

Perceptions and Attitudes of Academic Staff Towards Agricultural Training in Kenyan Universities

Davis Njuguna Karanja, Raphael Githaiga Wahome, Catherine Nkirote Kunyanga, Cecilia Moraa Onyango

University of Nairobi, Kenya

Abstract

Agricultural productivity in Africa does not match that of the number of professional graduates working within the sector. This raises question on suitability of university training to needed graduate competencies. Under "PREPARE BSc project", ninety-five lecturers selected from academic disciplines were interviewed to collect data on lecturers' perceptions and attitudes on learning environment, curriculum development, teaching and learning, and assessment activities. Over 80% of the respondents stated that curricula were adequate in content, but poorly aligned to teaching and learning activities. They (71.4%) thought they were competent in lecture and laboratory teaching methodologies, but the university learning environment (53.4%) and field training arrangements (73.9%) were poorly aligned with the curricula. There was excessive emphasis on summative assessment (68.4%) at the expense of continuous assessment tests (formative assessment). A need was therefore identified to train staff on aligning curricula, teaching and assessment methods to learning environment and expected graduate competencies.

Key words: Graduates of agriculture, curriculum alignment, teaching and assessment methodologies, agricultural faculty quality

1. Introduction

Globally, universities are mandated to equip personnel with knowledge and skills demanded by the job market and society. Before 1990, universities admitted fewer students who were motivated to learn and eventually provide solutions to problems affecting their societies (RELMA, 2002). However, since then, there has been increased student numbers and diversity of academic capabilities and cultural backgrounds (Fry, Ketteridge & Marshall, 2009). Consequently, lecturing (the common teaching method at universities) has failed to provide real-life experiences, and proved inadequate for production of graduates having competencies in critical thinking and problem-solving (Odhiambo, 2011). This has had a negative impact on the quality of graduates in the job market (Onyango, Kunyanga, Karanja & Wahome, 2018).

Teaching and learning is a sum total of attitudes and actions of teachers and students in a given environment. Understanding their nature is helpful in enabling learning to take place in an enjoyable way. Teaching methods in world-class universities are highly dynamic, ever evolving, in order to motivate learners to convert from knowledge containers to creative thinkers and adapt to job market demands (Gamache, 2002). However, many students joining African universities today misconceive learning as an

addition of more knowledge into their pre-existing stores. Lecturers should therefore change this mind-set through their teaching, curricula design and assessment format (Biggs, 2003).

Quality university teaching and learning requires that lecturers undergo training in pedagogy for them to become more effective teachers. Incidentally, majority of these academicians are experts in their disciplines and conduct excellent research, but teaching plays a second fiddle (Nyaigotti-Chacha, 2004). In addition, University administration is the corner stone in implementation of an education program and must provide an enabling environment. These include higher education policies, finances, leadership and management, physical facilities, competence and motivation of lecturers and student support services (Kaburu & Embeywa, 2014). However, in the last 15 - 20 years, Kenyan universities have witnessed massive increase in student enrolment without matching increase in financing, staffing and facilities. Consequently, inadequate and run down facilities may compromise quality of graduates (Nyangau, 2014), but the situation in the University of Nairobi is largely unknown.

A project entitled "Enhancing the quality of graduates of agriculture to meet tomorrow's food security challenge (PREPARE BSc)" was implemented in three East African universities, including University of Nairobi. This paper presents results from the component addressing evaluation of academic staffs' preparedness to make necessary transformation for improved graduate competencies.

2. Materials and Methods

2.1 Study site

The data reported in this paper was collected from academic staff of the College of Agriculture and Veterinary Science (CAVS) located at Upper Kabete Campus, 16 kilometres west of Nairobi city, Kenya. The pertinent faculties were Faculty of Agriculture and Faculty of Veterinary Medicine.

