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## **Participatory Development of Demand-Driven Curriculum for Career-Ready E-Extension Services in Nigeria**

**Abstract.** This paper described and contextualized participatory development of demand-driven curriculum for career-ready e-extension services in Nigeria as introduced by the Sasakawa Africa Fund for Extension Education. The stages of participatory development were participatory need assessment, participatory stakeholders' workshop and validation among 124 stakeholders selected as key informants in relation to agricultural extension training, delivery, end users and policy makers. The stakeholders were grouped as follows: community leaders and policy makers; extension agencies / organisations / institutions / employers; farmers; input suppliers / marketers / agro-based traders / other value actors; and potential candidate groups. Stakeholder meetings were held separately with different groups three times, and then a combined meeting took place. The aggregated major decisions/consensus were subjected to content analysis using ATLAS.ti. The validation process included reading of each agreed decision to all participants, then participants indicated their agreement or otherwise, which led to either rejection or acceptance of the decision. This paper concludes that participatory curriculum development has enhanced the stakeholders to identify areas of demand-driven training in response to community needs. The stakeholders preferred more online than face-to-face training. The major perceived advantages of e-extension were reduced risk, time and cost effectiveness while infrastructural and human challenges were the perceived challenges that could possibly hinder the smooth running of e-extension.

**Key words:** participatory curriculum, career- ready, e- extension services, stakeholders, Nigeria

**JEL Classification:** Q16, Q10, Q19

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## **Introduction**

The need for innovations and technologies to be effectively disseminated for end-users to derive maximum benefit and utility has reawakened the interests of public and private development agencies to agricultural extension training. This reawakening has brought with it several approaches, nomenclatures and terminology albeit semantically having the same underlining connotation such that agricultural extension services are currently depicted as agricultural advisory services, or rural advisory service (Sulaiman and Davis, 2012). Oladele (2020) stated that agricultural extension is a common criterion for agricultural development, agri-prenuership, effective and efficient value-chain and food security such that agricultural development outcomes are closely linked to the agricultural advice provided by extension services.

Nigeria has the largest agriculture research system in sub-Saharan Africa, with 17 commodity-based research institutes, the National Agricultural Extension Institute, Agriculture Departments in 18 national universities, three specialized Universities of Agriculture, and an International Agricultural Research Center (CTA, 2011). In Nigeria, extension training and education take two major dimensions: pre-service and post service. Agricultural colleges, polytechnics and colleges of education provide intermediate level education for extension while high level extension education is provided at the universities for competency development. These competencies are needed in technical subject matter (crop, soil, animal); socio-cultural make-up of clientele, communication skills and programme planning and evaluation. However, Asiabaka (2002) indicated that the post service training is required to keep staff abreast with the latest research findings and technologies, increase their knowledge base of subject matter, and cross –pollination of ideas and experiences. According to NBTE (2017), there are 35 colleges of Agriculture in Nigeria. Since the withdrawal of the loan by the World Bank for Agricultural Development Programme – the agency responsible for extension in Nigeria – most of the agents on their own are returning to school for degrees; some even for Master’s-level degrees.

According to Arokoyo and Ekpere (2013), a weak agricultural extension system has been identified as one of the major challenges of agricultural development in Nigeria due to lack of opportunities, relevant and appropriate training for in-service training for field extension staff. The current agricultural curricula in most colleges and universities in Nigeria, and indeed in most African countries, lay great emphasis on technical knowledge and theoretical methods of teaching, without providing the relevant practical experience gained through demonstrations, field visits, and interactions with rural communities.

It was in recognition of the above-mentioned areas of deficiency and the need to boost field experiences in the leadership ranks of the extension service, that the Sasakawa Africa Association (SAA), an NGO funded by the Nippon Foundation, launched the Sasakawa Africa Fund for Extension Education (SAFE) program in 1993 with a special innovative curriculum (World Bank 2012). The SAFE program provides the opportunity for midcareer practicing extension workers to participate in degree programs, and for participating universities to closely appreciate the field conditions and problems of their immediate communities. It also enhances the status of the universities in the agricultural and rural development and provides the Ministry of Agriculture with greater credibility and effectiveness (Arokoyo and Ekpere, 2013).

