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Meta-profiles to enhance competence based training, case-study of the Faculty of Agronomy and Agricultural Sciences (FASA) Dschang Cameroon.

Abstract

Nowadays universities are faced with the challenge of implementing continuous change and improvement of courses to develop a better educational offer for students. A core issue concerns the learner having a central position within the process. Expected learning outcomes concern knowledge as well as skills of both subject specific and generic competencies to equip the graduate for the job market. This paper focuses on the Tuning Africa methodology which is a student-centered approach to improve higher education institutions in Africa and worldwide. It aims at providing an overview on the development of meta-profile in the domain of Agriculture through the combination of appropriate competencies. The meta-profile is a useful tool for improving student-centered education. The empirical data for the development of the meta-profile were drawn from a qualitative questionnaire with open questions filled-in by the different stakeholders: students, lecturers, graduates and employers. The first degree program currently used in the Faculty of Agronomy and Agricultural Sciences, Dschang, Cameroon (hereafter referred to as our local institution) has some similarities and differences in the subject specific and generic competencies respectively, with respect to the meta-profile proposed by the Agricultural team of Tuning Africa in design and content. The results of this study describe areas to rethink and restructure in the teaching and learning for a more efficient professional development of our local institution and other institutions of Higher Education in the continent taking into consideration the specificity of the systems approach. The findings have the potential to reshape undergraduate education in our local institution to facilitate transferability of degrees and facilitate international mobility of students as proposed by the Agriculture subject area of the Tuning Africa team.

Keywords: Meta-profile, Agriculture subject area, Tuning Africa, our local institution

Introduction

Effective learning is the fruit of well conceived training programs. In order to develop a program that satisfies the different stakeholders of the system, efforts need to be made to incorporate the aspirations of various components of the system in the program development. With the increase number of students interested in university education, there is need for attention among policy-makers, employers and educators to promote a student-centred educational system with products ready for the job market (Bell, 2010). Student-centred educational systems are positively associated with student outcomes. Good teaching practices that promote student success have been identified by some researchers. Chickering and Gamson (1987) outlined seven good practices of undergraduate education. They suggested that good practice encourages: (1) student-faculty contact, (2) cooperation among students, (3) active learning, (4) prompt feedback, (5) time on task, (6) high expectations, and (7) diverse talents and ways of knowing. While Cruce et al. (2006) clustered scales related to good teaching practices into three groups: 1) effective teaching and interaction with faculty; 2) interactions with peers, 3) academic challenge/high expectations.

The harmonisation of higher education in Africa is important to achieve collaboration across borders, sub-regionally and regionally, in curriculum development, educational standards and quality assurance, joint structural convergence, consistency of systems as well as compatibility, recognition and transferability of degrees to facilitate mobility. Tuning Africa (subsidized by the European Commission and coordinated by the University of Deusto Bilbao, Spain), was adopted as a possible instrument to advance harmonisation in the continent. Tuning Africa has provided a platform for dialogue on quality assurance and the improvement of teaching, learning and assessment in higher education by bringing together academia, employers, and students. The approach is competence-based. Deep understanding as a basis for the use of knowledge and skills is an outcome expectation of the competence-oriented teaching and learning. The Tuning Methodology defines the most relevant competencies of the subject area which are deemed to be important. Competencies are defined as the cognitive and meta-cognitive skills, knowledge and understanding, interpersonal, intellectual and practical skills and values to be acquired by a learner to earn the degree, certificate or diploma certifying training in the field of study (Wagenaaar, 2014). In Tuning, two types of competencies are distinguished: generic (common to any degree course) and subject-specific competencies (Diallo, 2018).

