

THE POTENTIAL OF A MULTIMEDIA OPEN EDUCATIONAL RESOURCE MODULE IN ENHANCING EFFECTIVE TEACHING AND LEARNING IN A POSTGRADUATE AGRICULTURAL PROGRAM: EXPERIENCE FROM AGSHARE PROJECT MODEL

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ABSTRACT

Graduate programs in agriculture in developing countries such as in Ethiopia are often designed in cognizance of the need for skilled manpower for agricultural development. In Ethiopia, the contribution of graduates of agricultural graduate programs to the attempt to transform smallholder agriculture has become a matter of urgency in the face of the increasing challenge of food insecurity. However, the performance of graduates of those programs in making concrete contributions to the urgent needs of agricultural development has been patchy at best. There might be no single best solution as to how to make agricultural graduate programs and/or their graduates responsive to the needs of agricultural development. In particular, hopes that effective teaching and learning in agricultural graduate programs would lead their students to attain the relevant knowledge and skills to make concrete contributions to agricultural development are frequently not realized. This article seeks to share the experience of implementing the AgShare project model to develop and use an open education resource (OER) module, and in so doing, furthering our understanding of the possibilities of enhancing the quality of teaching and learning toward its intended purpose [1]. Among the key findings from this experience is that a multimedia OER module developed against clearly defined educational needs, with authentic content designed according to sound educational principles, can lead to direct and immediate improvements in the quality of teaching and learning, which enables learners to acquire knowledge and skills that fit an ultimate purpose in a real-life context.

KEY WORDS

Ethiopia, graduate program, effective teaching and learning, agricultural development, open educational resources (OER), AgShare

I. INTRODUCTION

Ethiopia's economy is heavily agrarian. Agriculture accounts for over 40% of GDP and 90% of the total export revenue, and employs about 85% of the country's labor force [2]. Despite the importance of agriculture in the Ethiopian economy, its agriculture is virtually entirely small scale, subsistence oriented, crucially dependent on rainfall [3], and characterized by low productivity. The average grain yield for various crops is less than two metric tons per hectare [2]. Thus, the growth of the Ethiopian economy relies on the transformation of smallholder agriculture, which dominates the agricultural sector of the country.

Realizing the importance of agriculture in the national economy, the Ethiopian Government has embraced the Agricultural Development Led Industrialization (ADLI) strategy to promote the economic

development of the country since the early 1990s. Agriculture has been a central pillar of the country's successive development plans, which included the Sustainable Development and Poverty Reduction Program (SDPRP), which covered the years 2002–2005, and the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP), which ran from 2005–2010. During these periods the government invested heavily in agriculture. On the basis of the experiences gained during the preceding plan periods and the national vision, the Growth and Transformation Plan (GTP) was prepared for the 2010–2015 period. Like all of the preceding plans, the GTP envisages that the agricultural sector will continue to be the major source of the economic growth of the country [3].

Moreover, recognizing the importance of agriculture, the Ethiopian government has been committing huge resources for the development of the agricultural sector in terms of opening up agricultural training and research institutions. As a result, the agricultural sector showed progressive growth over most of the last two decades. However, the huge potential for agricultural growth remains untapped in the face of persistent challenges of food insecurity [3, 4].

The low performance of agriculture contrasts with the potential for growth from the emerging market opportunities and technological innovation that could transform smallholder agriculture [4]. Such a scenario thus implies the need for knowledge-based transformation of smallholder agriculture that is situated in a complex and dynamic economic, social, and ecological environment. Successful knowledge-based agricultural productivity growth, in turn, heavily relies on enhancing the capacities of agricultural graduate programs [6].

In general, the need for intervention to address the critical failure of agricultural curriculum to meet the urgent need to transform smallholder agriculture in developing countries such as Ethiopia is not debatable. However, there might be no single solution to make agricultural graduate programs and/or their graduates relevant to the urgent need of agricultural development [6]. To this end, it is worth sharing an initiative on the ground.