2.2 Study approach

A survey of academic staff from the two faculties was conducted using semi-structured questionnaires designed to re-construct the process of delivering quality agricultural education. It was divided into five sections as follows:

- **Characteristics of respondents:** sex; academic qualification, specialization, experience and current position,
- **Conceptualization of curriculum:** knowledge and practices of curriculum design and development,
- **Teaching and learning activities:** traditional and modern teaching methods,
- **Methods used for formative and summative assessment:** question and answer sessions; feedback; examinations; course evaluation and staff appraisal, and
- **Aspects of teaching and learning environment:** physical infrastructure; staff motivation and professionalism; rules, regulations and administration

2.3 Theory of change

From the data collected, analyses of potential modifications of curriculum development skills, teaching, learning and assessment approaches, lecturer - learner relationships and teaching and learning environment

would result in enhanced graduate competencies. The anticipated modifications included constructive alignment of curricula to learning outcomes, training approaches, administration, rules, regulations and guidelines to meet job market demands.

2.2 Selection of respondents

We purposed to interview respondents from the two faculties and each of the nine teaching departments, within which a stratified random sample was obtained with academic positions and gender as strata. A sample of 95 lecturers was thus obtained from 205 academic staff using Cochran’s sample size formula (Cochran 1977) as follows:

$$N_o = \frac{z^2pq}{e^2} \dots\dots\dots\text{Equation 1}$$

Where,

- N_o is the sample size,
- z is the selected critical value of desired confidence level,
- p is the estimated proportion of an attribute that is present in the population,
- q is $p - 1$ and
- e is the desired level of precision.

Equation 2 was used to calculate the final sample size

$$n = \frac{n_o}{1 + \frac{n_o - 1}{N}} \dots\dots\dots\text{Equation 2}$$

Where,

- n is the final sample size,
- n_o is the sample size derived from equation (1) and
- N is the population size.

2.4 Data analyses

The data collected was entered into computer spread sheets and cleaned of inconsistencies. Proportion for each response category was calculated using cross-tabulations. Demographic data was analyzed using percentages and frequencies. Descriptive statistics were derived to demonstrate the leaning of attitude or opinion towards either positive or negative. Qualitative data was assessed for trends and mindsets.

3. Results

3.1. Characteristics of respondents

The key characteristics of the survey respondents are as shown in Table 1. The respondents from either of the two faculties were fairly similar in terms of university teaching experience and gender distribution. There were more respondents possessing lower academic degrees in Faculty of Veterinary Medicine than in Faculty of Agriculture. Likewise, the Faculty of Agriculture had greater academic diversity with staff

possessing degrees from many universities distributed globally. Their years of university teaching experienced ranged from one year to 45 years with a mean of 14.6 years. According to their academic positions, 25 (26.3%) were tutorial fellows and assistant lecturers, 22 (23.2%) were lecturers, 19 (20.0%) senior lecturers, 10 (10.5%) associate professors and 11 (12.6%) professors.

Table 1: Characteristics of academic staff respondents in CAVS who participated in the survey

Characteristic	Category	Faculty (Proportion, %)	
		Agriculture	Veterinary Medicine
Gender	Male	78.4	84.2
	Female	21.6	15.8
University teaching experience	<10 years	48.6	46.2
	10 - 20 years	21.6	19.2
	>20 years	29.7	34.6
Academic degree	Bachelors	0.0	3.5
	Masters	29.7	36.8
	Ph.D	67.6	57.9
	Others	2.7	0.0
University awarding highest degree	University of Nairobi	56.8	80.7
	North American	27.0	7.0
	European	8.1	5.3
	East African	5.4	0.0
	Other Kenyan	2.7	0.0
	Other African	0.0	1.8
	Australian	0.0	1.8

3.2 Knowledge and practices of curriculum design and development

The academic staff responses on seven attributes of the curricula are shown in Figure 1. The respondents opined that curricula were balanced for the stated learning outcomes (86.7%), they were covered in provided time (80.4%) and stakeholders were involved in their development and review (84.8%). However, some thought that the curricula failed to provide sufficient details (23.9%) for effective delivery, teaching and assessment (30.8%) and philosophical outlook (22.0%). Only small proportion stated that the curricula were insufficiently modern (31.9%) since their delivery rarely had input from invited guest lecturers from the industry and other world class universities (26.5%). From the non-structured comments, respondents suggested that, interpersonal and entrepreneurial skills be incorporated within the curricula.