Among the challenges facing Africa today is the need for African agricultural graduates and professionals to work effectively with rural farmers, and to bring innovation in agricultural practices based on the skills and competencies that they have acquired in their various institutions (World Bank, 2007). It is with this belief that the challenge of food insecurity can be solved if agricultural graduates help them to transform traditional agriculture through development of new methods, processes and systems to address real-issues facing agriculture and agribusinesses; and their sustainability across the continent. On the African continent, there is a consensus on the need to shift from merely fit-for-purpose to creative models of agricultural higher education that make agriculture attractive to young people while creating impact in rural communities and serving the needs of industry (Salm et al., 2013). Training that presents farming as a lucrative business along the food value chain and attracts young people to engage was identified as a new paradigm in training that African universities need to adopt (Mulder, 2012; Kumar and Kumar, 2014).
One of the tasks in the Tuning Methodology, after the development of the generic and subject-specific competencies, and the consultation with the stakeholders, was to develop a meta-profile. It is a representation of the structure and combinations of generic and subject-specific competencies that gives meaning and identity to a subject area (González and Yarosh, 2013; González, 2014). Meta-profiles are mental constructions that cluster the generic and subject-specific competencies into definite core and supportive elements and illustrate diagrammatically their interrelationships. Core elements are those indispensable competencies that all graduates should acquire while the supporting elements are the other competencies that are related to the core elements (Beneitone et al., 2014). Meta-profile enables collective understanding and common comprehension of degree profiles, offers possibilities for recognition, validates the learning experience or academic qualification acquired, and allows development of joint degrees (González, 2014; González and Yarosh, 2013). It also offers a new path to regionalisation and ultimately to globalisation (Knight, 2013). Learning and teaching is characterised by the orientation toward domain-specific relevant knowledge and meaningful representations, as well as domain-specific ways to acquire knowledge and domain-specific ways to think and act. Therefore the development of competencies is made differently in diverse domains.
The objective of this work is show how the meta-profile developed by the Agricultural Sciences Subject Area Group of Tuning Africa can contribute in the improvement of Agricultural programs of African Universities in general and our local institution in particular - the crux of training in agriculture in Cameroon.

Methodology

The Agricultural Sciences Subject Area Group (SAG) carried out an extensive consultation with various stakeholders to validate the generic and subject-specific competencies by means of either an online or face-to face interview questionnaire based survey in main regions of Africa (North, West, Central, East and South) in which Cameroon and in particular our local institution, was fully involved (Boodhoo, 2018)

Fig. 1. Geographical distribution of participating countries of the Agricultural Science Subject Area Group.
There were 1,023 respondents comprising 312 academics, 381 students, 204 employers and 306 graduates. The characteristic of each stakeholder as defined by Beneitone (2014) is given as follows: Academics were university lecturers teaching in the area of Agricultural Sciences. Graduates were students who had successfully completed and graduated with a full study programme / university degree, in Agricultural Sciences. Students were those in the last two years of a first degree in Agricultural Sciences or awaiting graduation. And employers were organisations that had employed graduates or although they had not employed graduates, had jobs of interest for the graduates. In each category of stakeholders, at least 30 respondents were interviewed. They rated the degree

of importance and ranked the 18 generic and the 16 subject-specific competencies and the extent to which these competencies are currently being achieved, on a four-point scale in which 1 = “none”, 2 = “weak”, 3 = “considerable” and 4 = “strong”. The rankings (that is the indication of the most important five competencies in order of precedence) assigned by all stakeholder groups were analysed (Diallo, 2018). Generic competencies, also known as transferable skills or general academic skills, are competencies that a degree holder in any field of study is expected to acquire. Subject-specific competencies are the knowledge, skills, abilities and values that individuals who have completed a course of study in a particular subject should possess. In drawing up the subject competencies, the academics of the group of Agriculture Sciences deliberated on the competencies that they expect a first degree graduate in Agriculture should possess after completing a programme of study in Agriculture. In developing the Meta-profile for Agricultural Science, several variables were taken into consideration; firstly it was deliberated on which competencies should constitute the core and supportive elements of an agricultural study programme from an academic perspective. And secondly, the rankings and rating provided by consultation with the students, graduates, lecturers and employers were used to categorise the competencies. Other factors that were taken into consideration were the key occupational jobs for the sector, the general trends in agricultural development (e.g., mechanisation, development of agribusinesses, intensification of small holder production system, agricultural value chains, among others). After this step, the supporting elements were grouped into 5 clusters: (1) learning process, (2) social values, (3) organisation and communication skills, (4) innovation and (5) technical/technological capacity. In the final step of setting up the Agricultural Meta-profile, the core clusters was combined with the supporting clusters to show their interrelationships (Sene and Tankou. 2018).