The purpose of this paper is to share experiences and lessons learned from one of the ongoing developments in strengthening the regional master's programs in agriculture and veterinary sciences for eastern and central Africa—through the AgShare Project funded by the Bill and Melinda Gates Foundation (BMGF). Among the programs supported by the project, this paper specifically focuses on experiences with an AgShare-model-based multimedia OER module, “Perspectives of Agricultural Extension,” developed for the regional master's program in Agricultural Information Communication Management (MSc-AICM) hosted by the Department of Rural Development and Agricultural Extension at Haramaya University in Ethiopia.

The paper is organized as follows: The next section presents a brief overview of the need for an alternative approach to teaching and learning and offers the AgShare model as a promising alternative. Section 3 presents the guiding principle of the AgShare model and the processes involved in developing the OER module. Section 4 presents the process involved in developing the module and its impact on effective teaching and learning. The section also highlights other aspects directly associated with effective teaching or otherwise. The final section presents key conclusions drawn from the experience with the OER module.

II. THE NEED FOR ALTERNATIVE TEACHING AND LEARNING AND THE POTENTIAL OF THE AGSHARE-MODEL-BASED OER MODULE AS A PROMISING ALTERNATIVE

The previous section highlighted that the potential for sustainable development to end poverty and hunger in Ethiopia heavily relies on the transformation of its traditional and subsistence-based agricultural system. The section also indicated the untapped potential for agricultural transformation that relies on knowledge-based interventions. In particular, such interventions are challenged by the limited human capacity in agriculture and allied fields [6]. The limited capacity in this context refers not only to the

number of graduates in the agriculture field but also the knowledge and skill required by the graduates to make meaningful contributions to agricultural development.

As a graduate of an agriculture program, one needs to have knowledge and skills that can contribute to the successful transformation of smallholder agriculture. This could be in the form of knowledge and skills required by agriculture graduates employed by organizations working at different levels, committed both directly and indirectly to making a difference in smallholder farmers' livelihoods. In connection to this, the teaching and learning in graduate agricultural programs is therefore expected to equip graduates with the required knowledge and skills. However, the effectiveness of the current style of teaching and learning in agricultural graduate programs in terms of equipping graduates with required knowledge and skills that enable them to make concrete contributions in agricultural development endeavours left a lot to be desired. To this end, it is imperative to ask the following question: in a country like Ethiopia with ample potential for agricultural development coupled with enormous resources committed to agricultural training and research, why does food insecurity and transformation of smallholder farmer livelihoods remain a challenge? The answer to this question leads to another question: could conventional teaching and learning at the agricultural graduate level enable graduates to have knowledge and skills that would have meaningful impact on agricultural development? Such questions obviously imply the pressing demand for quality teaching and learning in graduate agricultural curricula, raising questions about the effectiveness of conventional teaching and learning.

Standard conventional teaching in universities emphasizes teaching of theory with less focus on students' practical skills needed in the field. Students might be taught from up-to-date reference books, but the opportunity given for students to reflect on the practical application of the classroom theory in practical farming communities' situations is often limited. This kind of approach to teaching is not powerful enough to make the difference required to transform the lives of smallholder farmers. Transforming smallholder farmers requires intensive knowledge of the complex farming system and thus requires more community-based learning [6]. The emerging paradigm of quality teaching and learning is also in favor of such a move.

Linking classroom learning to the root context of the working environment has become the defining feature of the emerging paradigm of quality teaching in the twenty-first century. Graduates are expected to operate in complex, interdisciplinary, dynamic, and uncertain working environments. The mode of learning at university will need to equip students with appropriate skills, knowledge, values, and attributes that will enable them to succeed in such challenging working environments. To this end, there is a strong drive to build and create knowledge together with an understanding of working life and to reformulate the concept of knowledge in learning situations. Tighter connections with working life through different academic projects provide authentic opportunities to learn both generic and professional competencies [5]. Moreover, there is also pressure on universities from farming communities. In this regard the report of UNDP asserted the urgent need for linking African universities to rural farming communities to meet their growing needs [8].