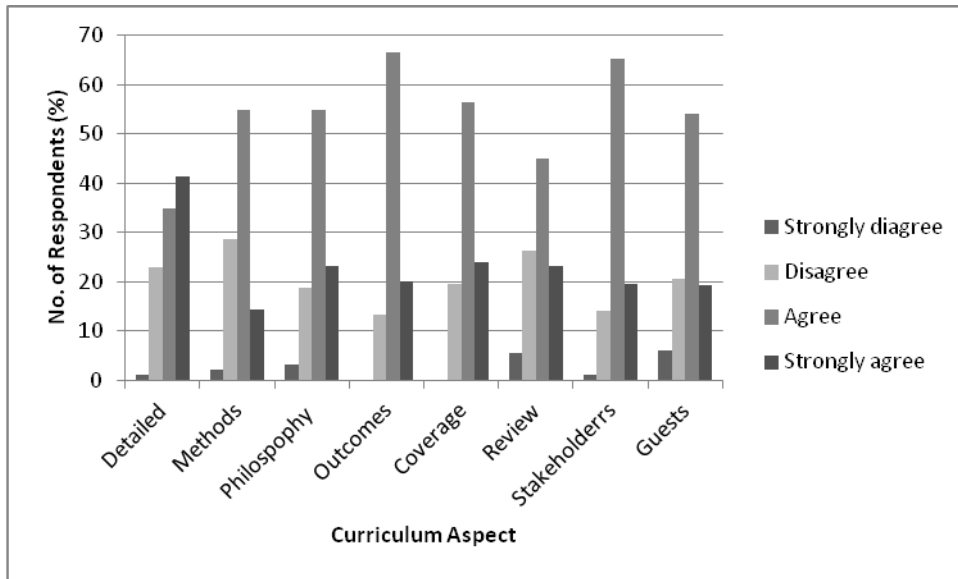


Figure 1. Opinion of lecturers on nature of their undergraduate curricula, their review process and delivery in CAVS

3.4 Teaching and learning activities

The average scores of respondents' opinion on the six aspects of teaching and learning activities are shown in Figure 2.

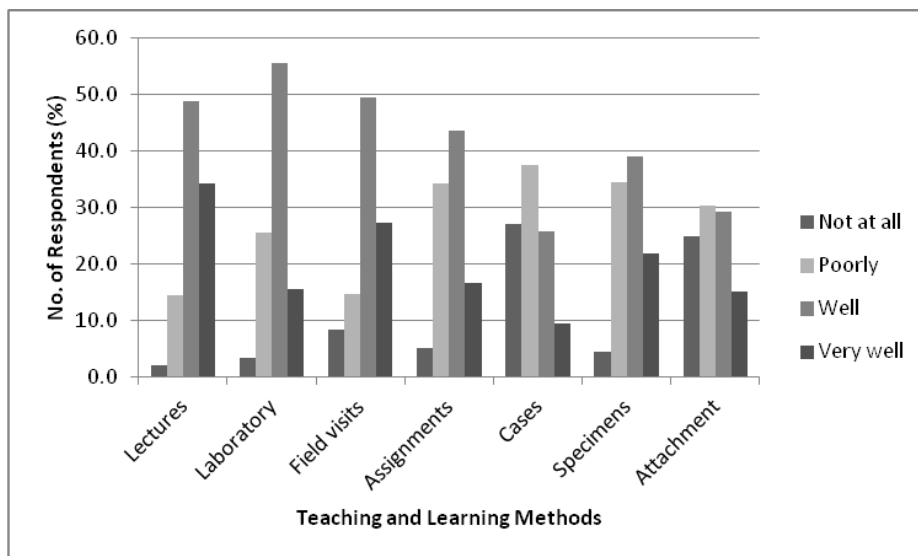


Figure 2. Opinion of lecturers on how best they use various traditional teaching methods, in their course content delivery in CAVS

Traditional lecturing (79.2%) and laboratories exercises (68.0%) were integrated better in teaching and learning activities. In addition, most respondents applied field / farm visits (77%) to complement lectures and laboratory exercises. However, many respondents did not use assignments (40%), case studies (66%) and preserved materials (54.4%) in their teaching. Majority did not think that the industrial attachment (73.9%) as currently carried out was useful for learning. Although majority were computer literate (79%),

knew how to use internet and electronic platforms (50.5%), had one or other social media handles (42.6%), few used them directly for teaching (Fig 3).

