

Defining the Concept of Competence: a Systematic Literature Review

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Abstract

Performance in the actual job environment is a much more investigated area. In the field of psychology, human resources development and education, the concept of competence is a prerequisite for and the centre of analysis. This article review focuses on how competence is conceptualized in the literature during 1950-2010. A systematic review was done using the google scholar search engine which covers different fields of social sciences like psychology, human resources development, and education, among others. The search was operated by using the word 'competence' and the phrase 'competence-based education'. Six articles that were written in English and published between 1950-2010 were identified. However, after judging their relevance, two articles were excluded because of duplication and focus on competence for firm competitiveness instead of defining it. Hence, four articles were included and submitted for data extraction. The selected articles were assessed for biases based on three quality assessment criteria enlisted as: methodological quality, precision, and external validity. Following the quality assessment for biases, data were analysed qualitatively using content analysis method. Thematic synthesis was used to bring the findings from those 4 articles together. Though there are different theoretical assumptions related to it, it is concluded, competence is conceptualized as the acquisition of knowledge, skills, and attitudes by the learners/trainees to achieve superior performance in the actual job environment.

Keywords: Competence, performance, psychological theories, Human Resources Development

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Introduction

Research works from different branches of psychology like behavioural psychology, constructivist or holistic psychology, environmental or ecological psychology, among others investigate competence related to performance in the actual job environment. In these branches of psychology, competence is the centre of analysis. However, the use of competence related to performance varies based on the underlying theoretical orientation of researchers. Because of these differences, it is necessary to define the concept of competence clearly. The main question in this study, therefore, is: How is competence defined by researchers in their scientific articles? To answer this, the author of this paper undertook a systematic review of articles discussing competence and competence-based education.

Methods

To identify scientific articles in peer-reviewed journals that could contain definitions of the concept of competence, this reviewer searched articles using Google Scholar; particularly through use of the word “competence” and the phrase “competence-based education”. This has been done until the 18th page of Google Scholar. This search engine contains references to articles published in internationally recognized journals in different streams such as psychology, language, sociology, and human resources management among others.

Table 1: Final Search Strategy

<i>Block</i>	<i>Search word/phrase</i>
Focus 1	“Competence” in title
Focus 2	“competence-based education” in title
Others	Document type= Article, Languages = English Timespan =1950-2010

Though a numbers of articles appeared during the search process, selection was made only to those articles that displayed a relevant focus to competence and competence-based education (*table 1*). The selection was limited to articles written in English language and published between 1950-2010. As indicated above, though not for methodological quality reason, two articles were excluded because of similarity and little relevance to competence related to individual performance. It is known that there are three domain analysis types: folk domains, mixed domains, and analytic domains (Spradley, 1980). From these domain analysis types, analytic domain was used in this article review. It stated that this domain analysis helps to recognize researcher’s terms for domains. Furthermore, content analysis was done to investigate the theory informing each article. According to Weber (1990), theory determines what people look for. This has an aim to define the concept of competence precisely. To identify the differences related to competence, therefore, the results section was carefully analysed. Content analysis was made on identified theoretical assumptions, main facets or features, and limitations. These points are found important to analyse all articles based on common assumptions. This review was done by solely by this reviewer and the articles were not subjected to inter-raters reliability. This is one limitation of the review process which may adversely affectthe quality of the review. Though this is the case, the scoring and coding was done independently and, following this, the theoretical assumptions, main features or facets and limitations were discussed (*table 3*). This was an iterative procedure involving several rounds of discussions (readings) before it evolved into the coding scheme presented in results

(table 2) of the analytic domain analysis, which synthesizes the results of the different steps into a scheme of types of characteristics and some examples of terms used by the article writers.