The AgShare-model-based approach innovatively responds to such pressing needs. The module created relevant and effective student learning in the coursework component of the program, enabling students to engage directly with local issues rather than experiencing them through abstract theory. The AgShare-model-based OER module enhanced the context of learning, teacher-student relationships, and structure of curriculum. These are known to be at the center of quality teaching and learning underpinning learning theory, discussed later in the paper.

III. GUIDING PRINCIPLES AND PROCESSES BEHIND THE SUCCESS OF THE AGSHARE MODEL

The founding principles and the process they entail are behind the AgShare-model-based OER module's achievements. These achievements demonstrate the potential of the model's approach to enhance quality

teaching and learning. To this end, this section will briefly present the principles of the model, the process involved in developing the module, and the associated achievements.

The AgShare model is based on a set of comprehensive principles that guided the achievements of quality teaching and learning through multimedia OER. The guiding principles include the need to consider available resources in developing the OER module; designing OER according to sound educational principles; considering potential scalability of OER while serving the intended program; considering learner engagement in the process of OER development to enhance their learning experience; placing emphasis on the need to build structured relationships between academics, students, content suppliers, and community-wide partners, such as farmers, to facilitate the creation and sharing of OER with positive impact on all parties; and the possibility of repackaging OER for different target audiences besides the academic learners, such as farmers [1].

From the above premise, it is apparent that AgShare-model-based development of a multimedia OER module considers the need to respond to quality teaching and learning from the perspective of all stakeholders associated directly or indirectly with teaching and learning. To this end, it considers quality teaching and learning in light of the immediate purpose of classroom learning as well as the ultimate goal of enhancing the knowledge and skills learners need in a real-life context. In other words, the AgShare model implies that the nurturing of teaching and learning toward its intended purpose can be achieved if all stakeholders (for example, students, teachers, farmers, etc.) equally contribute to the generation and sharing of knowledge. It is an approach that is needed to nurture conventional teaching toward the development of more relevant and quality teaching needed to facilitate agricultural development. In general, the guiding principle of the AgShare model interestingly responds to different aspects of quality needs in the twenty-first century [5].

A. Processes Involved in Developing an Effective OER Module

The process followed in developing the OER module “Perspectives of Agricultural Extension” demonstrated the innovative approach of the AgShare model that responded to the needs of key actors concerned, both directly and otherwise, with quality teaching and learning. To this end, this subsection explains how the process enabled achievement of the intended goal of the intervention while taking into consideration the prevailing context of teaching and learning.

The prevailing teaching and learning context: Like other postgraduate programs in Haramaya University, the prevailing teaching and learning context in the Department of Rural Development for its master’s programs (MSc in AIMC and MSc in RDAE) and PhD program in RDAE is based on the conventional classroom lecture. The lecture class interactions are usually one-way and tend to be teacher centered. The course contents are primarily about abstract theory and are prepared by the course lecturer based on a course description given in the syllabus. Supporting theory-based class lectures with practical fieldwork usually depends on the motivation and commitment of lecturers. If efforts are made by some to provide printed case studies as references, the clarity of learning outcomes tends to be patchy, and it is questionable whether learners benefit from such print-based case studies. To this end, it is imperative to ask where and when the results from research and experience from community service get utilized to add value to classroom teaching. Or why is teaching separated from the other two pillars of universities—research and community development—when they are all expected to support one another? The processes involved in AgShare-model-based OER module development provide an answer to such questions.

Overall goal of the project: The overall goal of the project was to establish a complete set of teaching and learning materials (integrating both printable and multimedia formats) for the course “Perspectives of Agricultural Extension” for the MSc program in Agricultural Information Communication Management (AICM), thereby creating opportunities for additional farmer impact, improved learning outcomes, and use by other MSc faculty in a variety of higher education institutions beyond those that created the materials.