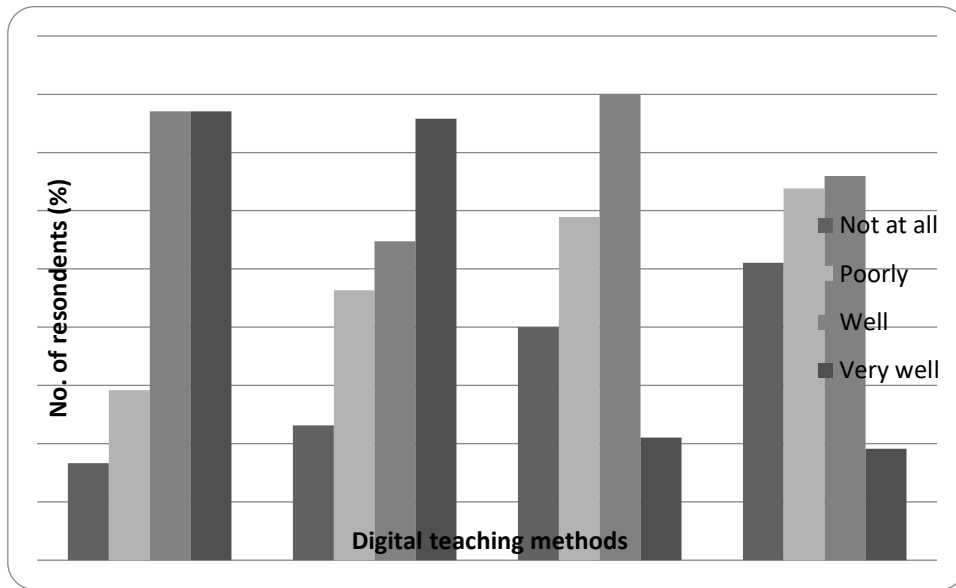


Figure 3 Opinion of lecturers on how best they used modern technology in CAVS

3.5 Methods used for formative and summative assessment

The respondents' opinions on assessing teaching and learning in their undergraduate programs were as shown in Figure 4.

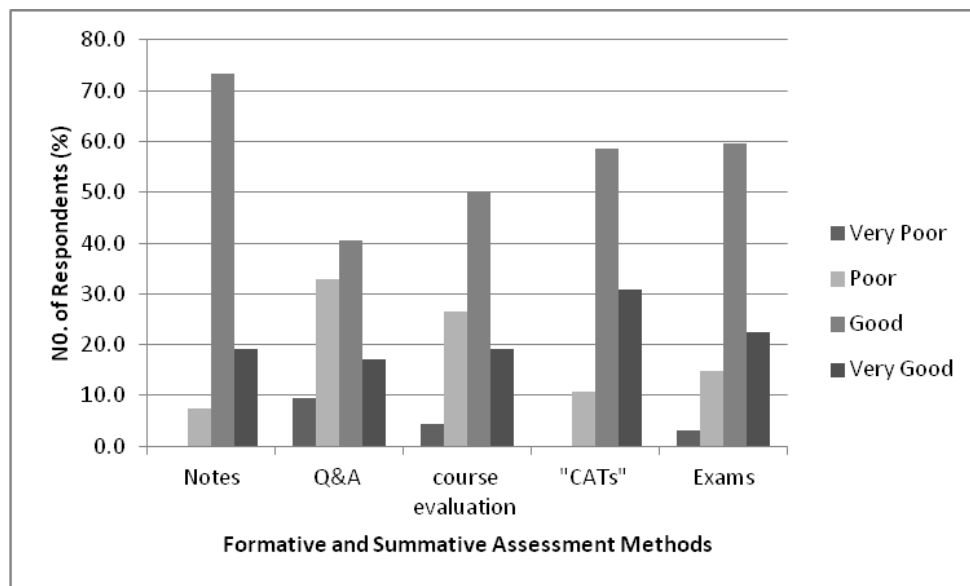


Figure 4. Respondents' knowledge and practices about ways of assessing student learning

The respondents had wealth of experience on summative assessment methods in form of end of topic, mid-semester assessment tests commonly referred to continuous assessment tests (CATs) (79.4%), end of semester examinations (74.7%), student course evaluation (70.8%) and staff evaluation of examination

results (75.3%). Although they rated note taking (notes) as means of assessing communication to students highly (91%), they had less experience on formative classroom assessment and feedback (Q &A) (66.4%).

