

Defining and Assessing Generic Competencies in Australian Universities: Ongoing Challenges

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In this paper, we discuss ongoing challenges in defining and assessing generic competencies in Australian universities. The paper begins with a discussion of factors that led to, and later fuelled, the focus on generic competencies in Australian higher education. Broad constructs that have underpinned research and practice in the field are then discussed. We next consider obstacles that have been confronted in efforts to identify the particular competencies that are most important both within and across given discipline areas. The paper concludes with a consideration of the practical issues that emerge in designing tasks to assess generic competencies within specific contexts.

Introduction

Over the past two decades, a significant body of research has accumulated on the topic of defining the generic skills, attributes, values and competencies that Australian university graduates require to succeed in their post-university lives. In one early definition, the Australian *Higher Education Council* (1992) described generic skills, attributes and values as those which:

...should be acquired by all graduates regardless of their discipline or field of study. In other words, they should represent the central achievements of higher education as a process... They include such qualities as critical thinking, intellectual curiosity, problem solving, logical and independent thought, effective communication and related skills in identifying and managing information; personal attributes such as intellectual rigour, creativity and imagination; and values such as ethical practice, integrity and tolerance (pp. 20-21).

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In this paper, we summarise some of our own views in this area, focusing in particular on its unresolved challenges. The paper begins with a discussion of factors that led to, and later fuelled, the generic competencies agenda in Australian higher education. This provides important context for discussing the ways in which generic competencies have come since to be defined and studied. Broad constructs that have underpinned research and practice in the field are then discussed, followed by a consideration of issues in identifying particular competencies that are most important both within and across given discipline areas. We last consider practical issues associated with how generic competencies can be assessed.

The Focus on Generic Competencies: Points of Origin

Arguably, the current focus on defining and assessing generic competencies in Australian universities began in earnest during the late 1980s, with the so-called 'massification' of higher education that occurred at that time (Dobson, 2001), and associated demands for a tightening of quality monitoring and control processes. Shortly after, the Australian Higher Education Council's *Achieving Quality* report appeared, which focused on the issue of how higher education quality should be judged (Higher Education Council, 1992). In this report, it was proposed that the quality of higher education should be judged in terms of graduate quality, rather than by other criteria such as the quality of the facilities offered by different institutions. It was argued further that 'graduate quality' should be judged by the extent to which these graduates demonstrate high levels of generic skills, attributes and values, as defined earlier in this paper.

At around the same time, Ramsden and his colleagues began developing and testing a version of the *Course Experience Questionnaire* (CEQ) for use in Australian universities (see Ramsden, 1991). A revised form of this instrument remains in use today. The CEQ includes a subscale designed specifically to assess the extent to which university courses foster generic skill development in their graduates. The skills within the CEQ *Generic Skills Scale* (GSS) align well with those listed in many generic competency frameworks, such as problem solving skills, analytic

skills, the ability to work as a team member, the ability to tackle unfamiliar problems; skills in written communication; and the ability to devise work plans.

Various industry groups and professional bodies involved with accreditation also played a significant role in fuelling the focus on generic graduate competencies during the 1990s. For example, the Australian Institution of Engineers, together with the Australian Council of Engineering Deans and the Academy of Technology Sciences, conducted a comprehensive review of engineering education in Australia, and recommended a stronger focus on generic skills, values and attributes (e.g., communication and problem solving skills; teamwork, and ethical values) in undergraduate programs (Institution of Engineers Australia, 1996). At around the same time, the Business Higher Education Roundtable called for the development of generic graduate skills within undergraduate programs (see Hager, Holland & Beckett, 2002).

In response to such demands, Australian universities began to work on developing frameworks for assessing and fostering generic skills in their graduates. For example, the Australian Technology Network (see Bowden, Hart, King, Trigwell, & Watts, 2000) proposed frameworks for the definition, assessment and development of generic skills that would enhance students' employability prospects post-graduation. This report identified graduate attributes as:

the qualities, skills and understandings a university community agrees its students should develop during their time with the institution. These attributes include, but go beyond, the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses (p.1).

