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A comprehensive competence-based approach in curriculum development: Experiences from African and European contexts

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Abstract

Objective: To describe the methodological steps of developing an integrated reference guide for competences according to the profile of the healthcare professionals concerned.

Design: Human resources in healthcare represent a complex issue, which needs conceptual and methodological frameworks and tools to help one understand reality and the limits of one's acts.

Setting: This study uses results from four contexts (Belgium/Europe, Democratic Republic of Congo, Rwanda and Senegal) in which integrated reference guides for competences for healthcare professionals have been developed.

Method: Priority was given to the writing of curricula (initial training) or of training plans (continuous training) more effective in terms of professionalization and more adequate to populations' needs.

Results: Pedagogical approach is presented as some (step-by-step) methodological guidance which will help one to get acquainted with this approach. This analysis questions the whole issue of healthcare training institutions' social responsibility.

Conclusion: The products obtained (ie reference guides for competences) are only the visible part of the results of the far more fundamental change process that is the real reinforcement of competences and capacities of healthcare professionals in organizations aiming at better managing their resources, among which are human resources in healthcare.

Keywords

competence profile, healthcare quality, integration, training

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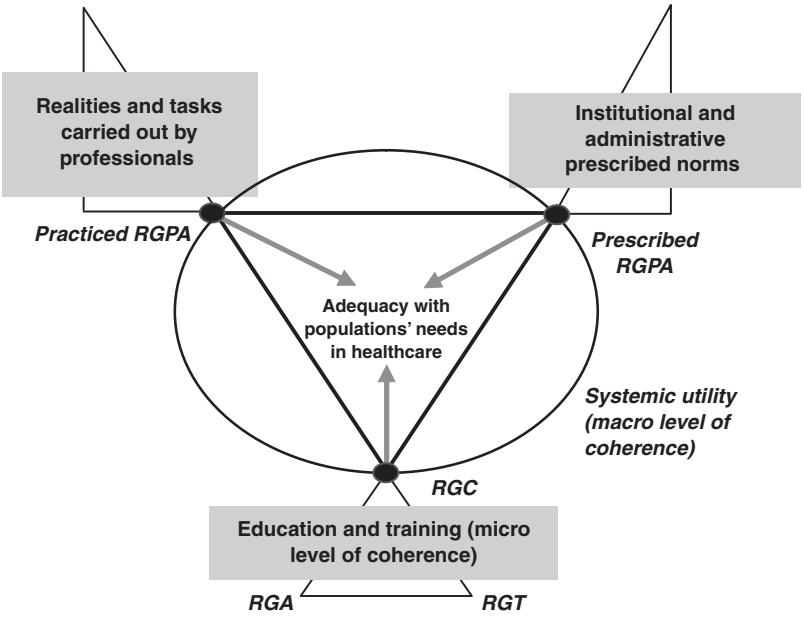

Figure 1. Adequacy triangle for training and HRH management

Introduction

Although human resources in healthcare (HRH) have been described as 'the core of healthcare systems in all countries'[1,2], documentation on pertinent and global answers to the HRH issue is still lacking. Therefore, we thought that it would be interesting to describe, in terms of process, of paradigm and of methodological steps, the results of participative research actions which aim at the co-construction of reference guides for competences (RGC) by and for healthcare professionals in various contexts. The analysis brought by this work focuses on the issue of the pertinence of the content of curricula in initial and continuous training, as well as on the issue of the integration of a reform and of the implementation processes of such a change. HRH represent a vast issue which requires the help of mechanisms of coordination between the different sectors of planning, healthcare and education[3–6].

The concept of 'systemic utility' refers to the need of real adequacy between the three poles of this triangle: training, norms and prescribed standards (qualitative and quantitative) and professional realities (see Figure 1). Without temporal and global coherence, each activity, as suitable as it could be to its intervention level (micro level), would not be sufficient enough compared to the systemic issue (macro level) which includes community needs. This concept of 'systemic utility' puts forward the issue of social responsibility of training institutions since global coherence increases the specific effectiveness of the action.

The adequacy triangle also assumes that the issue of 'systemic utility' is above all of a contextual nature and that it should reflect local, regional and/or national specificities. Global effectiveness can thus also be questioned, allowing a strategic vision of HRH to be developed. Figure 1 serves as a conceptual framework to the methodological process and the results which will be

presented. It is proposed here as an introduction in order to enable better understanding of the choice of the 'path' used to answer the question of 'systemic utility'. This qualitative path, using training, is considered as a concrete and sustainable opportunity to improve systems as a whole. It will moreover help to ensure that all its components are taken into account during the processes of methodological development for each of the contexts presented.

The objective of this article is also to describe – starting from implementations and validations in various contexts – the methodological steps of developing an *integrated* reference guide for competences (IRGC) according to the profile of the healthcare professionals concerned. The process of implementation in order to mobilize the various actors is also described, with special attention to the paradigm of socioconstructivism. This description should help us to analyse the answers given by the pedagogical and organizational approach proposed with reference to the initial theoretical framework.

