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**FLIPPING OUT: Students and teacher learn together via self-learning, self-assessments, rubrics, & peer review in a novel course on agriculture information & technology, Cuttington University, Liberia**

Martin Kesselman, Agriculture and Environmental Studies Librarian and Christine Forbes, Library and Information Science, Rutgers University, New Jersey, USA

**Introduction:**

This paper reviews development of a required course focusing on information literacy and research skills, teamwork, evidence-based practical information for problem solving (including interdisciplinary approaches), information technologies, and life-long learning. The course is integrated into the curriculum of the College of Agriculture and Sustainable Development (CASD) at Cuttington University in Liberia through a US Agency for International Development (USAID) EHED (Excellence in Higher Education for Liberian Development) Grant (669-A-00-11-00035-00). Presentation support came from a Rutgers University Research Council Grant and University Libraries.

A librarian was embedded into creating the curriculum and developed a required course, CASD 304, on agriculture information and information technology that students will take in their third year. A major obstacle is that no one is experienced to teach it, hence the choice of the “flipped classroom.” This course is taught through the use of self-learning, readings, collaborative team work, and involves an active learning hands-on approach to develop critical thinking skills in accessing information in today’s world. There is no textbook required for the class but suggested resources are provided that students can consult throughout the semester. Through an extensive literature review, postings on agriculture librarianship lists, and professional colleagues, no other required course like this (other than a small number of workshop materials) exists anywhere in the world. Lists consulted included those of the US Agriculture Information Network (USAIN), AgNIC (Agriculture Network Information Center) and the International Association for Agriculture Information Specialists (IAALD).

**The Course:**

Flipped learning can be described as "a model of learning that rearranges how time is spent both in and out of class to shift the ownership of learning from the educators to the students" (Johnson, Adams Becker, Estrada, and Freeman, 2014, p. 36). In this model, instruction is delivered outside of the classroom in the form of digital content such as videos, podcasts, or tutorials, and the classroom is used as an active learning environment where students apply the concepts they are learning. Flipped learning has become a hot topic in higher education, and the New Media Consortium's 2014 Horizon Report named the flipped classroom as one of the biggest emerging trends in higher education. Current research shows that 56% of higher education respondents are either "using or planning to use the flipped classroom model" (The Center for Digital Education and Sonic Foundry, 2013, p. 5).

The major deliverable for the course is a literature review and annotated bibliography for the final project and for background research for the senior year experimental project. A major intent of the course is the development of workplace literacy and ongoing lifelong learning skills. Students also learn to be an effective team member, communication skills, and presentation tools appropriate to various audiences and settings: farmers, community leaders, policy makers, and others related to the use of sustainable agriculture practices, food security, poverty reduction, gender sensitivity, market information, agribusinesses, and other topics relevant to Liberia. Technologies, particularly those involving mobile devices are emphasized to have information on hand to take into the field. Students learn to transmit information to cellphones through RSS texting, radio, the Internet, mobile apps, social networking, and emerging technologies, including those that can be used without Internet access or even electricity.

Elements required in the final project include: at least 17 or more scholarly research articles and at least 3 authoritative and timely websites relevant to their research topic. The literature review should be clear and well organized, provide a strong summary of prior research, relevancy, and demonstrate any gaps in the research published on their topic. Annotations demonstrate a clear understanding of each article or website, relevancy to the topic, and provide critiques and not just summaries. Students also learn the importance of providing attribution to the work of others to avoid plagiarism. Citations are consistent and include the elements needed for other readers to easily find the articles themselves. For websites, students need to include the URL and the date they accessed the website. There is no required page length for the final project as quality is much more critical than quantity. A project rubric spells out these elements and point values in detail (see below for more on rubrics).

General learning outcomes for the course include:

- Developing a research topic and identifying important elements of scholarly/peer-reviewed research using critical thinking and reflection skills to evaluate information that is relevant and timely.
- Using TEEAL (The Essential Electronic Agriculture Library) to obtain relevant full-text articles and be able to utilize scholarly resources for their required senior research project. (See more below under course technology).
- Using teamwork, the rich picture technique, and writing and presentation skills to communicate practical information understandable to populations without a scientific knowledge of agriculture needed for Liberia. Students learn the potential of evidence-based research for practical application.
- Learning about technologies for communicating agriculture information to farmers, community leaders, and others in Liberia.
- Learning how to use technology and other methods to keep abreast of new knowledge for continuing education and personal lifelong learning development.