Results

Definition of Competence

The search strategy identified 6 articles (*see references*). Two articles were excluded because of duplication and lack of relevance to defining the concept of competence as already stated above. This left 4 articles for further analysis. All papers could be retrieved. These articles attempted to give operational definition of the concept of competence. In the four articles, the definition of competence was given as:

“competence is the organisms capacity to interact effectively with its environment”.
(White, 1959, p.297)

“competence is the concept by which behaviour is explained and needs proper assessment for preparation of graduates for the world of work” (McClelland, 1973, pp.7-12)

“...competence is capability to effectively function in the actual job environment” (Biemans et al., 2004, p.2)

“the concept of competence is multidimensional, and specific use of the concept depends on the context of the users; may be behaviouristic, generic or situational” (Mulder et al., 2007, pp.68-73)

There are differences in these definitions of competence. There are also differences in the theoretical assumptions underlying the concept of competence. The first two articles (White, 1959 & McClelland, 1973) defined competence from the behaviouristic psychology theory orientation. Competence from this underlying theoretical assumption is defined to entail the preparation of students for certain functions and it can be achieved by training miniscule skills. This approach of competence, however, was criticised by proponents of the humanistic psychology. Humanistic psychologists believed that reflection on action is more important than practising endless small skills.

On the other hand, the other two articles (Biemans et al., 2004 & Mulder et al., 2007) defined competence from holistic (Generic) psychology theory orientation. Competence from this underlying theoretical assumption is defined to entail integrated sets of knowledge, skills, and attitudes which are needed in core occupational roles and situations (instead of tasks and activities). This approach of competence, however, was criticized for undermining the educational philosophy of institutions and their autonomy to innovate. Critiques stated that labour market would define education.

In the 4th article (Mulder et al., 2007), the concept of competence was also seen as context-specific (situational). This approach of competence was based on the observation that competence only gets meaning in a certain context, in which professionals interact with each other. This article citing Gibson (1979) underscored that professional context also enabled competence development because of its affordances. The article went on to state, “Gibson conceived of affordance as the characteristics of a given context which provide possibilities for professional action and development.” In short, the situational approach to competence informed this reviewer that competence also develops during experience with certain activities and in varied situations. This approach of situated professionalism is related to notions of situated cognition: Knowledge is situated, being in part a product of activity,

context, and culture in which it is developed and used. This approach of conceptualizing competence falls within the ecological (environmental) psychology theory orientation. This approach, however, did not escape criticism. Critiques stated that not all learning is necessarily depending on a real context; there is a possibility of transfer if tasks are similar; learning by abstraction is possible by giving concrete examples, and not all learning needs to be individual.

Selection Characteristics for Competence

Of the 4 articles, the first article reported its aim, and its use of secondary data from biological experiments, general psychology, and child psychology. In the reviewed works, it was stated that, children, students, and professionals were participants of the study. There was no mention of data collection methods, statistical techniques used or any inclusion and exclusion criteria. The second article also stated its aim, and reported secondary data from comparison of college GPA and actual job performances. And, it stated that meta-analysis was used and 12,000 correlations were reported of more than 10,000 respondents. Yet, there was no report of inclusion and exclusion criteria. The third article reported its aim and the Dutch Vocational education and training (VET) system as its target study. It reported that it used existing scientific literature to evaluate the limitations while practicing competence-based VET. Shortly, it presented primary data using qualitative methods. It reported that it used expert interview to collect data. There was no any mention of inclusion and exclusion criteria. The fourth article reported its aim and Uk, Germany, France and Dutch vocational education as its target of study. It reported that it reviewed existing literature and analysed the use of the concept of competence in the 4 countries. It reported that it examined existing literature to analyse the practice in these countries. There was no any mention of data collection methods or inclusion and exclusion criteria.