Method

Starting from an analysis of the demand in reinforcement of HRH in various contexts, priority was given to the writing of curricula (initial training) or of training plans (continuous training) more effective in terms of professionalization and more adequate to populations' needs. One of the elements of the process is the building of integrated reference guides for competences, starting from the development or the improvement of professional profiles and reference guides for professional activities (RGPA) (job description) for healthcare agents in various practice places. In order to answer to this specific objective, a methodological approach, built and consolidated in interaction with actors from the various contexts, stems from integration education[4, 5] within which the competence-based approach (CBA) lies appropriately.

Beyond the reference conceptual framework presented in the introduction (Figure 1), there are three types of methodological elements: (i) participative research action fields in various contexts ; (ii) a model of systemic analysis of the HRH issue referring to the model by Green and Kreuter adapted by F. Parent[6]; and (iii) integration education based on the use of a CBA methodology adapted to the healthcare sector[6–10] and developed within a socioconstructivist aim[11] in coherence with the principles of health promotion action (among which participation, autonomy, reinforcement of capacities and intersectoriality)[6, 12]. It is the process and methodological steps that will be presented in order to facilitate integration and the questioning on 'how to build and implement an integrated reference guide for competences in adequacy with populations' needs'.

Participative research action fields in various contexts

This study uses results from four contexts (Belgium/Europe, Democratic Republic of Congo, Rwanda and Senegal) in which integrated reference guides for competences for healthcare professionals have been developed within the framework of initial or continuous training.

The systemic analysis model: adaptation of the model of Green and Kreuter

The development of a Predisposing, Reinforcing and Enabling Constructs in Educational/ Environment Diagnosis and Evaluation (PRECEDE) model[13] in each action context is the main thread of the participative process and of the representativeness of the groups of actors present. It also gives a strategic vision of the actions and of its limits.

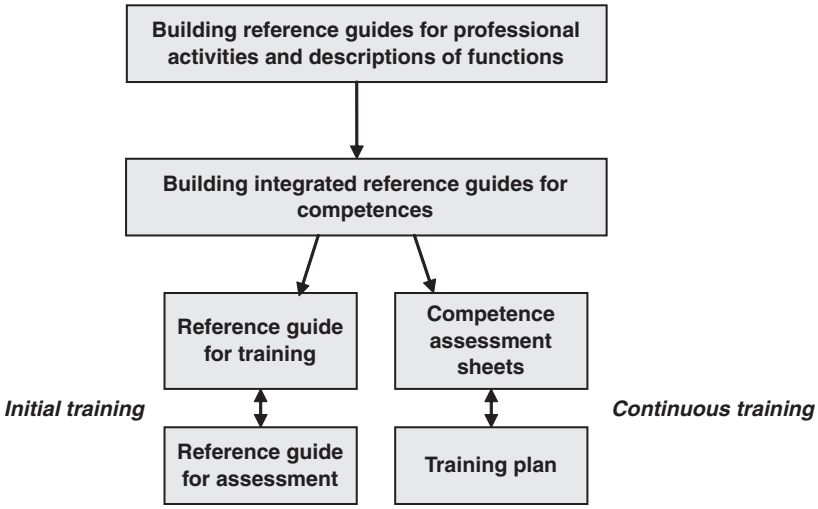

Figure 2. Successive steps in building training curricula according to the competence-based approach

Competence-based approach and socioconstructivist paradigm

The description of the competence referred to here is the following: according to Tardif's definition, a competence is 'a complex action knowledge based on mobilization and the efficient combination of a range of internal and external resources within a situation family'[14]. From an epistemological point of view, the concept of socioconstructivism refers to the constructivist hypothesis according to which knowledge is not 'transmitted' to the subject, but has to be 'built and developed by the subject themselves'[11]. The constructivist hypothesis thus conflicts the ontological hypothesis according to which knowledge has to be taught and expounded. This theory puts us on the teacher/trainer's side (teaching logic). Conversely, training based on a constructivist paradigm sees knowledge as something to be built, developed and learnt. In this theory, it is thus the learner's, participant's, patient's[12, 13], or community's point of view[14] which determines the training, evaluation, supervision and exchange tools to be developed (learning logic)[15–18].

Results

The development of a competence-based curriculum goes through three phases (see Figure 2). In continuous training, one needs to go through an additional step: the building of competence assessment sheets. Figure 2 helps us to visualise the role of coordination and global coherence played by reference guides for competences within the framework of training.

We would like to remind here that this article presents the building of reference guides only. Subsequently, the reference guide for competences should be completed by a reference guide for training and assessment (Figure 2) describing in more details the titles of training/learning units and their pedagogical objectives; that is, the competences, capacities and underlying knowledge aimed at, and the assessment tools used in theoretical as well as practical teaching.

Steps in developing an integrated reference guide for competences (IRGC)

1. Identification of professionals' function(s) in a given healthcare organization, description of this organization and launch of the process. The aim at first is to specify who the healthcare agent is on whom the analysis is carried out and to pinpoint, in the healthcare system studied, the functions expected from this field player. The analysis will differ in terms of exhaustiveness of the possible functions depending on whether the competence profile is worked on in initial training or in continuous training. It is necessary to clarify the agent's intervention levels or the environments where they exercise in order to understand the descriptions specific to each context.