Process followed: In order to achieve the above-stated goal, there were a number of activities involved in the process of developing the course package. The key activities included the following:

- Comprehensive review of available resources from both digital libraries (OER or otherwise) and physical libraries
- Review and documentation of relevant cases from extension activities of Haramaya University and the Department of Rural Development and Agricultural Extension
- Documentation of student activities in other agricultural programs, and use of relevant ones as part of multimedia packages for the course material development. This included student activities from
 - “field project” activities of the regular undergraduate students;
 - examples of “Supervised Extension Project (SEP)” activities of the mid-career undergraduate students; and
 - “village stay” camp activities of the regular undergraduate students.
- Visits to farmers’ fields with students to gather relevant evidence and for student engagement in case study production. These visits also served as a chance to gather feedback from farmers on relevant aspects of the module. For example, regarding communication channels, the farmers’ preference for video messages, as opposed to print posters, was discovered.
- Synthesis and production of a final teaching and learning multimedia package involving the integration of a print- and computer-based multimedia package for the course that followed a sound pedagogical standard with the assistance of a technical expert in the field. This process also included gathering feedback from students on the full content of the material.
- Publishing the multimedia module OER on DVD and on the OER Africa website for use in a Moodle Virtual Learning Environment and to be loaded on RUFORUM website after being peer reviewed.
- Distribution of the DVD to key stakeholders that included universities in Ethiopia (all public universities and some private universities), governmental and nongovernmental development organizations.

Achievements: The process enabled the achievement of all the intended goals, though a few of them need further assessment with regard to OER uptake by other higher learning institutions. An initial national advocacy workshop and DVD distribution indicated that the OER was well received; however, this was an on-the-spot reaction, and further assessment is yet to be made. The following section looks at the achievements in more detail, but the following were the key achievements:

1. A comprehensive contextually relevant multimedia module, “Perspective of Agricultural Extension,” with up-to-date, relevant global cases and theoretical content. This has helped shift the context of teaching from being solely theory based to being more practical and local-context based.
2. A well-structured multimedia module with clearly defined learning outcomes guiding independent student learning. This enabled students to benefit by using the multimedia package, which contextualized the nature of extension systems in theory as well as in practice. Moreover, the package was found to motivate students to read in detail, unlike conventional printed books, which are less interactive and demand searching in a physical library.
3. The process impacted content developers in different ways. For example, it broadened their knowledge on the subject in the field. It also influenced the way teachers value local knowledge, available untapped research outputs, and results from the practical field activities of other academic programs, as well as changing their view of their role as teachers in the classroom.
4. Farmers impacted positively in the process of students conducting case studies.

In general, the innovative nature of the process the model guided in developing the course material is evident. For instance, the focus on contextualized local agricultural extension activities undertaken by Haramaya University, and considering lessons from student field practical activities in developing the module are among its exemplary innovations. The extension activities of the university and students’ field-based practical extension activities have been ongoing for years within the university and the department. But systematic documentation and case study production had not previously been attempted. Neither were these local experiences formally used in the contents of any course materials in the academic program, which focus on theory and other countries’ examples instead. To this end, the project made good use of relevant experiences in the development of the “Perspectives of Agricultural Extension” course material, demonstrating the possibilities of nurturing context of learning with available resources and the synergy between the pillars of the university.

IV. IMPACT ON EFFECTIVE TEACHING AND LEARNING

From the premise of the AgShare-model approach described in the previous section, the innovative capacity of the OER module in responding to the provision of quality teaching and learning is apparent. In this regard quality teaching and learning is described by OECD as follows:

Quality teaching is the use of pedagogical techniques to produce learning outcomes for students. It involves several dimensions, including the effective design of curriculum and course content, a variety of learning contexts (including guided independent study, project-based learning, collaborative learning, experimentation, etc.), soliciting and using feedback, and effective assessment of learning outcomes. It also involves well-adapted learning environments and student support services [5].