In conducting the content analysis, therefore, the reviewer identified three theoretical assumptions, namely, behaviouristic psychology, generic or holistic psychology, and ecological psychology. Based on these psychological theory orientations, competence has been found to have three main characteristics: knowledge, skills and attitudes. Differences in psychological theory orientations of the article writers is used to address competence either in terms of training small skills, integrating knowledge, skills and attitude or the relevance of these in contextual situations. The concept of competence is found debatable. The author of the first article defined it succinctly in relation to motivation while the second author defined it as a means by which behaviour is explained. The third article defined it in terms of capability while the fourth conceived it as multidimensional and generic.

Table 2: Classification of terms used by Authors (Analytic Domains)

Types of characteristics	Some Examples of terms used by authors	Sources
small skills	Effectance, motivation	White (1959)
small skills	Explained behaviour, job performance	McClelland (1973)
Knowledge, skills and attitude	Capability, job performance	Biemans et al., (2004)
Knowledge, skills and	Integrated, generic, multidimensional	Mulder et al., (2007)

attitude		
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Descriptive Characteristics of Competence

From the definitions given by these authors, it can be concluded that competence consists of the three domains of knowledge: cognitive domain (knowledge), psychomotor domain (skill) and affective domain (attitude). These criteria leads to a coding scheme in the content analysis section (table 3).

Table 3: Content Analysis of Result Sections

Theoretical Assumptions	Dimensions	Facets or Features	Indicator or Code (number of papers)	Main limitations
Behavioural psychology	Skill	Training small skills	Gap between desired and actual performance (2)	-Reflection on action is better than training small skills
Generic or Holistic Psychology	Knowledge, skill and attitude	Integrated teaching/training of knowledge, skill and attitude	Alignment of education and work place learning (labour market) (2)	- Undermine autonomy of educational institutions and their innovation -Labour market would define education.
Ecological psychology	Skill, knowledge, attitude	Education/ training based on context	Professional action and interaction in a given context (1) * (1) Same paper: The number of papers reviewed is still 4 in number	-There is possibility of knowledge transfer if tasks are similar -Learning by abstraction is possible by giving concrete examples -Not all learning needs to be individual

Synthesis

Using thematic synthesis approach, identification of themes across the four studies were done. This is mainly concerned with translating the findings of those research works to a common measure so that comparing and contrasting is possible. Accordingly, therefore, three themes were identified: competence for specific function, competence for generic occupation, and competence for a given context. These themes were described by each author as follows. Competence for specific function is mainly concerned about training small skills to fill the

gaps between desired and actual job performance. Secondly, competence for generic occupationalism aims to enable learners or trainees possess integrated knowledge, skills and attitudes so that they can perform effectively in every job position. And, competence for a given context is viewed as that education or training offered to individuals should align itself with the context or situation. When compared and contrasted, therefore, all of the four papers provided a definition of the concept of competence though there were many disparities because of the article writer's underlying theoretical assumption. Both the results of the domain analysis and the results of the content analysis reflected the features of competence as knowledge, skills, and attitudes. However, these three features were seen to have different psychological theory orientation in the content analysis. This analysis revealed theoretical assumptions based on which one might evaluate the concept of competence (training small skills, integration of knowledge, skill, and attitudes, and education for specific context). Whatever the underlying theories behind each article, however, the combination of the *identified themes gives us the definition of competence as: the learners'/trainees' acquisition of knowledge, skill, and attitude to capacitate him/herself in order to perform effectively in the actual job environment.* Finally, based on the description of themes identified, the analytic theme of learning outcomes is generated; which inform us that any educational or training designer has to think of the intended learning outcomes. Clear identification of intended learning outcomes will help us follow either of the psychological theoretical assumptions stated in table 4 above and to address competence precisely.