Another important step at this stage is that of choosing participants for the process. The aim here is to ensure that all actors concerned by the issue in healthcare and education sectors are correctly represented. We refer here to the systemic situation analysis made at the beginning of our research and which helps to identify the key players in the process. It is thanks to such tools that the validation process can be best carried out during workshops. Such an approach also allows us to remove potential obstacles to the decisions taken during the application of changes in the curricula.

2. Description of function and professional activities. Building reference guides for professional activities and functions consists of making an exhaustive list of the tasks and activities carried out by the healthcare professionals studied, taking into account their socio-professional context. These tasks serve as guides by giving elements which will later be classified and grouped together in another way in reference guides for competences.

Data collecting. The aim, while collecting activities and tasks, is to analyse the functions and descriptions of professional activities carried out by healthcare professionals. This collecting of activities is made among others by interviewing professionals, using the explicitation interview technique[19] and by directly observing the activities being carried out on the field. Data collecting can be improved by listing the activities described in health norms, legal texts or decrees relating to the job. Data collecting is carried out with concerned agents, preferably in their workplace. Because of the differences that exist between professional practices in cities and in the country, data collecting must be representative of those two realities.

Know-hows and inter-personal skills described in existing training programmes also serve as interesting sources of information, as well as the lists of activities, in vertical or specialized programmes, which must be carried out by the agent on whom the analysis is made[20]. All those activities are then translated into action verbs (next step). Activities are the real foundation upon which our whole work can be based. Exhaustiveness criterion is very important at this stage. The precision and updating of this first step will also influence the pertinent nature of the curriculum produced.

Listing of data in the shape of action verbs. The different activities collected are then reworded into the shape of action verbs. It is important, in this methodological phase, to focus on the action verb itself, and possibly its complement, since a competence defined by one and the same verb can reflect quite different activities, depending on the situation. Besides, it is necessary to avoid focusing on the contexts of application of the verb, which would lead to an endless list of activities and tasks. The crossing, in a later phase, with situation families will ensure the contextualization and integration (mobilization in situations) of competences. Moreover, the question of building a reference framework which will facilitate the 'transferability' of learnings is partly at stake here (also at stake is the link with situation families, a concept which we will present during one of the steps of the building of IRGCs).

Remember that an action verb describes an action made by the subject. In opposition, a state verb (ie to be, to seem, to appear, to become, to stay, to remain, etc.) describes the state of the

subject (autonomous being). All those activities are transcribed on individual index cards which will help us to later categorize them in a participative way during workshops. In order to recount information, it is also worth being precise on the card about the origin of the identification of the activity: actors themselves (their functions and practice places), health norms, an existing programme, etc.

3. Categorization of activities. This step consists of classifying activity/task cards following a particular categorization of activities according to underlying knowledge and observability levels[21, 22]:

- 'Cognitive activities': activities linked to learning, knowledge, cognitive know-how. These activities essentially mobilize the mind's resources, rationality and logic.
- 'Procedural activities': activities linked to gestural know-hows, gestural skills, mastery of techniques.These activities essentially mobilize the resources of sensorial perception and motricity.
- 'Reflexive activities': activities linked to inter-personal skills of the reflexive type, a questioning attitude, reflexion on one's actions, a new involvement into the action, evolution skills. Reflexive activities should include the metacognition dimension[23, 24].
- 'Psycho-affective activities': activities linked to inter-personal skills including self knowledge, emotions management and stress management.
- 'Social activities': activities linked to inter-personal skills of the relation type, aptitudes to communicate, to interact.

In this classification, it is also important to pay attention to the 'observability level' of the task. Lists of verbs are thus classified from the less observable (the most general verb) to the most observable (the most precise verb) (Table 1). The distinction in 'observability' categories depends

Table 1. Classification of DRC nurses' tasks and activities into categories of knowledge and observability levels (examples)

Operative and procedural activities		
General	Examine the patient	Be in charge of eutocic delivery
	Carry out healthcare	Ensure the cold chain
	Carry out prenatal consultation (PNC), postnatal consultation (PoNC), SPC	
Observable	Carry out comfort healthcare	Carry out healthcare according to the different systems
	Auscultate the patient	Take laboratory samples
	Ensure equipment maintenance	Carry out healthcare before, during and after surgery
	Resuscitate newborns/babies	Demonstrate techniques
	Carry out laboratory tests	
Precise	Prepare equipment	Put a patient on a drip
	Prepare rehydration salts	Apply bandages
	Palpate the patient	Vaccine
	Settle the patient	Suck up liquids in a patient
	Carry out circumcision	Take vital signs
	Package medicines/medical tool boxes	Rid of parasites
		Supplement
	Sterilize equipment	Carry out lingual fraenum severing
	Transfer a patient	Carry out dental extraction
	Carry out stitches suture	Rehabilitate

(Continued)