Gilbert (2010) stated that curriculum reform refers to attempts to improve the selection and organization of school knowledge and associated student learning; however, the reform

process is complicated by different views about curriculum purposes, priorities, and processes and thus the need for participatory processes. Thomas (2016) emphasized that curriculum should be designed such that learning and teaching should enable all students to participate fully by making use of a range of approaches, and being aware of other factors that exclude students from participating fully; providing suitable opportunities for engagement that are relevant and feasible; and having expectations that all students should engage equally within the mainstream curriculum offer.

Curriculum development is defined as a planned, purposeful, progressive, and systematic process in order to create positive improvements in the educational system. Curriculum development is a flexible, dynamic process leading to products such as new or revised curriculum frameworks or detailed curricula which include objectives or learning outcomes, content and means of assessment and evaluation of learning. It can also involve identification and use of appropriate teaching and learning methods and materials – it is not a list of content. Curriculum development provides an opportunity for institutionalizing a systemic approach to learning. It aims at integrating the recognition of the needs for learning, the ways in which learning is organised and delivered, and the way in which learning is monitored and evaluated within a particular context of location, values and beliefs.

Participatory Curriculum Development is a process for engaging end-users in curriculum development. The steps in implementing a participatory approach to curriculum development include: awareness-raising workshop for key stakeholders, follow-up workshop with wider group of stakeholders, training needs assessment, development of curriculum frameworks within the wider curriculum, develop detailed curricula, learner-centred teaching methods training (TOT), learning materials development training, testing of new/revised curricula, and evaluation systems. The Sasakawa Africa Fund for Extension Education (SAFE) enables mid-career extension professionals to obtain university degrees. SAFE started in 2002 at Ahmadu Bello University and now includes eight other universities in Nigeria. Some 522 extension professionals have completed the mid-career BSc program (Oladele, 2020). The expansion of the Sasakawa Africa Fund for Extension Education (SAFE) in 2018 covers Obafemi Awolowo University where a participatory curriculum development approach was applied to set up a curriculum on e-extension and social engineering.

### **Objective of study**

This paper describes and contextualizes participatory development of demand-driven curriculum for career-ready e-extension services in Nigeria as introduced by the Sasakawa Africa Fund for Extension Education.

### **Methodology**

A participatory curriculum development approach was used to develop a curriculum for the Bachelor of Science degree on e-extension and social engineering in Obafemi Awolowo University, Nigeria for the implementation of the Sasakawa Agricultural Fund for Extension Education (SAFE). The stages of the participatory development were participatory need assessment, participatory stakeholders' workshop and validation among 124 stakeholders selected as key informants in relation to agricultural extension training, delivery, end users and policy makers. The stakeholders were grouped as follows: community leaders and policy

makers (11); extension agencies / organisations / institutions / employers (46); farmers (26); input suppliers / marketers / agro-based traders / other value actors (15); and potential candidate groups (26). Most of the groups had more males than females.

Stakeholder meetings were held separately with different groups three times, and then a combined meeting took place. Each group had a facilitator and two rapporteurs who engaged the group in discussions guided by the developed group through checklists. The decisions from each group were presented to all the participants. The presented decisions were then validated so as to capture the views of the majority of the participants on each issue. The validation process included reading of each agreed decision to all the participants, then the participants indicated their agreement or otherwise, which led to either rejection or acceptance of the decision. Using ATLAS.ti 8, the validated reports were subjected to content and thematic analysis to derive and analyse the major decisions/consensus on each issue. Each report was read through and quotations were derived and preliminary codes were assigned to the quotations based on similarities and the aspect of the need assessment that each quotation addressed. This was done to analyse the content. Patterns and themes among the codes were then sought. The themes were derived by collating and linking associated codes. The themes, codes and quotations were then visualized by creating a framework that shows the relationship that exists between the different entities (themes, codes and quotations). Content and thematic analysis were preferred because the intention was to derive the major consensus on each issue and the quotations that aggregated to form the consensus.

