is used as a label. For instance, managers who realize a complex re-organization are, by definition, termed competent; physicians who successfully revive a road casualty are also, by definition, competent; and so on. All we know about the internal structure of competence is that it comprises knowledge, skills, attitudes, and something extra that is associated with a new, unknown (theoretical) dimension. It is not clear how this something extra associated with competence can be influenced and how its role as an explanatory variable can be tested. As a consequence, we have to see competence as no more than a descriptive term that could easily be replaced with other terms like, e.g. 'conditions for successful performance', 'divine expertise', 'magical touch', and the like. Efforts to build a causal theory around the notion of competences are not encouraging because,
unfortunately, conclusions about competence seem to coincide with its definition.

The problem of competence standards

When competences are chosen as the ultimate objectives of education (as in, e.g. competence-based education), they should be described in terms of well-expressed behaviours in well-expressed situations. If someone is labelled as ‘competent’, his or her performances meet a standard (Barnett 1994). But, any such standards conflict with the idea that competences are associated with unique, complex situations and ill-defined problems. This problem also has consequences for the assessment of competences: assessment is usually associated with reproducibility—which requires controlled conditions. Competence, defined as the ability to produce successful behaviours in non-standardized situations, seems to vitiate the possibility of using competences as an educational frame of reference.

The problem of assessment

The assessment of competences should deal with the reproducibility or, more precisely, with the prediction of success in future behaviours. As I have suggested, a well-defined and controlled test situation would not be appropriate for assessing competences, because competences assume ill-defined and unique environments. But, once successful performance in such a unique environment is assessed, it is far from clear if this success would guarantee similarly successful performance in a new, but substantially different, complex situation. From this, it may be concluded that the assessment of competences must include the issue of transfer; but such assessment would require a number of environments, each of sufficient complexity. This would not only be laborious to set up, and costly, but it would also require detailed insight into the structure and functioning of the competence concept. Furthermore, the testing of reproducibility in such complex processes would be a problem, because of the unique characteristics inherent in each different situation: we need to remember that successful and celebrated filmmakers, writers or managers (who, obviously, are ascribed competence) often fail in their later projects.

In addition, there is another problem involved with the assessment of competence. Competence as a cognitive ‘ability’ is determined by the observation of successful performance. Successful performance, however, may easily be the result of chance, while cognitive malfunctioning can be obscured. To some extent, this also seems to hold for cognitive skills; however, when assessing cognitive skills, the focus on outcomes is supplemented with a focus on cognitive procedures or processes that refer to the conditions for success. This seems to be impossible for ‘competence’ because of its poor theoretical basis. Therefore, within the logic of Aristotle (modus tollens, i.e. denying the consequent), it is likely that only incompetence can be determined, not competence.
The problem of values

Competence has been associated with successful performance, effective use of resources, and making the right choices. Clearly, 'successful' performance and 'right' choices refer to normative criteria. This does not necessarily imply a violation of clarity and objectivity; however, it may easily give rise to arbitrary and, sometimes, undesirable standards. This is the case when dealing with complex, non-standard processes in complex environments involving many different actors, perspectives, and interests. In such situations, success from one perspective is usually counterbalanced by failure from another perspective. An extreme example would be the case of Hitler and the associated question of his competence. Here, again, we touch on the problem that unique, complex situations do not fit well with standardized evaluative criteria.

The problem of stability

Given the problem of values, competences become all too easily subject to change. In retrospect, well-regarded, 'competent' managers, politicians or scientists are easily condemned when the effects of their actions appear to be in contrast with their promises or pursuits. Politicians strive for short-term successes to gain popularity; but short-term successes all too easily produce and lead to long-term failures. (Environmental issues might be a good example.) In addition, the way behaviours are regarded can change over time—as a result of circumstances or shifting societal attitudes. Such changes in context can and do lead to the reassessment of competence to incompetence, although the abilities of the person in question remain unchanged.