Table 1. *(Continued)*

Psycho-affective activities		
General	Handle one's emotions	Welcome
	Handle one's stress	
Observable	Adapt one's attitude to the patient	Respect others
		Adapt to situations, environments, characters
	Be assertive and creative	Assess, question oneself
	Be available	Develop oneself a personal and professional level
	Recognize the beliefs and values influencing one's practice	Question oneself on an ethical level
	Respect culture, religion, values differences	Adopt attitudes facilitating communication
Precise	Listen to the patient	Comfort the patient
	Interview the patient/their relatives	Reword the patient's complaints
Social activities		
General	Make a community diagnosis	Promote health
	Communicate	Manage staff
	Give health education	Mobilize the community
Observable	Communicate with colleagues	Lead meetings
	Prepare the patient psychologically to examinations	Collaborate to local initiatives in health development
	Answer the patient's psychosocial needs	Carry out home visits
		Supervise auxiliary staff
Precise	Disseminate meeting reports	Inform the patient
	Take part in mutual meetings	Rehabilitate
Reflexive activities		
General	Supervise interns	Make a diagnosis
	Plan healthcare	Estimate a patient's global state
	Assess	Promote the use of essential medicine
		Manage resources
		Supervise
Observable	Screen children suffering from malnutrition	Refer and contra refer the patient
		Transfer the patient
	Requisition equipment	Direct the patient
	Stock up medicine	Exploit reports
	Detect high risk pregnancy	Interpret data
	Prepare a meeting	Interpret laboratory results
	Supervise et plan healthcare	Monitor
	Collect data	
Precise	Examine the patient	Monitor parturient
	Monitor the patient	Supervise the taking of medicine
Cognitive activities		
General	Elaborate or conceptualise protocols, frameworks	
Observable	Write report	
Precise	Write the prescriptions	Calculate hydric balance
		Calculate percentiles

on the positioning of action verbs between one another within a continuum defined on the basis of a qualitative and participative consensus[6].

Table 2. List of the competences taken from reference guides for nursing care in Senegal (continuous training) and in Belgium (initial training)

Competences for chief nurses in the healthcare post in Senegal (continuous training)	Nurses' competences in Belgium (initial training)
1. Establish and promote communication with the patient, his family, relatives and the community.	1. Carry out reflexive and scientific research practices.
2. Plan and organize curative, preventive and promotional activities.	2. Analyze a situation, practice one's clinical judgment.
3. Analyze individual, collective and environmental situations in link with healthcare in one's responsibility zone.	3. Carry out healthcare.
4. Manage the resources of the health post.	4. Establish professional communication.
5. Develop community participation within one's responsibility zone.	5. Get involved in the job.
6. Reinforce staff's competences at the healthcare post and areas.	
7. Supervise activities in healthcare posts, areas and in the community within one's responsibility zone	
8. Provide quality healthcare and services.	

4. Pinpointing of competences. The pinpointing of key competences (ie knowledge, resources and pedagogical objectives) mobilized in situations is made, starting from the classification described earlier. For example, 'social' activities include verbs such as 'to educate', 'to inform' and 'to give advice'. Those verbs all have in common the connotation of mobilizing 'communication skills'. Competences will emerge from more general, non-observable activities, whereas competence stages or capacities will emerge from observable activities, and criteria/indicators will partly emerge from more precise activities or their qualities.

Since competence is 'an action knowledge within a given situation', it must be expressed using an action verb. Each competence is given a precise definition which enables everyone to understand and agree on the extension of the field covered by this competence. For example, here is the definition of a competence taken from the reference guide for competences in A2 level nursing science in DRC: 'Establish professional communication is: exchange, within mutual respect, in order to establish a relationship based on confidence with individuals, their families, communities and other organizations'. All these competences should help to cover all the activities carried out by the agent within their own structure of the healthcare system.

With an integrated CBA, one cannot help but notice that the number of competences is very small when building a reference guide for competences. There are usually no more than five to eight key competences. This is one of the characteristics which make it differ from a 'behaviourist' approach in which one can sometimes find an extremely long list of 'competences' (or, in this case, 'skills', ie specific objectives). Previous articles on this educational approach have specified that the definition of competence in the singular corresponds more to a macro capacity, whereas situation families (concept described later) better reflects our vision of a CBA in which the term 'competences' is always used in the plural. Indeed, with reference to the definition of the word 'competence' on which this study is based, the mobilization of *several* competences and of *several* underlying categories of knowledge is the only way to ensure correct integration and competent actions in a complex situation.

5. Integration of competences

Identification of common performance situations (situation families). Situations in which competences should be put into practice are also described and classified into situation families. A situation

family is a group of several situations presenting enough common characteristics to mobilize the same competences and capacities, under the same conditions. Those situations are common professional situations which must be feasible for students during internships. Competences can indeed bear a more or less complex nature, depending, among other things, on the conditions in which they are put into practice. These conditions should thus also be described to complement competences.

The next phase of the process is thus to describe common performance situations and, starting from them, to create the 'situation families'. This work is essential as situations to be dealt with are the elements which enable us to link competences between them and translate them in an operational way. The aim here is thus to present plausible situations, among the most common ones, and at the same time situations representative of competences put into practice by healthcare professionals. The main functions of reference guides for professional activities are among the first elements to guide the identification of situation families. A situation must be described in a most precise way in order for it to be understood without getting lost in too many details. The situations are those encountered by the responsible healthcare agent. Activities carried out by professionals appear in a global way in those situation families and should be listed among the list of activities previously pinpointed and classified.