Based on the brief summary presented above, the current focus on generic competencies in Australian universities arose in large part during the late 1980s, in response to public concerns over quality in higher education, and calls from industry groups and professional bodies for more 'work-ready' graduates. In research conducted since, the concept of a 'work-ready graduate' has remained relatively stable, typically including reference to the ability to be

flexible, undertake diverse tasks, and be able to learn 'on-the-job'. Work on defining and assessing the generic competencies that make graduates 'work ready' has, however, confronted a significant number of obstacles and setbacks. The next three sections of the paper provide a brief outline of these challenges.

Underpinning Constructs

Addressing the question of how generic competencies should be defined and assessed in higher education begs an analysis of what these, and related terms used in the literature, are intended to signify. Previous surveys (e.g., Male, 2010; Young & Chapman, 2010) have suggested that both the terms used and their intended meanings vary considerably across contexts. In general, however, reviews of the area have included any work focused on identifying and assessing the characteristics of university graduates that are both, or either, desirable and/or transferable across a broad range of discipline areas and/or contexts. The current paper was thus based on consideration of any efforts to identify, define or classify characteristics of university graduates referenced by the terms *attributes*, *skills*, *capabilities*, or *competencies*, paired with any of the following descriptors: *core*, *key*, *employability*, *graduate*, *generic*, or *transferable*.

Problems of definition have long been identified as a key stumbling block in efforts to assess and foster generic competencies in university settings. For instance, in a major research program led by Barrie (2004, 2006, 2007), it was found that academics hold highly disparate views of what the term *generic attributes* means. Barrie's work, based on phenomenographic analysis of interview data, suggested four distinct understandings. Academics who held *precursor conceptions* saw generic attributes as abilities that provided a foundation upon which disciplinary knowledge could be built. Those with *complement conceptions* saw generic attributes as general functional abilities and personal skills that complemented discipline-specific learning outcomes. *Translation conceptions* were based on the notion of generic attributes as skills essential for applying and translating discipline knowledge and university

learning within unfamiliar settings. *Enabling conceptions* depicted generic attributes as abilities and aptitudes that transformed the individual and supported the creation of new knowledge. These different understandings were, therefore, based primarily on the different functions that the attributes were believed to serve.

Another potential source of inconsistency amongst researchers and practitioners stems from disparate understandings of the nature of the characteristics in question, most commonly referred to as *attributes*, *skills*, *capabilities*, or *competencies*. To some, these are clearly differentiable, and hold different implications for assessment and practice. For example, Parry (1996) distinguished between skills, values, traits and competencies, defining competencies as clusters of related knowledge, attitudes and skills that affect job performance. Thus, in this conceptualisation, the term *competency* is seen as somewhat broader than the term *skill*. In most papers, however (e.g., NCVET, 2003), the terms are used interchangeably.

Similarly, while some would see the term *attribute* as the broadest term within the set (in the sense that an attribute can encompass *any* quality that is a characteristic of an individual), others have seen attributes either as specific components of competencies or as interchangeable with competencies (e.g., Snoke & Underwood, 2000). Based on the literature that has appeared, the terms are most commonly used and meant interchangeably.

Usage and intended meanings of the descriptor terms *core*, *key*, *employability*, *graduate*, *generic*, or *transferable*, also appear to have varied considerably within the literature. In general, the first four of these terms have been used to refer to competencies that have been deemed necessary or desirable in graduates based on agreed views from a given discipline, field, or institution. These have generally been defined in terms of the functions or generality of the skill, competency or attribute in question. For example, in the report, *Employability Skills for the Future*, DEST (2002) defined employability skills as “skills required not only to gain employment, but also to progress within an enterprise so as to achieve one’s

potential and contribute successfully to enterprise strategic directions.”

The terms *generic* or *transferable* are often also used interchangeably with the terms *core*, *key*, *employability*, and *graduate*. In cases where the former terms are used to signify how generally the competencies will be useful (i.e., that they should be useful across a large number of contexts), the terms carry a similar meaning to other descriptors in the list, and their interchangeable use is justified. For example, one widely used definition, Bowden et al. (2000) defined ‘generic graduate attributes’ as:

the qualities, skills and understandings a university community agrees its students should develop during their time with the institution. These attributes include but go beyond the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses. They are qualities that also prepare graduates as agents of social good in an unknown future.