The learning outcomes developed were based on both the College of Agriculture and Sustainable Development's mission and the unique needs of the students. CASD's mission is to promote "the development of human capacity, resources, and skills required to solve critical agricultural and natural resources challenges of Liberia and undertake interdisciplinary academic demand-driven research and outreach programs in agriculture and natural resources for sustainable development" (Cuttington University, 2012, p. 8). This mission was taken into consideration during the development of CASD 304, as the course covers information literacy skills and technologies used for information access and dissemination. In addition, there is a unit specifically dedicated to interdisciplinary collaboration.

Although any information literacy instruction integrated into subject courses provides an opportunity for librarian-faculty collaboration, flipped information literacy instruction makes this alliance critical. The need for faculty "buy in" and necessary pre-work is a common thread running throughout the literature on flipped information literacy instruction (Allen, 2014; Arnold-Garza, 2014a; Arnold-Garza, 2014b; Datig & Ruswick, 2013; Youngkin, 2014). Arnold-Garza (2014a) describes the experience of flipping information literacy instruction at Towson University's Albert S. Cook Library: "There was a large amount of advanced scheduling for this project, including talking with faculty to get the assignment in the syllabus and creating and assigning the pre-class assignments" (p. 13).

Since the learning that takes place outside of the classroom is integral to the flipped model, Datig & Ruswick (2013) suggest "working with faculty to make completion of the out-of-classroom activities part of the students' grades" (p. 257). Some librarians feel that students are more likely to take their instruction seriously when activities count towards a grade (Allen, 2014; Arnold-Garza, 2014b). Out of class activities can be included in course management systems or other learning technologies that provide automated grading of quizzes. For example, Stiwinter (2013) has found success using an interactive information literacy tutorial which is required to be completed by all students that take an introductory English class. This tutorial counts as 5% of the students' grade for the course.

Since the course at Cuttington University is a credit-based course, the instructor does not need the faculty cooperation described above. However, the course does include a unit on interdisciplinary collaboration in which the agriculture students' interview students from other disciplines in developing a research based practical document. Since the CASD students are working with students from other disciplines, some faculty collaboration is necessary.

### **Course Technology**

The course builds on technologies used in developing a new library for CASD that takes into accounts various realities. Because of the high cost of books and shipping, we have leap frogged into the digital environment by having free e-books, mp4 videos (downloaded educational You Tube videos with a creative commons license), full-text documents in Agriculture and TEEAL (The Essential Electronic Agriculture Library) developed at Cornell's Mann Library, an offline "library in a box" that includes full-text research journal content for free to World Bank Level 1 countries and at a nominal fee for Level 2 countries. Instead of having students check out books, the library is lending out tablets which students can download books and journal articles to read in the evening, often just using the light of the tablets.

Besides the course, there has been very little written regarding the use and adaption of many exciting new and emerging "low-threshold" technologies that show great promise and innovation for agriculture information and instruction in developing countries. Low-threshold information technologies are characterized by being reliable, accessible, non-intimidating, inexpensive, and easy to learn, use, support, and maintain (Gilbert 2002). It is hoped that this course and research will demonstrate how low-threshold technologies might be deployed in meeting these needs. These students armed with tablets or laptops with downloaded information, a Pico projector, and a Waka Waka device (unique combined solar charger with high-intensity lamp), can create a "low-threshold technology toolkit" to bring into rural communities and make presentations without the need for electricity, Internet or even a cellular connection for less than \$500. The Waka Waka device is the size of a large smartphone and new Pico projectors, demonstrated at the 2015 International Consumer Electronics Show in Las Vegas, can even be placed in one's pocket.

We use curated open source learning materials with a creative commons designation as well as materials designed specifically for the course. All learning materials and assignments are available on the CASD network arranged in folders. Each student uses a flash drive instead of a physical notebook and a computer is available for students to back up their work. Since the college does not have broadband internet activity, the tutorials for this class consist primarily of educational videos with a creative commons license that have been converted to MP4 files and many instructional materials were available also as pdf files. Although these tutorials lack some of the interactivity that can be found online, students are still able to pause and rewind, and several tutorials include quiz questions to reinforce the material and provide self-assessment. We hope to add some interactivity to some of the instructional tutorials in the next few months using Adobe Flash.