Before describing situation families, one must choose practice place categories, followed by practice places for initial training. Those categories can be communities, healthcare centres, hospitals or other practice places, depending on the analysis carried out. Regardless of the context to which we belong, those situation families always sweep across the main categories covering healthcare needs – that is, promotion and prevention fields – as well as curative healthcare and management fields. Situation families represent suitable global integration units and do not need to be subdivided. Usually, an integrated competence-based approach (ICBA) contains a maximum of three to six situation families in the context of initial training. More situations may be encountered in continuous training because of feasibility.

Conditions under which those activities should be carried out must also be specified: individually, in groups, with how many people, with what aids and which resources, etc. (see Table 3). This information helps to already prepare the assessment context for initial training. It is worth underlining the importance, in Southern contexts, of taking into account all the diseases and priority states of health covered by vertical or specialized programmes; taking those elements into account helps to a achieve a better adequacy between training programmes and populations' needs and current healthcare policies.

Within the reference framework of integrated reference guides for competences, situation families are the elements which will give the best visibility to professional activities and which will play a role in increasing professional identity, especially for highly polyvalent jobs/posts.

Crossing of the reference guide for professional activities with the competences and situation families listed in the reference guide for competences. In order to favour a real coherence with the reference guide for professional activities and professionals' functions, one needs to check that content exhaustiveness is ensured between the reference guide for professional activities and the reference guide for competences by using crossed validation times, such as described here later. This methodological approach should be carried out for competences and situation families as well as for competence stages (or capacities), criteria and indicators (our next methodological steps).

Crossing of competences with situation families. Once competences are listed and situation families are identified and described, one necessarily needs to cross situations with competences mobilized in each of them. This is one of the mechanisms that enable us to increase the internal coherence (micro level) of reference guides for competences.

Table 3. Description of situation families for District Chief Doctors (DCD) in Senegal and for the profile of nurse in DRC

Situation families of DCD (Senegal)	Situation families of nurses (DCR)
1. Taking care of patients At the healthcare centre, the doctor welcomes a patient coming for a consultation or sent from a healthcare post. They take care of the patient and when necessary, direct them to a hospital. 2. Management Each year, the district chief doctor, in consultation with other members of the staff, identifies issues, determines gaps and obstacles, plans activities to be carried out in the district, carries them out and evaluates them. They are in charge of the resource management and regularly write reports which they submit to the medical region. During final assessment, they check the impact of the actions carried out on the health situation and if necessary adjust interventions and their implementation. 3. Training The DCD and their staff evaluate training needs, identify targets, develop or adapt training plans and are in charge of their implementation and assessment. 4. Supervision Within the framework of the increase of service quality, the DCD, in collaboration with other members of staff, carries out an integrated formative supervision of PCNs and other agents on priority issues such as EPI, infection prevention, PNCs, medicine management, data management, hygiene and decontamination. 5. Community Together with the community, the DCD identifies health issues, develops an action plan and mobilizes the resources needed for its implementation. For example, within the framework of the implementation of community-based monitoring of possibly contagious diseases, the DCD, in collaboration with the departmental committee for the management of such diseases, develops a community monitoring network based on relays, PCNs and BOCs in order to quickly detect all suspicious cases and to take all the necessary measures.	1. In the community In a healthcare area during internship, the learner helps the target group to identify their health problems. They identify all activities to be carried out to face those diagnoses. They organize a meeting with the healthcare centre staff during which they present a file of community diagnoses as well as the prelevant activities to implement. They organize, lead and assess, if possible within the framework of the analysed situation and in all the ways linked to the list made and presented in the glossary, a communication session on behaviour changes for: either 10 to 50 school children aged from 6 to 12 or from 12 to 18; or 20 to 40 relay people in a community. The learner should appeal to resource persons and all the reference documents. 2. At the healthcare centre 1. During their internship in a healthcare area, the learner takes care, among a target population determined by the healthcare centre, on of the following sessions: vaccination, PSC, reproduction health: PCN ou PoNC or desirable births, environment hygiene. Besides, the learner carries out an analysis of the cover rate for the activity carried out. The learner should appeal to resource persons and all the reference documents. Specific technical performances in link with the activity will be performed on at least two persons. 2. The learner takes care, alone, using flow charts, of two patients who come for a consultation at the healthcare centre. These patients suffer from a common health condition for the region. Assessment takes place during the last planned internship in a healthcare centre. 3. At the hospital The learner takes care, alone, of a dependent or semi-dependent patient aged of less than 60 years. Among all the healthcare required, they provide at least one basic healthcare and 2 to 4 specific healthcares. Assessment takes place during the last planned internship in one of the following departments: medicine, surgery, pediatrics, gynecology/obstetrics. The learner must be allowed time to get to know the patient and his file.

All competences do not have to be found in all situations; but at the same time, one situation cannot mobilize just one competence, in which case it would not be representative of the complex nature of situations on the field. In the same way, if a competence is not mobilized in any situation, this shows a problem in the building/validation of the competence itself or of situation families.

Wording of integrated continuous objectives (ICO). The formalization of expected competences materializes by the wording of what we call the 'continuous integration objective' (CIO) in all contexts of initial training. CIO is a variation of what De Ketele, in 1980, called terminal integration objective (TIO). The aim here is to make directly visible what is expected as macro competences throughout the year; in other words, a summary of situation families. Specificities of nursing practice, that is, diversification of internship environments, with different contexts for the mastery of competences and temporal distribution of internships which may vary from one group of students to the other, led us to build, not what is usually expected in terms of 'terminal integration objective' (TIO), but to integrate the concept of CIO.