3.6 Aspects of teaching and learning environment

Among the teaching and learning environment, focus was laid on staff motivation and professionalism and learning infrastructure. Reported levels of motivation and professionalism are shown in Figure 5. Most of the academic staff were motivated and possessed a passion for teaching (68%), were committed to their work (94.6%) and believed that their teaching inspired their students (72.3%). In addition, they were responsive to needs of their students (80.6%), available for consultations outside the classroom time (63.8%), possessed high degree of integrity (83.5%) and were accountable to their administrators (89.2%).

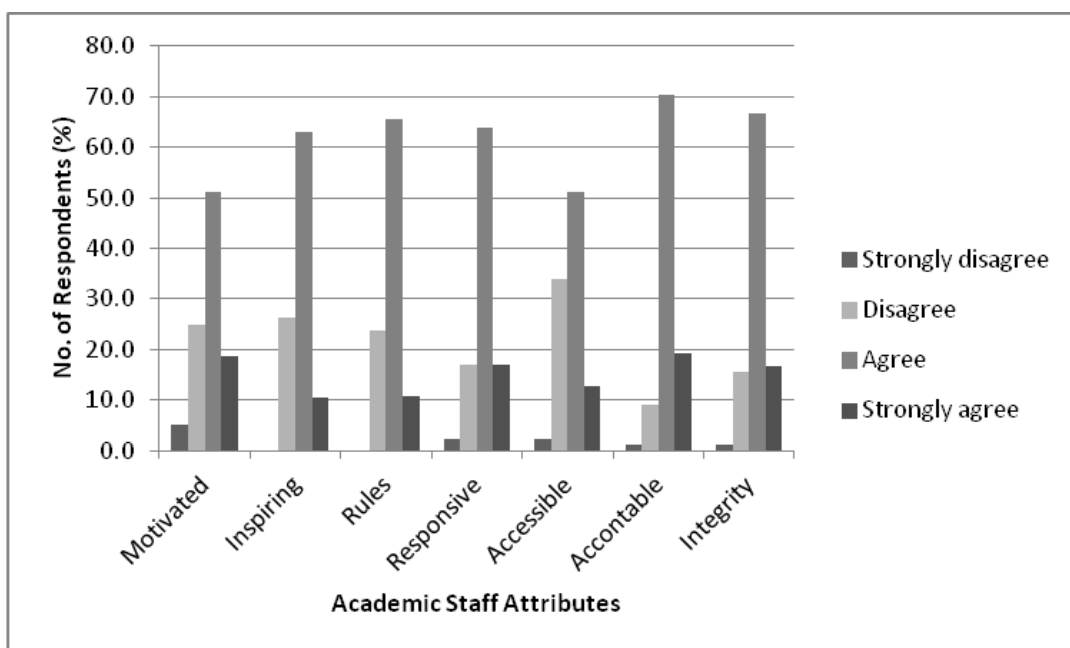


Figure 4: Opinion of lecturers' levels of motivation and professionalism in delivery of quality undergraduate curricula in CAVS

The teaching facilities in CAVS were stated as: adequate lecture rooms (100%), somewhat inadequately equipped and staffed laboratories (53.4%) and libraries (45%). However, many respondents knew little about teleconferencing (8.7%) and voice over internet protocols (VOIP) apps (eg skype®, webex®, whatsapp®) (2.3%) as teaching tools (Fig. 5).