Barnett (1994) stresses that the capacity to cope with profound societal, international and ecological change cannot be covered by any concept of standardized competences. In his view, no competences can be identified that will carry us forward in a changing world—because no competences will carry the value tomorrow that they have today. Competences may be stable but become worthless in a changing world.

Finally, human performance is subject of decay. Performance in new situations may even become 'less competent', because of retention problems, the problematic transfer of acquired competences, or even because of gratuitous but inappropriate transfer. Clearly, the assessment of competences requires the perspective of time and, in this regard, we need to note again the lack of valid assessment standards appropriate to complex situations.

The problem of conscious thought

Complex and novel situations provoke intentional and conscious behaviour. This conscious thinking focuses on the selection, combination, or adaptation of existing routines to meet the new situation. In competence-based
curricula, students are trained to improve the effectiveness and efficiency of their behaviours in complex situations with the expectation that their thinking, judgements, and selection of relevant skills will move faster, and that, as a result, the associated behaviours will become more fluent. But, increased speed and fluency implies more automatism and less thinking: paradoxically, therefore, such training for competences—if possible at all—degrades the competences to routine-like procedures that would not be very different from skills. When we realize, in addition, that many skills also require conscious thinking, any distinction between skills and competences seems to fade away.

Barnett (1994) argues that conscious thinking occurs less frequently in education than we presume. In his view, learning to conform to standards as identified by practising professionals may even obstruct process-thinking. He also asserts that the notion of competences cannot handle the ideas of thought and understanding, because competences are usually defined from an operational perspective that focuses on observed actions, outcomes and skills rather than on the underlying processes.

This issue of conscious thinking also reminds us of the unresolved Descartian problem of mind-body dualism and the associated question of whether human behaviour is 'reflective', i.e. the result of a free will and understanding, or 'reflexive', i.e. a collection of automated responses. But, even without exploring these topics, I would suggest that conscious thinking cannot be the discriminating factor between competences and skills.

The problem of complexity

According to Kirby (1988), skills are more or less automated routines that allow the execution of well-specified tasks. This does not necessarily mean that skills are simple and straightforward: flying an aeroplane requires sophisticated skills. But, as the level of complexity increases, it is assumed that successful behaviour cannot be explained by the presence of skills alone. We would all prefer a competent pilot over a skilled one in bad weather—but this raises the question of how the level of complexity is described so as to discriminate between competences and skills. In theory, the complexity of a given task could be determined from the number of objects involved, their attributes, their interrelationships, the rules and processes involved, etc. But, quite apart from this being a laborious undertaking, such analysis would not be of help, because the complexity of a task must always be assessed relative to the person involved. Consider, for example, the following problem: 'Assume that 13 candies are available for eight people. How many candies would be left if everyone is given one?' Clearly, such subtraction problem is not difficult for an adult, and would not require much conscious thinking. Yet, for a 4-year-old child, the problem is a complex task of a kind unlikely to have been faced before. Considerable insight is needed to link the problem of candies to the abstract system of numbers; knowledge about numbers has to be retrieved; and strategic thinking enters in considering how to approach the problem.
Counting skills clearly play a role, and a choice has to be made from alternative computational procedures or routines. Possibly, after some time, the child will be able to solve the problem.

Although this case represents a well-defined, closed problem, the operations involved fit in the picture of competence very well when viewed from the child’s perspective. This example demonstrates that competences do not refer to tasks, but, rather, must be associated with the characteristics and background of the person involved. Clearly, this complicates the use of competences as an independent frame of reference for educational systems. In addition, it seems to establish that competences are merely labels for immature skills that lack speed and fluency. Thus, for the candy problem, sufficient training of the child would change a competence into a skill. And, to return to another example I used earlier, it would suggest a preference for a skilled pilot over a competent one.