6. Structuring of competence stages (or capacities)

This phase is divided into two steps:

Identification of capacities for each competence. At this stage, and still in the context of participative production, the aim is now, for each competence, to identify competence stages (CS) or capacities which the learner must acquire to practice the competence in an optimum manner. CSs are sometimes activities, sometimes groups of activities. Depending on the methods presented, they should correspond to activities classified as 'observable' in cognitive, reflexive, procedural, psychoaffective and social categories. CSs are always identified starting from an 'end of training' profile and declined from the last to the first year of studies in growing order of complexity/difficulty. Reading CSs for just one year (corresponding to vertical reading) shows the 'ingredients' of each competence; that is, the capacities included in it. Horizontal reading of CSs – reading the same CS throughout all 2nd, 3rd, 4th etc years of studies (according to the contexts approached) – shows the progress and evolution of the complexity of this CS throughout the training. It is worth noting that one and same CS can be found in two distinct years of the training. In this case, the criteria making the CS and/or the complexification of the SF in which the CS is practised are the elements which

Table 4. Continued integration objectives for the 4 years of initial training in nursing in DRC

	1st year	2nd year	3rd year	4th year
Continued integration objective: 'Students should be capable of':	• Writing a report on data collecting in link with community observation. • Taking care of a patient, providing basic healthcare in surgery and intern medicine departments.	• Collecting, categorizing and presenting information for community diagnosis. • Organizing sessions on health prevention and promotion in a target group aiming at behaviour changes. • Taking care, alone, of a patient in a similar situation to one already encountered in a department of surgery or internal medicine.	• Increasing community participation and leading prevention and promotion activities at an individual, family or collective level within the structures of one's healthcare zone. • Using flow charts if needed, taking care of paediatric cases in a stable situation in a healthcare centre as well as in a hospital.	• Organizing health prevention and promotion activities at an individual, family or collective level within all the structures of a healthcare zone. • Taking care of patients with health problems common to the region they live in, in a healthcare centre as well as in a hospital, during consultation or hospitalization.

will show the evolution of the required learning. A CS may not appear at the beginning of training when the capacity aimed at is too complex for the year of studies and thus doesn't correspond to the situation families described for the year of studies approached. Still, in a vision of integration as well as of operationalization of the reference framework[6, 9, 10].

Identification of criteria and indicators for each capacities. With a view to assess the reaching of competence stages and of competences and situation families, the last step is to write, for each CS, the criteria, that is the indicators of mastery levels of the CS. The 'reference guide for competences' tool will thus make those indicators accessible to students. Those criteria and indicators can, depending on contexts, be divided in minimal criteria (MC) and perfecting criteria (PC). The use of exclusion criteria can also be considered. This wording phase of criteria and indicators is often seen as difficult, but can be facilitated at the beginning of the process by developing a qualitative reference framework based on a list of criteria and their definition. Precision is important when it comes to define as accurately as possible the qualities of the CS. As mentioned earlier, the activities listed when building the reference guide for professional activities are a support since the most precise of them are often used as indicators. For example, reflexive and precise activities such as 'respect asepsis (rules)' or 'calculate medicine proportioning' etc. bring assessment elements for a CS such as 'provide technical healthcare' or 'administer medicine'. One can notice that the link between precise activities and categorization of activities is not as linear and that in this case a reflexive activity is useful as criteria of a CS taken from a procedural activity. 'Respect asepsis (rules)' and even 'calculate medicine proportioning ' mobilize and include a reflexive and procedural approach. Besides, those two indicators belong to the same 'technical quality of healthcare' criterion. Thus, within the framework of an ICBA, pertinence to have a programme and educational and assessment tools built in a multidisciplinarity vision is reinforced. Criteria can be expressed using a noun (eg, adequacy, coherence, precision, originality); a noun and a complement (pertinent use, correct interpretation, personal production); an action verb (to respect) or a question (does the patient feel at ease?; are security norms respected? etc.).

A few rules guide us in the development of this work: those criteria do not need to be excessively but sufficiently strict. There should not be too many or too little of them (three or four)[25].

7. Validation of the integrated reference guide for competences. The validation of a RGC is made in several steps; it is thus more appropriate to use the term *validation process*. This validation must be done on the application field with the various healthcare professionals and the population as well as with (national and international) public health, health promotion and education experts. Validation times should also be organized with students and learners on work placement fields. The results of the validation will all be considered and discussed with the direct actors (pilot group) to produce the final version of the IRGC. The logic which prevails in a participative approach is indeed to respect not an institutional or expertise hierarchy but a 'process hierarchy' and by doing this, the involvement of actors. Final decisions should not escape the pilot group of a reform, even more so when this group is representative of the actors directly concerned by the change. The validation process can be categorized 'internal' or 'external' depending on the contexts and the actors present.