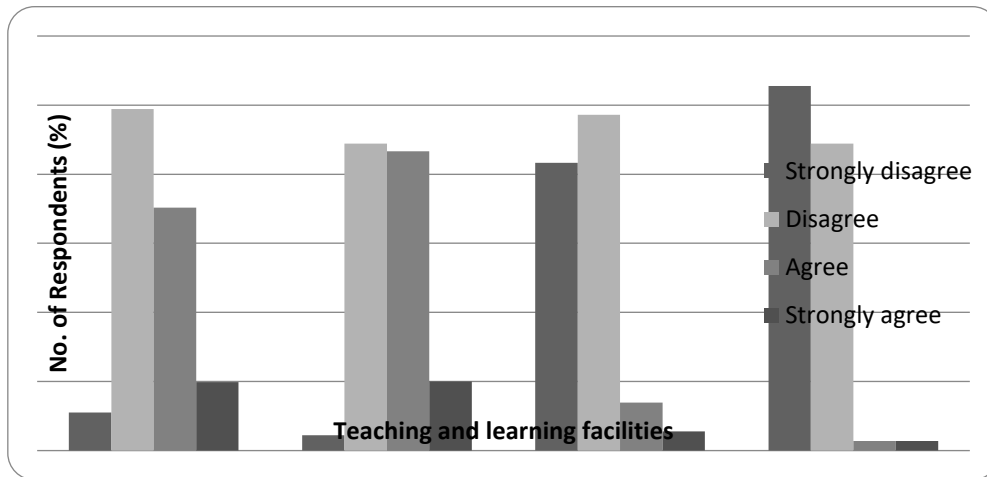


Figure 5: Lecturers' opinion on adequacy of facilities for teaching and learning in CAVS

There was consensus on knowledge (78.5%) under student management and teaching rules and regulations, but rules reference material was poorly circulated (38%). Further, vast majority of staff (93.3%) agreed on need for formal mentorship programs, which had remained largely informal.

4. Discussion

The data in this survey represented balanced views from academic staff in the university having been derived from the two faculties in the college with wide ranging years of experience in university teaching. Incidentally, majority of the respondents were males, a gender disparity that has been reported in other Kenyan universities (Nyaigotti-Chacha, 2004; Kabura & Embeywa, 2014) and does not only affect universities, but also positions in national leadership. The sample truly presented the gender proportions in the lecturer populations of the two reference faculties despite effort to bias interviews in favor of female respondents. This gender disparity is a manifestation of tradition, culture and history. However, it does not reflect reality of feelings among men, women, institution or national acceptance. The University of Nairobi's, Gender main-streaming Policy (University of Nairobi, 2015) and the Constitution of Kenya 2010 (Kenya law reports, 2010) unequivocally state for the goal of equal gender representation among staff and students, and in all public institutions. Indeed, gender inclusivity at all levels is a key object at the College of Agriculture and Veterinary Sciences that is progressively being pursued as openings and qualified female applicants become available.

The curricula development process in CAVS follows world class university standards as provided for in literature (Biggs, 2003). However, some respondents were inadequately informed on the practice. It is possible that administrative effort on participation and the collegial feeling were inadequate and resulted in curricula development inexperience and information on the regularity of review. Likewise, curriculum implementation, by lecturers possessing inadequate pedagogical skills could not properly align content taught to such details in the curricula such as learning outcomes, teaching and learning activities and assessment methods. Consequently, efforts during the interviews to assess the respondent perceptions on graduate competencies, knowledge and skills demonstrated responses at variance with those reported

elsewhere as inadequate to meet the labor market demands (Nganga, 2014; Onyango *et al.*, 2018). This discrepancy requires highlighting, to receive appreciation by university managers and to galvanize administrative action to remedy. The PREPARE-BSc team participated actively in subsequent curricula review cycles in order to emphasize this need. Although stakeholders were involved in curricula development, their composition was sometimes limited by funds available. The anticipated transformations for staff to modify graduate competencies through contents and delivery methods; require widespread buy-in, changed mindsets, different administrative strategies than those currently obtained (Fredy *et al.*, 2009). Some of the materials used by the team, is occasionally used in a piece-meal mannered trainings for selected college participants (University of Nairobi, 2018). Although the tools worked to motivate change, they do need massive administrative support to produce significant change.