Although Internet access might be slow, it is probably fast enough to create a closed social network such as Edmodo ([www.edmodo.com](http://www.edmodo.com)). The teacher creates the social network on the Edmodo website and then the students are added. There are many applications such as chat, tracking student progress, and surveys. Another important free tool is Evernote ([www.evernote.com](http://www.evernote.com)) that students can use to organize their notes and thoughts and for collaborations with others on team projects.

The instructor and students may or may not have familiarity with technologies introduced in the course such as SMS broadcasting, mobile applications, important Internet resources, and social media. In the materials and assignment, students get an overview of the breadth of technologies that are currently or will soon be available. They also write a 1-2 page paper using the techniques they have learned about in the class such as brainstorming, mind mapping,

reflective and critical thinking, and rich pictures (graphical depiction of a group, problems and solutions) to write about the potential of an emerging technology in meeting the communication needs for any agriculture audience of their choice. We include resources such as wearables, 3-D printing, augmented and virtual reality including Google Glass, and big data. These resources are being presented to the students to give them ideas on how these technologies might be employed for agriculture information in the near future and beyond.

Greatly expanding in Africa are open education resources – most are free and many are taught as regularly scheduled classes such as MOOCs – massive online open classrooms (usually anonymous) and SPOCs – Special purpose open classes (usually registered for). Universities also offer continuing education and distance learning. Other ways to keep up-to-date are free trade journals available online, webinars, online conferences and live conferences in Liberia, in Africa, and worldwide. Funding of course is an issue for events outside of Liberia.

The final part of the course brings the class full circle. They have learned the importance of searching for and using information effectively for research, using information effectively with various populations to solve real-life problems, and about information technologies. The challenge is to take information literacy skills into the workplace for lifelong learning. As an assignment, students use the tools they have learned about throughout the class such as brainstorming, mind mapping, reflective and critical thinking, and the rich picture technique and create a personal development plan. The idea is that students leave this final class feeling that they have the skills to continue their research and learning throughout their work careers.

### **Course Assessment**

Writing learning outcomes can be challenging, and how they are developed will depend upon the context of the instruction. Librarians who are providing course integrated instruction may want to collaborate with faculty to create the learning outcomes (Armstrong, 2010; (Lundstrom, Fagerheim, & Benson, 2014). Librarians working on their own to create learning outcomes for information literacy course should look to the institution's mission and goals (Judd & Keith, 2012). Whether working on their own, or in partnership with disciplinary faculty, librarians will want to consider that "[w]ell-crafted learning outcomes state the specific skills, abilities, knowledge, beliefs, attitudes, or dispositions that students are expected to develop as a result of completing a class. They should be ambitious, yet attainable by the students taking the course, and measurable" (Drezek McConnell & Doolittle, 2012, p19).

Student access to instructor's evaluation rubrics (see example 1) lets them know what is expected in completing assignments and activities. In addition to this there are written self-assessment (see example 2) forms to be completed for each unit. These self-assessment forms are designed to help the students reflect upon their learning. Student self-assessment enhances learning by providing motivation and allowing the students to identify their strengths and weaknesses (Tan, 2008; Walser, 2009).

For students, surveys and a pre-test/post-test (with the title, "Testing Your Knowledge"), will be used to get feedback at the beginning of the course as a benchmark and at the end of the course for comparisons and qualitative and quantitative measures. Besides the "Testing Your Knowledge" form, there are two surveys that review their beginning knowledge and experience with technologies and research skills. These surveys and the pre-test/post-test will be anonymous. We want students to be "open" in terms of their previous expertise and the evaluation of the course. Two surveys and the pre-test are listed in the Basic Resources Folder as First Class Surveys. There are also two surveys for the Final Class and an overall course evaluation form. The instructor must be sure to give students the same "Testing Your Knowledge" test (this time used as a post-test) during the final class.