Discussion

The use of this methodology in different contexts has brought to light certain precautions to be taken into account and highlighted some pitfalls to be avoided. In the phase described earlier as

'Listing of data in the shape of action verbs', particular attention should be given to the precision of the verbs used. Ideally, the methodological process should include data collecting among field professionals by people with experience in the methods of qualitative data collecting and explicitation interviews[19]. Besides, some time should be planned during workshops in order to ratify the wording of verbs. For example, the verb 'to take care of a patient' is too vague. It should be translated as 'to analyse the person's situation', 'put a name on problems' and 'plan the required healthcare'.

In the phase described earlier as 'categorization of activities', one quickly observes that the same categories of activities often lead to the same types of competences. For example, reflexive activities lead to the 'analyze' competence, social and psycho-affective activities to the 'communicate' competence. From then on, one can project oneself in the existence of 'generic' competences to jobs dealing with the human. This raises a question on the danger of simplistic standardization as a result of this methodological process. This observation helps us to insist on the respect of a necessary global vision in the methods presented, even though adaptations should always exist. Precision of competences (definitions), situation families, competence stages or capacities (described in terms of observable activities), criteria and indicators enables us indeed to distinguish the context and activities specific to each professional profile and thus to reintroduce singularity.

In the phase described as 'Identification of common performance situations (situation families)', it is worth noting that the categories of situation families ratified influence the choice of work placements in initial training. It is important that participants realize pretty soon the link existing between situation families and internships in order for their choices to guide them in the final choice of categories of situation families, even if the identification of situation families starts from the main functions and from professional practice places. In continuous training professional practice places are the elements which directly guide the building of situation families, since priority needs are found in professional practice places.

In the phase 'Identification of stages (or capacities) for each competence', it is worth anticipating the following step by keeping as criteria activities considered as too precise to be included in a competence stage.

In the phase 'Identification of criteria and indicators for each competence stage (CS)' we questioned ourselves on the pertinence of including exclusion criteria – also called essential, vital or 'dynamite' criteria. The aim of such criteria is to stop learners in case of gross misconduct which puts the patient's life in jeopardy. Those criteria concern especially the 'provide healthcare' competence. This type of criteria should, in any case, be used parsimoniously and be the subject of a debate between all participants. It is also worth paying attention to the fact that in horizontal reading, a perfecting criterion can be ratified as a minimal criterion in higher classes for the same CS.

Understanding the concept of *integrated reference guide for competence* is something that will come during the process of building tools, when the linear logic of the mastery of knowledge underlying capacities and competences (linear or analytic approach linked to the action verb) coherently meets the integration logic of the mastery of competences in situations (contextual or situated approach). In a behaviourist approach of the use of competences, linear logic will prevail. This logic is thus translated in the RGC by listing a great number of competences and capacities which have more or less been put in context. The way in which IRGCs are built is not totally matrix either[26], even though it is quite similar to this concept in crossing objects (competences and situation families). Indeed, situation families themselves do not have the same status as competences and competence stages and are thus considered as assessment units as those found in IRGCs, together with competences and capacities. The 'Belgium-Congo-Quebec (BCQ)' pyramid

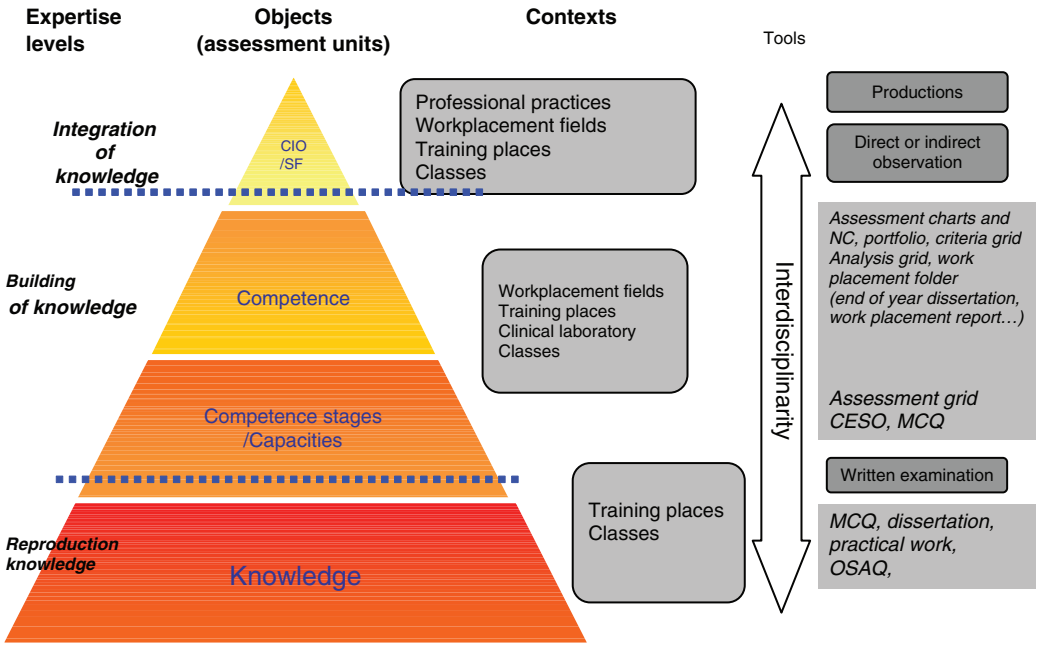

Figure 3. Build an Integrated Reference Guide for Assessment (IRGA) in coherence with the IRGC in order to increase didactic transposition: The 'Belgium-Congo-Quebec (BCQ)' Pyramid

(see Figure 3), which is radically different from the adaptation of Miller's pyramid[27], helps us to better understand this structure.