The tools and methods espoused by the team targeted change from lecture-centred teaching methods towards learner-centred approaches, widely believed to proffer better learner competencies (Spencer & Jordan, 1999). Lecturing methods favored by a large proportion of respondents attempted to transfer theoretical and abstract contextual knowledge, but failed to emphasize on experiential learning methods comprising teaching laboratory work and action learning. These methods are easy, inexpensive and repeatable because they require recycling of the same material year after year, but they fail to address changes of learner characteristics and needs (Fry *et al.*, 2009). On the other hand, experiential ones require careful planning, higher staff:student ratio, can be expensive and fall out of favor with cash-strapped university managers. Nevertheless, the approaches not only diversify student learning styles, but also give the students opportunities to acquire new knowledge and put into practice what they have learnt (Felder & Brent, 2005). Unfortunately, work-based/ placement learning which offer students opportunities to face real-life situations and put into perspective their employability and career development plans (Ligami, 2016; Onyango *et al.*, 2018) were poorly appreciated and applied by some academic staff. This could be attributed to the difficulties of their proper implementation in an environment of poor university - industry linkages and low financing for the exercise. While most respondents did not think that students could, in addition to learning practical skills, contribute significantly to industrial efficiency and effectiveness and product diversification, they could not put in sufficient effort to sell the students to the industry or even to properly orient the internships. For instance use of modern application in traditional practices can enhance productivity. However, as already seen, lecturers in CAVS, although rapidly catching-up on use of modern learning technologies, e-learning and social media, huge gaps were observed on their ability to facilitate their use in industry. Further, while students were constantly engaged in one form of social media or another, few respondents participated in similar groups with students. Such approaches are known to bring fun into the learning and trigger students' interest (Turer & Rooijen, 2016). Motivated lecturers could make and share youtubes with students and also encourage students to make fun based videos for competitive comparisons with each other. In these, they could have fun while learning. Further, students groups could be linked globally through video tele-conferencing, enabling global exchange of experiences if only viable partnerships existed. Indeed, such means of communications could enhance attainment of internships to the global level as students and industry leaders could discuss challenges and potential solutions (Dimitrios,

Labros, Nikolaos, Maria & Athanasios, 2013). However, respondents were never exposed to these possibilities.

Lectures and summative knowledge assessment over competence /skill building and formative continuous demonstration and evaluation of skills were emphasized in study area. The former were administrative instruments for driving study process from year to year and an important decision making tool on which student progressed to graduation (Dimitrios *et al.*, 2013). Such assessment methods focus on grading of students and are means of universities demonstrating the quality of their graduates. Students too were accorded opportunity to give summative lecturer's performance on course evaluation at the end of the teaching. However, the benefit of this tool to the staff concerned or to the students was poorly understood by the respondents. This lack of interactive assessment and feedback purposely planned by the lecturers and actively carried out during the class time could comprise a paradigm shift in learning approaches. Motivating question-answer sessions during lectures, or engaging students on topical issues using electronic platforms, could motivate lecturers to monitor student learning progress and thinking process as well as provide constructive, relevant and timely feedback (Fry *et al.*, 2009). Indeed the latter should be the goal of university education.

The University of Nairobi, and indeed most other universities in developing countries, is continuously challenged to provide enabling learning environment. These include: sufficiently motivated staff; classrooms; laboratory and field facilities; open discussion places; standard operating procedures for learning and assessment; among others. This is indeed a never ending race, for laboratories and library spaces and facilities are ever insufficient for ever growing numbers of students (Nyangau, 2014; Kaburu & Embeywa, 2014). This massification has made it difficult to create appropriate case studies for learning and has resulted in lecturers falling back onto the easy lecture and summative assessment methods. Therefore, mindset transformations and training to use electronic platforms and related technologies to manage large classes are needed. Such changes can create valuable improvements in graduate quality given that respondents demonstrated massive commitment and possessed passion not only for their work, but also to the graduate quality. It could contribute to high motivation, build lecturers' self-efficacy, support formal and informal student mentorship programs, and enhance completion rates and acquisition of employability skills (Fry *et al.*, 2009).

6. Conclusion

The survey revealed that gaps existed in agricultural graduate training curricula especially alignment of content to teaching, learning and assessment activities; competencies required in the agriculture industry; and modernization of teaching methods including use of evolving digital platforms. It was also clearly shown that, formal lecturer - lecturer and lecturer - student mentorship programs needed to be established. These changes should be in tandem with improved teaching and learning environment and would be recreated in line with upgraded curricula demands to meet the knowledge, skills and competencies needed at the job market.

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