## **Results and discussion**

The results of the needs assessment and stakeholder meeting are presented under the following themes: areas of extension training needs and preferred areas of specialized extension; perceived advantages and challenges of e-extension service in Nigeria and desired features of the proposed e-extension degree programme. The results in Figure 1 show the several extension training needs as perceived by the participants. These included: monitoring and evaluation; group formation; problem solving techniques; need assessment; social networking; communication; agribusiness; sociology; psychology; leadership; public relations; best production practices; agro-climatology; health and nutrition; simple soil testing technique; natural resources and bio-diversity. This implies that the stakeholders desire all-round expertise e-extension personnel who are not only good in technical issues but can easily find their way around any issues facing the farmers.

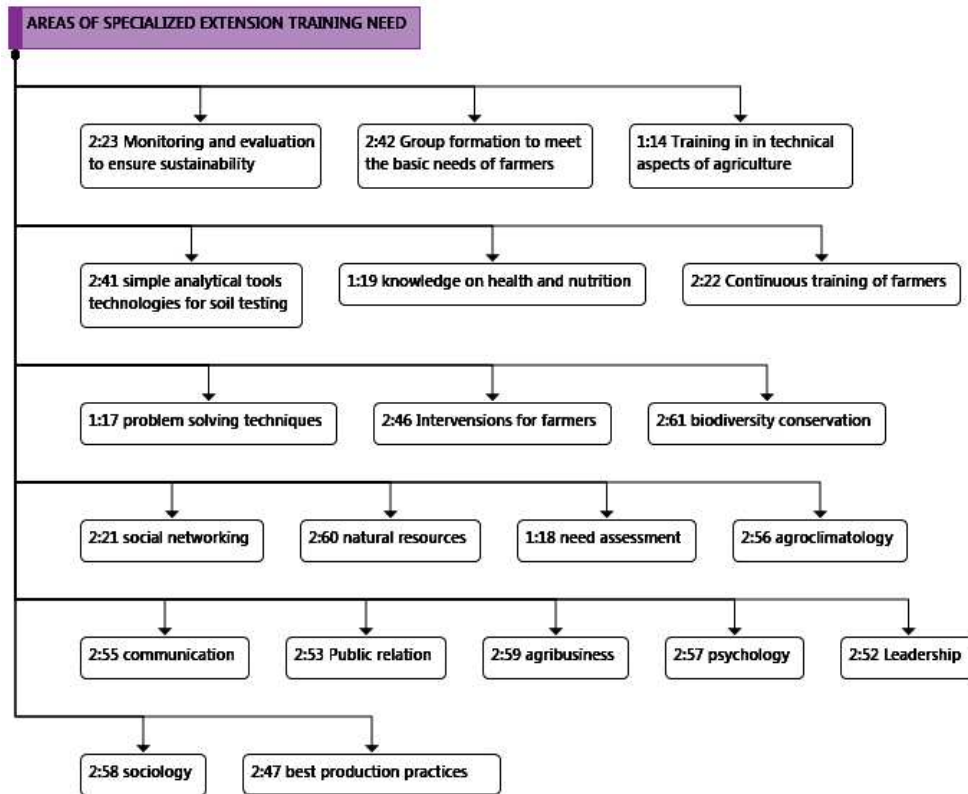


Fig. 1. Areas of extension training needs

Source: Authors' analysis using ATLAS.ti (2018).

The results in Figure 2 show the preferred specialized extension areas. Areas of interest to the potential candidates included: postharvest value addition and technologies; agribusiness; crop production and protection; animal production and processing; and soil conservation and management. All the areas of interest to the potential candidates were said to be needed in the communities by community leaders. In addition, nutrition and dietetics was said to also be needed in the communities. Furthermore, the results in Figure 2 show that the extension agencies/organizations/institutions/employers group recommended value addition, livestock and family nutrition for their extension personnel. The results show that postharvest value addition and technologies were given utmost priority of all the listed areas of specialized extension. The reason for this is apparent: a breakthrough in postharvest value addition and technologies should reduce over-supply and make farm produce available all year round. It should also reduce the bulky nature and increase the shelf-life of farm produce.