From the above description, it is apparent that the “context of learning,” “student-teacher relationship,” and “structure of curriculum” are valid parameters with which to assess the AgShare-model-based OER module on the quality of teaching and learning from the perspective of both teachers and students. Using these parameters, the overall project-wide results from external evaluation showed that the AgShare-model-based multimedia OER positively impacted three main factors underlying effective teaching and learning (see Table 1 summarizing the results from students’ and teachers’ responses). The indicators used to measure each dimension were validated by an external evaluator [1].

Dimensions of teaching and learning	Indicator for exemplary teaching and learning
1. Context of learning	Content is developed in an authentic context
	Learners are introduced to a “community of practice”
	Theory is linked to practice
2. The teacher-student relationship	The teacher interacts with students. The student’s voice is heard.
	Problem solving and debate occur
3. The structure of the curriculum	Course design makes structure and outcomes clear
	Students have access to supplementary resources and readings
	Students and teachers can adjust <i>sequencing</i> of topics
	Students and teachers can adjust <i>pacing</i> of content
	Formative as well as summative assessments occur
	Assessment is aligned with module structure
Assessment criteria are clear to students.	

Table 1: Result Summary of Impact of Multimedia OER Module on Teaching and Learning. Source: AgShare Planning and Pilot Project Impact Assessment Report [1]

A. Impact of Multimedia OER on Teaching and Learning Context

An OER module can be developed, but the most important consideration is whether the OER brings a meaningful contribution to teaching and learning in terms of nurturing classroom teaching for the intended purpose. In this regard, it is possible to consider to what extent the OER module could contribute to quality and relevant teaching and learning as compared to the conventional approach to teaching. Quality teaching and learning is a relative concept, and it may vary in different contexts. For the purpose at hand, the quality of teaching in universities described by OECD [5] can be considered. That is, quality teaching implies equipping students with knowledge and skills required in their working environments, which in turn calls for reformulating the concepts of knowledge in the learning situation. To this end, the multimedia OER module, “Perspectives of Agricultural Extension,” constituted with theory and local case studies, was found to enable students to learn both the standard theoretical knowledge and practical applications.

With the multimedia OER module, the context of teaching and learning moved from the traditional, solely abstract-theory-based learning to more practical, real-life-based learning. The generic theories are interpreted by examining authentic content from a local context. Students are exposed to the community of common practice through video case studies embedded in the module.

It is worth noting that the principles underlying the AgShare model collectively contributed to the enhancement of classroom teaching and student learning. For example, the process of developing the multimedia OER module “Perspectives of Agricultural Extension” involved a number of activities guided by the model. It included the content writers’ review of available digital and physical resources; student engagement in producing case studies; the incorporation of student and farmer feedback to improve the content of the module, etc. This process provided the group of students who were attending the course during the process of developing the module materials with the opportunity to test classroom theory in the field. The subsequent cohort that used the complete set of module materials also had similar experiences. The embedded video derived from local cases studies that were carried out by their fellow students enabled them to learn from authentic content and inspired them to explore independent learning opportunities in the practical setting of farming communities.

B. Impact on Teacher-Student Relationship

The dynamic and complex social and economic environment of the twenty-first century calls for a change in the role of teacher as a transmitter of knowledge to the students. Teachers should be required to create a learning platform for students. For instance, the challenges facing agricultural development in emerging economies demands that the new generation of agriculture and rural development graduates be independent thinkers. This, in turn, demands a shift from traditional teacher-centered approaches to student-centered approaches. Learning is a lifelong process. Unconventional curriculum and teaching methodology are needed to enable the graduates “learn how to learn.” It is only through enhancement of learners’ learning capacity that academic programs can produce dynamic graduates who have relevant and required competence for responding effectively and efficiently to the challenges of the ever-increasing, multidimensional, and complex issues in agriculture and rural development [7].

The AgShare-model-based multimedia OER module demonstrated its innovativeness in responding to the above-indicated demand for change in the style of learning in higher learning institutions. The module has nurtured the teacher-student relationship. It created the opportunity for teacher-student interaction, and created a platform for debate and problem solving. Unlike the conventional, teacher-centered approach, whereby teachers are the source of knowledge, students also have the opportunity to contribute to knowledge generation.