Discussion

In brief, as it has been indicated in table 3 above, the review identified three theoretical approaches to define competence which are that of : a) behavioural psychologists; b) holistic/constructivist psychologists; and c) ecological/environmental psychologists. The behaviouralist school tried to define competence in terms of acquiring small skills to fill gaps between acquired and desired performances in a job environment. However, this school of thought is heavily criticised for its over-specification and fragmentation of learning. Critiques argued that reflection on action is more important than training/teaching endless small skills. The holistic/constructivist school of thought tried to define competence as integrated sets of knowledge, skills and attitudes. This school of thought argued that these three domains (knowledge, skills and attitudes) are inseparable. It asserted that these domains are needed in core occupational roles and situations instead of tasks and activities. It emphasised that any educational design should integrate knowledge, skills and attitudes in its curriculum, teaching-learning, and assessment. It also argued that education should prepare trainees/learners to perform best in job situations. This school of thought strongly believed that the missing link between the labour market (or potential employers) and education (or quality of graduates) can be filled by using this approach. Nonetheless, it did not escape criticism. Critiques argued that the approach propounded by this school of thought will undermine autonomy of educational institutions and their innovation. In addition, education will be defined by the demand of the labour market or potential employers. Critiques went on to argue that the goal of education is not only to produce qualified trainees/learners for the market but also to enable them generate new theories and discoveries for the betterment of the future. Therefore, critiques stated, the need for balance. The ecological/environmental school of thought defined competence in terms of professional action and interaction in a certain context. It argued that competence develops during experience with certain activities and in different situations. According to this school of thought, knowledge is situated, being in part a product of the activity, context and culture in which it is developed and used. It argued, therefore, that we

cannot separate knowledge from context. Thus, competence is context-specific and should be defined in this line of thinking. However, as the earlier schools of thought, the ecological school of thought has been subjected to criticism. Critiques argued that there is possibility of knowledge transfer if tasks are similar, and learning by abstraction is possible if trainees/learners are given concrete examples. In addition, critiques further claimed that all learning needs are not to be individual.

To conclude, based on the available scientific evidence, particularly, following these four articles review, it can be learned that competence has been a debatable concept. Hence, defining competence will depend on the intended learning/training outcomes that the learner is expected to acquire on the one hand and the type of professions on the other hand. For instance, if the educational institution aims to produce qualified medical doctors, the behavioural school of thought will be important. The medical doctor has to be trained/educated in terms of acquiring each small skill. If the educational institution aims to produce graduates who envisage to create their own job, to become entrepreneurs, or to work in any vacant position, the holistic/constructivist school of thought will be essential. If the educational institution aims to produce qualified teachers, professional development of the teachers will be strengthened by placing them in an in-service situation. In this regard, the ecological school of thought will be of paramount importance.

Finally, it was found out that the psychological orientation of each author has affected the way they attempted to define competence. Yet, all of them pointed out the difficulty of: assessing competence and examining the relationship between competence and performance. Therefore, the reviewer would like to recommend further research on the following topical issues.

- How competence can be assessed concretely in real job environment?
- As the relationship between competence and performance is not direct, how can we measure their relationship?

Limitations:

Due to time constraint, the reviewer used only *Google Scholar* to search articles though there are lots of search engines to access journals. Even, the search using *Google Scholar* was not complete. It went until the 18th page. Secondly, the use of words and phrases to search articles were limited. If *Boolean Operators* were used, more articles would be accessed. These limited the possibility of searching additional articles as compared to the time gap (1950-2010). Thirdly, the articles were reviewed by this researcher only. Yet, the recommended method is to conduct the review by two or more people and apply inter-rater reliability. Hence, viewed from this perspective, the quality of the review process had its own limitations.

Implications

Bahir Dar university is training students in different disciplines to produce graduates in the specializations of medicine, law, engineering, language, teaching, management, psychology, among others. It seems necessary to think of and conduct further research on the theoretical approaches in line with fields of specializations. There are some who claim that the university is following *eclectic approach*. The question, here, is the eclectic approach relevant for all fields of specialization? Which method is taken from *behaviouristic*, *constructivist*, or *situational*, and for which fields of *specialization*? These and similar questions are still not

answered. Thus, the review will have implications to further scrutinize problems related to the curriculum, teaching-learning, and assessment procedures practiced by the university.

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