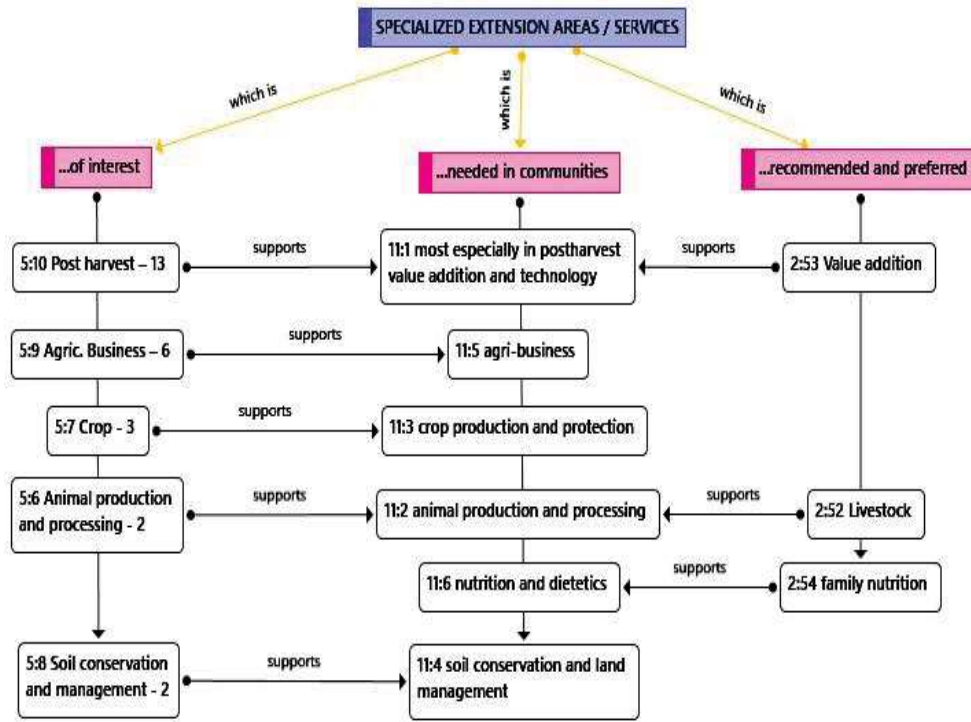


Fig. 2. Preferred areas specialized extension

Source: Authors' analysis using ATLAS.ti (2018).

The results in Figure 3 show that the stakeholders were optimistic that e-extension would have advantages over the conventional extension. These advantages included: less risk and easy access to farmers; faster information dissemination and quicker intervention, thereby saving time; wider coverage, reduction in cost of personnel and fewer needed resources thereby resulting in cost effectiveness. It was also stated that the use of phone applications will save time and cost and yet be effective for message dissemination. This implies that the stakeholders welcomed e-extension and believed that it would resolve some of the issues hindering extension service provision and would be of advantage to all stakeholders.

However, the results show further that the stakeholders perceived that some challenges could hamper the smooth running of e-extension. Infrastructural challenges included erratic power supply; cost of equipment and e-facilities; and poor network coverage. Human challenges included lack of expertise; low level of farmers' literacy which could affect their access to information online. Similar challenges were perceived in the use of phone applications. These included irregular power supply and erratic mobile internet connectivity.

There is a need to address these issues because constant power supply and very good internet connectivity are essential ingredients for the successful running of e-extension. Be it as it may, there is need to start from somewhere and start as soon as possible while working towards resolving the likely challenges. There is also the need to be ready to face these



challenges and not allow them to affect the smooth running of e-extension. The expressed fear of lack of expertise should be handled by the training of the extension personnel. The farmers should also be trained on how to use their mobile phone to access information online. The development of a special phone for e-extension, which would be more user friendly than the current android phones, was also suggested by the stakeholders. Furthermore, stakeholders were of the opinion that the application of e-extension should be developed in local dialects so that it can be useable by most farmers irrespective of their literacy level.