In other cases, however, the terms *generic* and *transferable* can be used to signify something about the nature of the traits themselves: that is, whether they are the kinds of attributes that an individual *can* generalize or transfer from one context to the next. While the usage discussed earlier focuses on the generic or transferable nature of competencies in terms of their general utility, this alternative view focuses on the extent to which transfer is *achievable* across contexts. The latter usage introduces qualitatively different issues in the identification, assessment and incorporation of generic competencies within higher education curricula. For example, while it may be possible to reach broad consensus on certain competencies or skills will be ‘generally’ useful across different contexts, or will remain useful if transferred from one context to another, the question of *whether* or *how well* those skills *can* be transferred is a matter of considerable debate (e.g., Holmes, 1997).

Most of the research reported thus far has focused on identifying competencies that are useful across a broad range of contexts. Very little has appeared which specifically identifies skills that are both useful *and* likely to transfer well across contexts. While any

competencies acquired that are useful across different contexts *may* also transfer well across these contexts, this cannot be assumed. For example, Clanchy and Ballard (1995) pointed out that the form that generic competencies take will vary considerably across situations.

The alignment between the general utility of competencies and their transferability may also vary with the way in which particular competencies are conceptualised. For example, very broadly defined, it is typically agreed that ‘communication’ is a useful competency across many areas. Yet, asking the question of whether this ‘competency’ is likely to transfer well across different areas immediately demands that we stipulate the specific communication skills that are relevant. Some facets of communication (e.g., communicating with colleagues in verbal form) may transfer relatively well across areas; others (e.g., writing formal correspondences) may not. Billing (2007) provides a comprehensive review of literature on learning context factors that affect the transfer of cognitive skills in higher education.

Identifying and Defining Important Competencies

Since the late 1980s, many Australian universities have made effort to develop frameworks for the definition and assessment of generic graduate competencies that are important in different disciplines. The reports that emerged from OECD’s *Definition and Selection of Competencies* (DeSeCo) project provided a key starting point for many of these efforts. A major objective of the DeSeCo project was to establish a sound theoretical framework for identifying the competencies that should be fostered across all areas of education, taking into account views drawn from representatives from a broad range of discipline areas (i.e., anthropology, politics, psychology, economics, and sociology).

One of the major outcomes reported in the final DeSeCo report, *Key Competencies for a Successful Life and a Well-Functioning Society*, was that while no single definition of the term ‘competence’ had been agreed, to be deemed ‘key’, competencies must meet four basic criteria (Rychen & Salganik, 2003):

- (i) *Multifunctionality* - key competencies are useful across different settings;
- (ii) *Relevance to a 'high order of mental complexity'* - key competencies assume a mental autonomy, which connotes an active and reflective approach to life, and calls not only for abstract thinking and self-reflection, but also for distancing oneself from the 'socializing process' and even from one's own values;
- (iii) *Transversal across social fields* - key competencies are relevant for effective participation in school, work, family life, politics, peer relations and for developing self-fulfilment; and
- (iv) *Multidimensionality* - key competencies have multiple dimensions, which represent different mental processes, including 'know-how'; analytical, critical and communication skills; and 'common sense'.

The lists of key competencies generated by disciplinary representatives from the five main groups in the DeSeCo project were disparate. In an effort to integrate these, Rychen and Salganik then generated a scheme which outlined three 'types' of key competencies (see Rychen & Salganik, 2003). These subsumed the specific competency lists generated within the discipline groups:

- (i) *Acting Autonomously and Reflectively* – asserting one's own rights and interests, thinking and acting for oneself; initiating interactions with one's physical and social environment; forming and conducting projects; and developing strategies to attain goals;
- (ii) *Using Tools Interactively* – using physical entities, language and knowledge, laws, and other tools to meet important societal demands; and
- (iii) *Interacting in Socially Heterogenous Groups* – forming, joining, and functioning effectively and democratically within multiple, complex, and socially heterogeneous groups.