Integrated reference guides for competences as management tools for Human Resources in Healthcare

Building reference guides for competences or competence profiles represents the central piece from which several other methodological and production tools find a significant place in the vast field of quality/HRH management[28, 29]. Figure 4 clearly emphasizes this central role played by working on IRGC.

Starting from this reference framework, several axes of use can be described:

- For HRH management in general: the RGC and its update process are tools which help to determine a reference framework (referentialization logic) in favour of a dynamic and open restructuring of HRH.
- For the development of reference guides and training plans: within the framework of the study contexts described in this article, the first objective of RGC is to succeed in developing training curricula which meet healthcare professionals' training needs. Within the framework of basic training, one reference guide in training is needed for each year of the training. However, various mechanisms may appear, due to the latest constraints in terms of organization of training curricula per unit, particularly in European contexts. For continuous training, the logic of training plans[9] will usually be preferred to that of reference guides for training, the latter being more exhaustive.

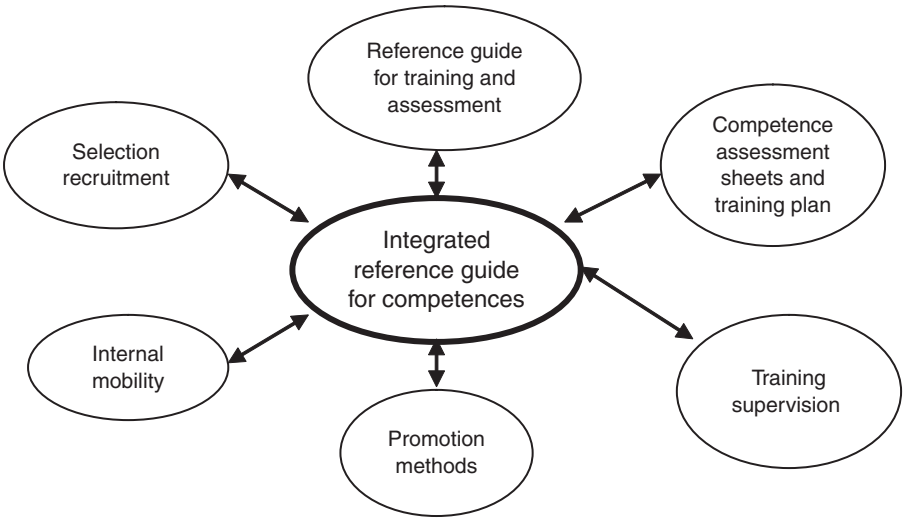

Figure 4. Fields in which Reference Guides for Competences are used as tools for HRH management

- As a tool for the formative assessment of healthcare professionals: within the framework of formative supervision of healthcare professionals, reference guides present the competences in situations which are expected from the agent as well as the criteria for carrying out these competences. The agent can thus be supervised, in their professional practice environment, on their communication skills, their competence in carrying out healthcare techniques, their management skills, etc. Moreover, some ministries now officially recognize the assessment of individual performances when granting subsidies and bonuses. A RGC also helps to determine performance criteria and serves as a real mission statement objectively reachable in accordance with the agent's working context.
- For the listing of objective criteria for methods of promotion, intern mobility and selection/recruitment: in the same way as performances, competence assessment can serve as a criterium to mobilize agents according to the competences expected for one job or the other as well as a criterium for individual promotion (in parallel with career plan development) or even as a criterium for recruitment (even more so when there is real adequacy between the basic training curriculum of training schools and recruitment criteria of healthcare agents based on their competences).

Conclusion

This article has met rigorous requirements in terms of concepts in training and methods in pedagogical engineering. Inter-sector work with the education world and the possibility of appealing to education and training engineering are possible mechanisms although they sometimes present drifts. But it is also essential for the healthcare world, and particularly the public health world, to integrate and master expertise in pedagogical engineering and curricula. This necessity is based upon several statements:

- The essential role of HRH in the quality of healthcare and services;
- The lack of global efficiency of healthcare training (professionalization, efficiency and rationalization, adequacy with populations' and systems' needs, competences and autonomy);

- The importance of an integrated competence-based approach which answers the double question of 'systemic utility' and 'didactic transposition' in coherence with the aims of a given healthcare system,
- The adaptation to change should be done in immediate proximity with the actors directly concerned by the action.

This conclusion brings us to consider the valued competence-based approach as an integrated competence-based approach (ICBA), integration being ensured at various levels and in several places.

In conclusion, we insist on the question of the social responsibility of training institutions. It is indeed important that they should push to more coherence, meaning, professionalization and rationality of training in the healthcare sector. It is by questioning the cost-efficiency relation on the one hand and the aims of healthcare organizations on the other hand that public health schools will be addressed to take a determining role in the vision to be developed, in each context, for better management of human resources in healthcare.

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