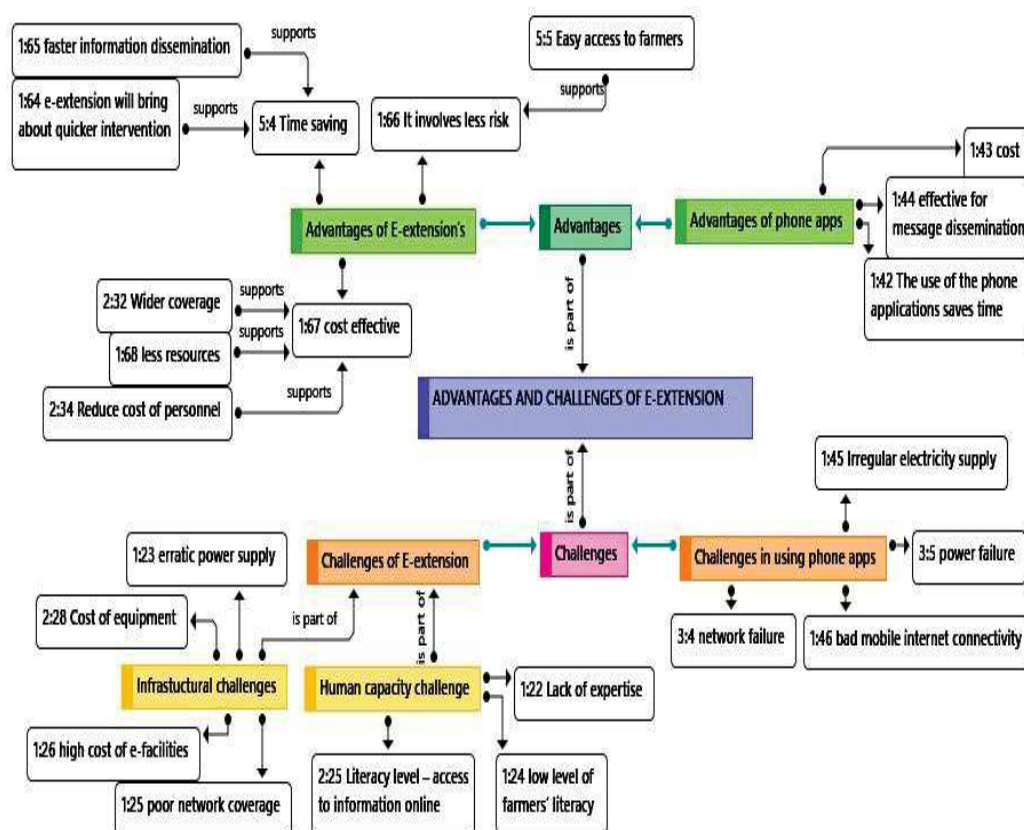


Fig. 3. Perceived advantages and challenges of e-extension service in Nigeria

Source: Authors' analysis using ATLAS.ti (2018).

The proposed e-Extension degree programme should be participatory in nature. In training e-extension personnel, some things that could be included to give a robust training are: sessions like presentations and screening of video films on ICTs in agriculture; interactions with expert resource persons through Skype sessions; demonstration of farmers' portal, knowledge systems, social media for agriculture; case studies on ICT initiatives in agriculture; group work on ICTs for extension reforms, farmers' portals, farmers call centre and social media for research – extension – education – marketing; hands-on practice in

computer lab on social media platforms; and visit to available ICT infrastructure facilities (Sharma, Murthy and Attaluri, 2017).

The results in Figure 4 show that stakeholders would prefer the training to be more online than face-to-face (70% online and 30% face-to-face practical). It was stated that the degree programme could be best offered in educational and research institutions. It was requested that the training should be wholesome and demand-driven. While the community leaders and policy makers group stated that they would prefer a generalized extension approach with all-round training guided by subject matter specialists, the input dealers / marketers / agro-based traders / other value actors group stated that they would prefer a specialized extension approach. It was stated that the e-extension applications should be developed in local languages so that non-literate farmers could access information without the need of an interpreter. However, the farmers expressed other fears concerning the use of mobile phone applications as a means of communicating between farmers and the e-extension personnel. They stated that most farmers may not have phones enabled with necessary functions. Also, most farmers are not literate enough to be able to handle such applications. Other reasons given were poor network coverage and erratic power supply in most rural communities in Nigeria. They however stated that the use of mobile phone could be tried while the conventional face-to-face communication should continue.