In spite of Rychen and Salganik's efforts, it is clear that discipline was a significant moderating factor in views of the competencies that should be considered 'key' competencies, using the four criteria stipulated. This outcome was arguably inevitable, given that what employers demand of graduates will vary with discipline. Putting aside current debates on whether disciplines, as traditionally defined, will remain tenable in the longer term (e.g., see Abbott, 2001; Krishnan, 2009), academic, financial, and educational processes within universities are still firmly grounded in discipline-based groupings. The skills, attributes and values with which graduates emerge are thus also likely to be affected by the cultures and normative practices of their disciplines. This view aligns with those of others in the field. For example, Barnett (1994) argued that:

... the doubt is whether skills, at any serious level, can be independent of the context, the forms of life, the traditions and expectations in which they are embedded. Analysing a text, for example, is quite a different form of activity for surveyors, cooks, ballet dancers, historians, social workers and physicists. Indeed what counts as text in those different domains is in itself problematic (pp. 64-65).

Not surprisingly, much of the research on defining generic competencies that has appeared after the final DeSeCo report was delivered has been done *within* defined discipline areas (e.g., Jackson & Chapman, in press; Male, Bush & Chapman, in press). In general, these projects have focused on identifying the competencies that are important for graduates across specialist areas within a given discipline (e.g., across the specialist areas of engineering, such as mechanical, civil, and electrical engineering), but do not extend beyond the boundaries of that discipline. This restriction has bypassed many of the challenges confronted in previous efforts to define these competencies more broadly.

Despite having more restrictive parameters, efforts to define and select competencies have continued to confront various challenges, even when confined to specific discipline areas. Three of these challenges (developing operational definitions of competencies identified; articulating the interrelationships between these

competencies; and distinguishing between competencies and stable personal traits) are discussed next.

Developing Operational Competency Definitions

Most of the competencies that have appeared in published frameworks are defined or described at a high level of abstraction (e.g., communication skills, teamwork, problem solving). Indeed, it is possible that some of the commonalities seen across lists of generic competencies that are regarded as important within given disciplines may be due in part to the level of abstraction at which these competencies are described and understood. For example, while very few professional stakeholders would rate the importance of a broadly stated competency like 'communication' as anything but very high, more specific forms (e.g., constructing formal written arguments) are likely to attract far more variable ratings of importance, particularly across different disciplines.

The level of abstraction at which many competencies are 'defined' in published frameworks has also made difficult the task of determining what these competencies 'look like' in practice, and, in turn, the task of selecting indicators that can be used in the development of relevant assessment tasks. Middendorp (1991) described two fundamentally different approaches that are used to link theoretical constructs to measured concepts. The first involves starting from a theoretical construct and then operationalising this for the purposes of measurement. The second approach involves starting with observations or measurements, and then relating these to one another in terms of 'models' or 'functions' within a particular empirical domain. In this latter approach, theoretical constructs cannot 'exist' purely in their nominal form (i.e., a form that goes beyond the relations between the observations that can be made within a particular domain of measurements).

Most efforts to define generic competencies have relied primarily on the first approach to conceptualisation. Thus, the theoretical (or abstracted) constructs of the competencies (or, as discussed later, the activities or tasks in which individuals are expected to engage) are

identified first; efforts are then made to operationalise these for the purposes of developing assessment tasks. In McCorquodale and Meehl's (1948) depiction, the constructs of generic competencies developed in this way will inevitably include some 'surplus meaning' (i.e., imply more than the operations by which they are measured).

Despite the popularity of this approach, the strongly 'applied' goals of most research and practice involving generic competencies demand that measurements of these constructs relate closely to the indicators that are used in their assessment. Thus, it is important that, while many of the competency constructs have been posed as abstract or theoretical constructs, these are systematically operationalised to ensure that what is measured is both clearly relevant to the target construct *and* useful for the purposes of practical or pedagogical interpretation.

In cases where there is risk of significant discrepancy between a theoretical construct and what is measured, full explication of the theoretical construct, prior to attempts to operationalise it, can help to ensure that the correspondence between the nominal form of the construct, and its operational definition, is as close as possible. Middendorp (1991) argued that explicit theoretical definitions should cover all relevant facets of a construct, brought together systematically in an 'ideal model type'. Only then should an attempt to operationalise the construct occur. We concur with this view, and pose further that developers be prepared to exclude or significantly revise abstract definitions of competencies that, in their more explicit form, are shown to be too broad to provide a useful focus for research or practice.