Independent problem-solving skills are among the abilities required from graduates of agriculture in dealing with smallholder farmers' problems in a real-life context. To this end, the OER module-based approach provides opportunities to come up with solutions such as case studies based on generic theory and local case studies. The following result from a report on the AgShare Project's impact also demonstrated such achievement:

Students have DVDs with real-life situations relevant to theory. They read first, then discuss in class. "Students don't arrive knowing nothing." Class time is about exchanging insights, clarifying issues, debating issues, forming opinions.

Case studies lead to questions about issues. Because the teacher or textbook is no longer the authority, students learn by coming to their own conclusions.

"Conventional teaching can be dry" because it's so abstract. We must teach concepts like the institutional approach, managerial approach, etc. With OER "theory comes to life, we see it in everyday life" [1].

The potential of the module to create opportunities for learning from peers is apparent. Peer learning is important in the diverse profile of graduate students, which includes individuals such as adult learners with concrete experience and years-long mind-sets.

C. Impact of Multimedia OER Module on the Structure of the Curriculum

The impact on the structure of the curriculum is another impressive effect of the OER module, "Perspectives of Agricultural Extension." This includes well-structured content with clear learning outcomes and systematically designed assessment criteria motivating students' engagement in the process of learning while also providing up-to-date reference material online and/or embedded in a DVD, available with just a click.

The overall structure of the module was found to be impressive in making teaching and learning relevant and effective. The process of its development brought understanding to lecturers that quality of classroom delivery goes beyond using up-to-date reference materials, which are often in the Western context. Quality and relevance is best interpreted as "fitness for purpose"—adapting the knowledge to local context [6]. Here it may also imply that the mere development of OER is not a panacea to solve the problem; how the OER is structured in putting available knowledge into context is also important. To this end, for example, up-to-date theoretical references and/or empirical findings in other contexts are placed in the module with proper guidance for the student to reflect on how those references or findings can be used or what they imply in a local context. The AgShare-model-based project-wide impact assessment also confirmed that structuring a module in an OER can take students to "the highest level of conceptual thinking" [1].

In general, the process of the module development and the final design enabled/enables learners' independent learning. In the process of its development, students were linked to rural farming communities to come up with relevant case studies as part of a learning exercise. The full content is also designed in a similar manner, guiding students to conduct similar learning exercises. This is the kind of approach to learning expected to enable learners to obtain the knowledge and skills required to make concrete contributions in real work conditions.

It was also observed that the local case studies provided teachers with inspiration to get out of their "ivory tower." The knowledge of farming communities' experience enables them to assess the relevance and effectiveness of their teaching, and to identify other opportunities for learning from real-life situations.

D. AgShare-Model-Based OER Module Draws Attention to the Synergy Between the Pillars of University

Higher learning institutions such as Haramaya University are established along three pillars—teaching, research, and extension (community service/development). In this regard, Haramaya University has engaged in these activities ever since its establishment. For example, the first public agricultural extension service in the history of Ethiopia was mandated to Haramaya until the shift of this mandate to the Ministry of Agriculture. Besides countless academic researches, the university is also responsible for conducting commodity research for the eastern regions of the country in collaboration with the national agricultural research institutes. As a result, it has released a number of research-improved technologies, such as crop varieties, animal breeds, post-harvest technology, small-scale poultry-production technology, etc.

Notwithstanding the pioneering experience of Haramaya University in research and extension, the university has overlooked its contribution of research results and experience from community service in enhancing learning. Classroom teaching is highly dependent on books written for the more developed Western context. To this end, the experience with the OER module based on the AgShare model has created a direct link between teaching, research, and extension/community service. For example, the module “Perspectives of Agricultural Extension” demonstrated the link between the three pillars of the university through video case studies that were developed. These video-clip components in the OER module serve to illustrate the farmer-research-extension linkage. This approach to curriculum materials development has brought to classroom teaching the innovations from scientific research, farmer reactions to the innovation, and the role of extension advisory service in the innovation process. The OER module, during a national advocacy workshop’s showcase, was praised by participants and served to bring attention to the importance of available resources on the shelf, which could add value to teaching and learning.