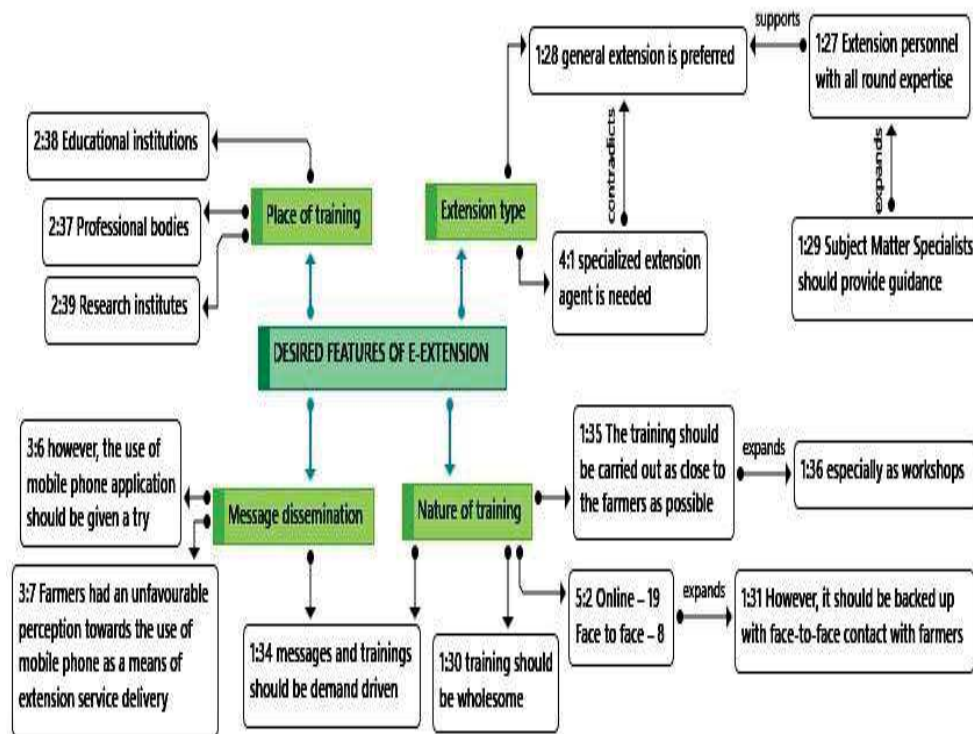


Fig. 4. Desired features of proposed E-extension degree programme

Source: Authors' analysis using ATLAS.ti (2018).



According to Arceo (2012), e-extension is the electronic delivery of extension service which maximizes the use of information and communication technology to attain modern agriculture. It focuses on creating an electronic and interactive bridge where farmers and other stakeholders meet and transact to enhance productivity, profitability and global competitiveness. Some African countries are successfully using e-extension and a framework can be borrowed from their experience. An example is the use of audio conferencing for extension (ACE) project in Northern Ghana, which is a two-way process allowing farmers to raise their issues of concern and steer sessions in directions fruitful to them. A mobile phone, audio conferencing technology and a portable external loudspeaker is used to link farmers in groups of 10 to 12 with extension personnel and researchers who offer a wide range of expertise between them. The services of trained community agricultural information (CIA) officers were employed to ensure the smooth running of the sessions (Food and Agriculture Organization of the United Nations (FAO), 2014).

## Conclusions

This paper concludes that participatory curriculum development has enhanced the stakeholders to identify areas of demand-driven training in response to community needs. The stakeholders preferred more of online than face-to-face training and a comprehensive, all-round training was suggested. There was consensus that the e-extension personnel should be trained to be general extension personnel to reduce cost and avoid confusing the farmers and community populace, the majority of whom are at low literate and economic status. In addition, the majority of participants supported the continuation of the on-going generalist extension approach because of the prevalence of the mixed farming system among Nigerian farmers. Specifically, the majority of farmers preferred a generalized to specialized extension approach; they offered reasons such as: to avoid confusion, reduce cost, enhance intimate social understandings and interaction, afford effective monitoring and evaluation, support the low literate level among Nigerian Farmers, support mixed farming practices popular among Nigerian farmers, and enhance adoption and continued adoption among the farmers as well as contribute to social security among actors along research-extension-farmers linkage. The major perceived advantages of e-extension were reduced risk, time and cost effectiveness, while infrastructural and human challenges were the perceived challenges that could possibly hinder the smooth running of e-extension.

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