But, such an interpretation of the word ‘competence’ would seem to contradict its meaning in common language, where the word denotes a valued qualification in a person rather than a disqualification. Yet, Mulder (1998; quoting Eraut 1994) points out that, from an etymological point of view, the word ‘competence’ refers to ‘sufficient in amount, quality or degree’ (see Oxford English Dictionary); in other words, competence is associated with a set of minimum requirements—enough to do the job—rather than expert behaviour; it is an intermediate state between a novice and expert. This is also implicit in the models of Fuller (1971) and Dreyfus and Dreyfus (1986; also cited by Mulder 1998) which treat competence as a stage preceding the stages of proficiency and expertise. From such considerations, I conclude that complexity cannot be an absolute criterion for the distinction between skills and competences.

The problem of sub-competences

Another problem arises from the idea of complexity. Competences may be decomposed into contributing sub-competences. For instance, flying an aeroplane competently includes the sub-competences of taking-off, landing, dealing with emergencies, and so on. Repeating such a decomposition procedure results in a hierarchical structure of conditional sub-competences that become more specific and limited as we travel down the hierarchy. Eventually, there comes a stage in which the sub-competences are identical to the supportive skills, i.e. there seems to be a gradual transition of competences into skills such that discrimination between the two types is not possible.

However, while maintaining the idea of skills as different from competences, we should also acknowledge that skills themselves can also be decomposed into a hierarchical system of sub-skills. Consequently, the entanglement of the skills-hierarchy and the competence-hierarchy produces a complex, confusing and inconsistent conceptual system that cannot be taken seriously. The distinction between skills and competences as different entities is very troubling.
Conclusions

I conclude from the above argument that the concept of competence is problematic. While the term has become more and more widely used as a 'new' entity to explain certain behaviours in certain situations, the causal law that relates 'competence' to 'competent performance' constitutes a tautology that lacks any explanatory power. 'Competence' is no more than an unclear label and does not increase our knowledge and understanding of the world. By definition, competences are associated with successful behaviours in non-standardized situations; such a definition seems to conflict with the use of competences as educational standards. In other words, the assessment of competences and the predictive value of such assessments for future performances is highly questionable. This conclusion also links to the instability of competence and its strong value-dependency. And, with respect to the differences between competences and skills, we see both that conscious thinking cannot serve as a discriminating factor and that the idea of complexity seems to indicate that competences are a sub-class of skills rather than a co-ordinating category.

I conclude that there are two major problems with the competence concept. First, it tries to set cognitive standards for behaviours that cannot be standardized. Secondly, from a research point of view, competences make up a sub-category of cognitive skills; the idea of 'competence' as a distinct category different from cognitive skills' cannot be sustained. Accordingly, the competence model of figure 1 has been modified in figure 2.

Figure 2. Competences as sub-skills.
However, the rejection of the idea of 'competence' as a distinct category of human abilities does not mean that the term should not be used. There are no objections to using the term 'competence' as a label, and it can be used successfully for the purposes of public relations because of its primary associations with quality and expertise. The term might also be reserved to indicate that the associated knowledge and skills originate from a professional practice. However, from a research point of view, the term competence is too problematic and lacks an appropriate and commonly accepted definition. Within educational research, its use should be restricted to a class of cognitive sub-skills involved in coping with complex problems.

Although the outcomes of this analysis may be disappointing to those concerned with 'competence learning', the rejection of the notion of a distinct category of 'competences' seems to be the only way to maintain a coherent research vocabulary. Likely we could have come to this conclusion before the analysis: when all is said and done, the only determinants of human abilities are possessing (knowledge), feeling (attitudes), and doing (skills)!

Note

It should be noted that the concept of competence is not exclusively reserved for education, but is widely used in the domains of professional practice, personnel management, and business administration (Bos 1998). Prahalad and Hamel (1990) introduced the term 'core competences' to identify the qualities associated with the competitiveness of companies. Here, competence is generally equated with individual or organizational characteristics that are directly related to effective behaviour or performance (McClelland 1973, Spencer and Spencer 1993). An analysis of such domains is beyond the scope of this paper.

References