Results and Discussions

A reflection on the similarities and differences between the meta-profile and current degree programme profiles of the participating universities were examined. The Agriculture meta-profile was compared and contrasted with the current degree profile of each participating institution. This process allowed the academics to reflect on the similarities, differences and missing elements at both institutional and regional levels. The core elements (S1, S2, S3, S4 and S5) were covered in all of the Agricultural Sciences programmes of the participating universities. In a few cases, it was suggested to increase the number of competencies, in the core elements, such as S12 Ability to make sustainable use of water and other natural resources for agricultural use and S15 – Ability to improve quality and safety along the agricultural value chains. This is understandable as more and more emphasis is now being placed on food safety and sustainable use of natural resources in many agricultural production systems. In some instances, some subject specific competencies identified by the group are not currently covered in the programmes of some of the institutions. For example, in the curriculum of University Gaston Berger’s Animal Productions Bachelor degree does not fully cover the Agriculture specific competence S16 “Ability to select and manage machinery, implements and equipment for agricultural use in different farming systems”. All the generic competencies were considered relevant and important for a first cycle degree programme in Agricultural Sciences SAG but not all competencies (e.g., leadership, innovative thinking, communicate in local language, among others) were covered as the emphasis is mostly on teaching and assessing the technical and scientific aspects. In some cases, although the students are provided with opportunities to develop their communication skills, Information Technology skills, ability to work independently, they are not explicitly assessed. The generic competence G2 Professionalism, ethical values and commitment to UBUNTU was lacking in the degree profile of all Universities. There is thus a need for more efforts to define the essence of UBUNTU and its resultant benefits to staff and students. Another generic skill that was missing in many University programme of studies was the ability to speak the native language. This skill was judged important as fluency in the native language build more trusty partnerships and transmission of knowledge, especially when the graduates work with farmers in rural areas. Members of the Agriculture team were concerned about courses with large classes, as it may not be easy to impart all the competencies, and appropriate teaching and learning methods for some competencies (e.g., S4 Possesses entrepreneurial and creative skills, G10 Self confidence, entrepreneurial spirit and skills). However, some members of the SAG indicated that in their programmes, students undertake practical training in industries and enterprises for periods ranging from three to twelve months. Such opportunities will allow the student to gain competencies in both the generic and subject-specific competencies (Armoogum *et al.*, 2016). In most institutions, students undertake a research based dissertation in their final year. When writing a final thesis, the student develops to some extent competencies in their ability to write in a scientific language, acquires more in-depth knowledge, ability to search for relevant information, ability to apply knowledge gained, ability to analyse, summarise and communicate results, among other competencies.

The use of the meta-profile to develop programmes assures: (1) the effectiveness of including courses that provide the desired competencies to be achieved in the training programme (Hussein and Mloza-Bamda, 2018); (2) reduces the time spent in carrying out the exercise. The traditional way of programme development has often consisted in debating on the various courses that should be taught with efforts geared towards making sure that the sum of the credit hours of the group of courses add up to a specific value as dictated by the administration. In so doing, some essential competencies are ignored while courses offering same competencies are in excess. An example in the undergraduate programme of our local institution is the little emphasis placed on the G12 generic competence. This competence is on the ability to communicate with individuals and groups in written, graphical and verbal form and to be effective in conveying ideas and technical knowledge in agriculture (Yemi et al. 2018). If this competence was considered in designing the programme, the course "communication techniques" which existed in the former programme would not have been dropped out in the new programme. Another innovation in the programme of our local institution is the reduction of the duration to achieve generic competencies from four to two semesters. The Agricultural Science group of Tuning Africa outlined 18 generic competencies (Yemi et al. 2018) which should require between four and six semesters. In the new programme of our local institution, specialisation has to start in the second year as opposed to starting in the third year in the former programme. Many efforts are required for the 18 generic competencies to be covered effectively under the reduced duration of two semesters. In addition, students admitted through special entrance examinations into the second year may not possess the required generic competencies offered in the first year. Effective learning depends not only on the course content but also on the evaluation methods. In a teaching and learning community, the most effective evaluation is that which encourages and rewards effective teaching practices on the basis of student learning outcomes (Doherty et al., 2002; Shapiro and Levine, 1999). Learning outcomes identify what the learner will know and be able to do by the end of a course or program. It is thus indispensable for course contents and/or programs to be completed with learning outcomes. The outcomes refer to observable and measurable knowledge, skills and attitudes. Different and effective evaluation methods of students should be envisaged for successful training with emphases on performance tasks to enhance professionalism which is the ultimate goal in agricultural training. The tasks have significant impact on the quality and complexity of learning process by influencing the choice of the learning paths and strategies, on the motivation of the students, as well as on the depth of the resulting understanding and the acquired kind of knowledge.

Conclusion

The success of a training programme is molding graduates ready for the job market. Taking into account competencies that satisfy all the stakeholders in the systems provides the appropriate platform. Thus the platform provided by the Agricultural group of Tuning Africa can greatly contribute in effective training in Agriculture in African Institutions and also enable harmonization and mobility amongst the different Institutions in the continent. The evaluation of teaching accomplishments has been more haphazard and less rigorous in our local institution and many other institutions of Higher Education in the continent where very little effort has been made on learning outcomes, evaluation methods and learning tasks. Training of educators on competence-based methods as proposed by the Tuning Methodology, will go a long way to foster graduates ready for the job market, harmonisation of degree programmes and mobility of students amongst Higher Institutions of learning within the continent.

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