Articulating Interrelationships between Competencies

Another major difficulty in developing useful definitions of generic competencies arises from the complex interrelationships amongst these competencies. This was first suggested in the Executive Summary from the DeSeCo project, which emphasized that meeting the demands of the environment would generally rely on a

‘constellation’ of competencies, configured differently for each particular case. The DeSeCo report also flagged the need for further development work in this area:

Possible future avenues for such development include... The construction of profiles of competencies, to reflect the fact that each competency is not used in isolation and that a constellation of competencies is required in any one context. One way in which such profiles might be produced is by looking at a portfolio of outcomes for each student rather than at individual competencies in isolation (p.17).

The complexity of the relationships that might exist between competencies presents a major challenge in the development of these overall profiles. For example, some competencies may overlap with one another, and thus serve a similar purpose. Others may interact with one another such that the presence or absence of one moderates the effect of the other on performance. For example, in some jobs, the effects of minor deficits in communication on performance may be negligible if the individual in question possesses very high level skills in other areas (e.g., sourcing information). In other jobs, it is possible that combinations of deficits in specific areas (e.g., both in problem solving and in communication) will have far more serious consequences for performance than would be anticipated by isolated deficits in any one of these competency areas.

We pose that assessing generic competencies in isolation will not, in most cases, provide meaningful predictors of performance in any context. Competencies must be considered as part of an overall profile, or ‘constellation’ of resources to which the individual has access to enable him/her respond to demands in his/her environment. The interrelationships amongst these will be critical in determining how relative strengths and weaknesses in specific competency areas will ultimately affect performance in different situations.

Distinguishing Between Competencies and Personal Traits

It is clear that it would be difficult, if not impossible, to ‘disentangle’ generic competencies from stable, personal traits of the individual

(i.e., traits that are not amenable to change through education). For example, interpersonal competencies and others related to teamwork will clearly reflect, to some extent, individual differences in personality. Similarly, communication and problem solving skills will clearly be related to general intelligence. Whilst some degree of confounding is unavoidable, there is risk that, depending on how competencies are defined, these personal traits will be *all* that is measured in some cases. Thus, efforts to define competencies must make explicit the likely relationship between the competency and clearly related personal traits. In descriptions of associated assessment instruments, there should be some consideration of the extent to which the measure will reflect these personal traits, rather than levels of the competencies themselves. For example, in their description of the *Graduate Skills Assessment* (discussed in the next section), Hambur, Rowe and Lucgrew (2002) state that:

Clearly, performance on the GSA is affected by intelligence, whether due to genetics or environment, or both, and whether there is a general, executive intelligence, modular intelligences, or both. It will also be affected by other factors, including motivation and confidence. Although intelligence is certainly a factor related to student performance on the GSA, what is important is that student performance on the GSA is affected by the university experience and is ultimately related to academic and work performance.

Such explicit descriptions will encourage those who use such instruments to adopt appropriate interpretations of their outcomes. Alternatively, individual users may choose concurrently to measure related personal traits such as personality or intelligence, with the goal of separating variability that can be attributed to these traits. In any case, to develop valid methods for assessing generic competencies, the interrelationships between these and stable personal traits must be understood fully and made explicit.

Issues in Assessing Generic Competencies

Two major categories of assessment approaches have been discussed with reference to generic competencies: Broad-scale, standardized assessments, and locally developed assessments. In the former

category, the major instrument available for assessing generic graduate attributes in Australia is the *Graduate Skills Assessment*, or GSA (see Hambur et al., 2002). The GSA is a standardized test which measures graduates' skills in the domains of:

- (i) *Written Communication* – i.e., the ability to write effectively in two genres: Argument and Report;
- (ii) *Critical Thinking* – i.e., the ability to think critically about viewpoints and arguments;
- (iii) *Problem Solving* – i.e., the ability to analyse and transform information as a basis for making decisions and progressing toward the solution of practical problems; and
- (iv) *Interpersonal Understandings* – i.e., the ability to show insight into the feelings, motivation and behaviour of others, and into approaches related to helping or working with others, such as effective feedback and teamwork.

Whilst the GSA provides a well-developed, comprehensive assessment in the areas listed, most universities will want also to develop and imbed their own, locally developed assessments of generic competencies. Within the latter category, Curtis and Denton (2003) identified four broad approaches to the assessment of generic skills that are used commonly at the schooling level: holistic teacher judgements, student portfolios, work experience assessments, and assessments using purpose-developed instruments. No literature was located which reviewed general approaches to assessing generic competencies in higher education, although specific universities have developed and published their own locally developed approaches.