E. Multimedia OER Module Ensured Quality of Teaching and Learning Maintained

Although the quality of the module developed through the AgShare model is subject to further evaluation [1], experience with the approach demonstrated its potential to enhance the quality of teaching and learning in different respects. In this regard, the potential contribution of the model to quality mainly revolves around the process involved in developing the module, as discussed in the previous section. The process involved was comprehensive and included the review of available theoretical concepts from both digital and physical libraries, local case studies from student fieldwork, and student and farmer feedback. These processes, if systematically followed, enable movement away from conventional teacher-centered and theory-based learning to more relevant student-centered and community-based learning. In other words, in the AgShare model the basic theories are not compromised, but rather value is added as theoretical concepts are interpreted together with local case studies.

The other important aspect of using the multimedia OER module is that it ensures the sustainability of delivering quality teaching and learning over time. In universities, lectures for courses are usually given based on the course description in terms of the time or credit hours set in a curriculum. The quality of course delivery is mainly assessed by students based on certain criteria, such as provision of a course outline and its coverage, provision of reference material, instructors’ level of preparation for the lecture class, his or her knowledge of the subject matter, etc. In connection to this, the opportunity to improve student learning using practical cases relies on an individual teacher’s self-motivation and commitment. Moreover, even if he or she is motivated and committed to that end, the curriculum might not be well structured. Multimedia-embedded and well-structured OER is obviously a solution to such challenges. Once in place, a good quality OER can provide well-organized lecture notes supported by both theory and practical cases for lecturers as well as learners.

It is also possible to see the contribution of the OER module as one way of setting minimum standards to ensure quality in terms of the content of the course and its relevance in enabling learners to achieve the required knowledge and skills. It also has the ability to facilitate continuity of teaching and learning in the face of high staff turnover, a common problem of most universities in Ethiopia. Moreover, in the dynamic world of the twenty-first century, once such an OER module is in place, it will be easier to update to keep in line with the changing knowledge frontier. It is obvious that courses delivered without such OER have fewer opportunities to change with the changing knowledge frontier. This lack of opportunity for change is because the course content is in the hands of lecturers, and it is invisible to the associated community of common practice, whose scrutiny could make it better.

F. OER Placed Farming Community at the Center of Learning Process

Community-based learning is at the center of developing AgShare-model-based OERs. The focus given to farming communities in the AgShare model was found to be responsive to the growing challenges around the need to enhance learning. For example, at the beginning of this paper, the growing need for experiential and/or community-based learning and the need for linking African universities to rural communities are indicated. In connection to this, the OER developed through the AgShare model has been innovative in linking classroom teaching with farming communities through field-based practical cases. Students are also linked to farming communities as part of their learning engagement. The evaluation of the AgShare project also confirmed the impact of the AgShare model on farming communities, as well as their impact on classroom teaching.

V. CONCLUSIONS

It can be concluded that it is possible to enhance the quality of teaching and learning in agricultural curricula, and thus to enhance the capacity of graduates to have meaningful impact on agricultural development. This can be achieved through the development and use of relevant multimedia OER modules if a systematic approach that encompasses the following key principles among others is considered in its development:

1. Designing systematic processes that ensure relevance of learning context, mode of delivery, and structure of the module. Well-contextualized multimedia OER modules that are developed along clear pedagogical principles can lead to direct and immediate improvement in the quality of teaching and learning.
2. Building structured relationships between academics, students, content suppliers, and community-wide partners, such as farmers, in facilitating the creation and sharing of OER can yield a positive impact on all parties involved. This is one of the most powerful principles of the AgShare model. For example, engaging students in the production of educational materials contributed to the enhancement of their own learning experiences, which will enable them to deal with problems in real life; farmers' farming practices can be positively impacted through their interaction with students during their field engagements and/or from their participation in the creation of OER module components, such as video cases that are used in addressing their needs.

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