Irrespective of the specific assessment tasks used, most will be based either on some form of rating scale, completed by relevant teaching staff; or on judgements that rely on the use of scoring rubrics (e.g., portfolios or performance-based assessments). In both cases, three further issues should be addressed, in addition to those discussed in the previous section, in developing the assessments: differentiating between activities, tasks, and competencies; identifying the specific

properties of competencies that are most important; and setting performance standards to be used.

Differentiating Between Activities, Tasks and Competencies

As indicated previously, demands for accountability and the need to meet industry demands for ‘work ready’ graduates significantly shaped the current focus on generic competency development within Australian universities. As a result, many competencies have been defined and clustered in terms of ‘things that individuals need to do’ in given (generally, work) contexts, rather than in terms of traits or characteristics that typically cluster within people. Thus, while they have been expressed in the form of ‘competencies’ (e.g., teamwork competencies), these actually describe activities or tasks that need to be performed by the individual (i.e., to engage in teamwork), rather than the competencies that can be used in performing these.

This creates a problem in terms of assessment, because many of the broad clusters of activities identified do not lend themselves well to representation on consistent ‘scales’ that can be used to rate competence levels. Using the example given above, *teamwork* is stated as a ‘competency’ in many frameworks (see Young & Chapman, 2010). Yet, for the purposes of assessing competencies, teamwork may be better classed as an activity which relies heavily on other competencies that individuals possess, such as the ability to communicate concepts; the ability to analyse complex problems; and the ability to deal with conflict.

Identifying the Important Properties of Competencies

In developing assessment tasks, one aspect that is frequently overlooked is the need to consider not only the nature of the competency in question, but also the specific properties of the competency that will moderate performance on a task. For example, a high proportion of behaviour rating scales assess frequency as the main property of interest. In terms of competency ratings, other properties, such as the level of expertise with which an action is

performed; the speed with which it is performed; or its generality across circumstances may, in many cases, be more important.

Take as examples the competencies labeled typically as communication, problem solving, and establishing interpersonal relationships. In some jobs, it is likely that the most important property of communication is the level of expertise with which this is performed when required. In contrast, as problem solving is often needed most in situations of urgency, speed may be the most important property of this competency in given jobs. Likewise, the most important property of the ability to establish interpersonal relationships may be the generality of situations across which this can be done well, particularly in jobs that require employees to interact with people from different disciplines/cultural backgrounds.

Considering and making explicit the key properties of competencies is important, regardless of whether holistic or analytical judgements will be made. In the case of holistic judgements, a list of possible properties may be provided, with raters asked to select, in scoring each competency, the most important property for judgement of that competency. When analytical judgements are to be made, the key properties identified will determine the response options offered to raters, and will clearly impact the judgements made.

Setting Performance Standards

One of the final steps in developing tasks to assess generic competencies is to determine the standards by which competency levels will be judged. In some cases (e.g., where only a minimal standard of performance will ever be required), it may be appropriate to judge competencies on a pass/fail basis. In other cases, more differentiated judgements may be appropriate (e.g., in cases where higher levels of performance can reasonably be differentiated and may predict potential for career advancement).

Clearly, the validity of performance standards within a given assessment instrument will hinge first on how well the competencies in the instrument have been understood and explicated. Devising an

assessment instrument that is likely to yield meaningful, discriminating judgements will also, however, rely heavily on whether the properties discussed in the last section have been defined explicitly, because it is these properties on which levels of competence will be differentiated. The validity of an assessment instrument will further depend on how the interrelationships amongst the different competencies within it are to be taken into account. In the absence of efforts to preclude this, judgements of individual competencies in a profile are likely to depend heavily on those made about other competencies within the same profile.

Conclusion

Significant progress has been made over the past two decades to define and develop strategies to assess the generic competencies required of Australian university graduates. Despite this, further work is clearly needed to ensure that associated assessment tasks encourage consistent judgements and are tenable, both in the sense that they reflect the underlying competencies of interest, and in the sense that they provide meaningful information on which those who consume the outcomes can base their decisions.

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