Assessment can be broken down into the general categories of objective (also known as traditional) or performative (also known as authentic). Whitlock and Nanavati (2013) describe the difference between the two types of

assessment: "Objective assessment focuses on what students know, attempting to measure knowledge acquisition as a proxy for skill acquisition...In contrast, performative assessment focuses on what students can demonstrate, attempting to measure students' skill acquisition in simulated scenarios" (pp. 34-35). The pre-class activities, which form the basis for the learning that occurs in the flipped model, are primarily suited to objective assessment, such as quizzes, fixed choice tests, and surveys. In-class activities, in which students apply their learning, are more complex and therefore better suited to performative assessment.

Pre-class activities in the flipped learning environment frequently include video lectures, tutorials, and web-based activities (Johnson et al., 2014; Allen, 2014). Many libraries include quizzes within their tutorials with the goal of increasing interactivity. In the flipped classroom, these quizzes allow students to use self-assessment to determine how well they comprehend the material (Blevins & Besaw, 2011; Lowe, et al., 2014; Stiwinter, 2013). Lemmer (2013) describes using the flipped classroom approach to teach a one-credit legal research course at Indiana University. In this class, the tutorials used for the pre-class activities include quizzes as well as short activities which "require students to interact with the tutorials by typing answers into text boxes and responding to self-assessment questions in the presentations" (p. 490). These tutorials also allow students to easily navigate back and review any portion of the presentation. The preference for the ability to control the pace and return to previous parts of a tutorial is commonly mentioned by students (Stiwinter, 2013).

In addition to quizzes, tutorials have the capacity to provide simulations. Since a simulation involves observing behavior, this is an example of an online performative (or authentic) assessment. Stiwinter (2013) specifically included simulations within the tutorials she developed for Spartanburg Community College, noting that by including this aspect in the tutorial "users could proceed through the simulation at their own pace, make mistakes, receive feedback, and not be embarrassed if they fell behind the instructor/class or got something wrong" (p.20). Formative feedback provided by online simulations can enable users to gain confidence for in-class participation. Using a simulation as an assessment tool also allows for a greater understanding of student learning, as it enables observation of "actual behaviour rather than theoretical (and potentially never applied) knowledge" (Walsh, 2009, p.29). An additional advantage to using simulations is that they are capable of providing greater assessment of higher order critical thinking skills than multiple choice tests (Katz, 2007; Mestre, 2012).

Formative assessment plays an important role during in-class activities. In-class activities allow the instructor to view the application of learning and guide students as needed. New technologies play a role in providing formative assessment in the classroom. One example of this is the use of audience response systems, also known as "clickers." Clickers come in a variety of forms and enable teachers to rapidly collect and analyze student responses to questions during class" (Bruff, n.d.). Since clickers allow students to respond to questions anonymously, they allow the instructor to get a truer picture of students' knowledge, as they elicit responses from those students who might normally be hesitant to speak up in class (Caldwell, 2007). Dunaway and Orblych (2011) have successfully used an audience response system during a one-shot library instruction session in graduate level business courses. A recent addition is Bing Pulse ([pulse.bing.com](http://pulse.bing.com)) that rapidly shows poll data of a group along with graphs. These types of assessment are particularly useful during a one-shot instruction because time is so limited. Audience response systems provides an efficient way for the librarian to "adjust the content of the instruction session based on students' performance, and to address the topics covered in the questions in appropriate detail during the instruction session" (Dunaway and Orblych, 2011, p. 29).

Since the College of Agriculture and Sustainable Development does not have the luxury of high tech clickers, the instructor needs to rely on more traditional methods of in-class formative assessment. Instead of using clickers, the instructor for CASD 304 begins class sessions by posing questions to the class at large related to the material that the students learned on their own through the tutorials. Unfortunately, this style of assessment relies much more heavily on the instructor being able to "feel out" the class for comprehension. One method some instructors use to help accomplish this type of informal assessment is the observation of students' body language (Allen, 2014).

Since much of the in-class activities in flipped classrooms involve active learning through group work, peer-assessment is another potential source of formative feedback. Strijbos & Sluijsmans (2010) define peer assessment as "an educational arrangement where students judge a peer's performance quantitatively and/or qualitatively and which stimulates students to reflect, discuss and collaborate" (p. 265). Peer-assessment has been found to have multiple benefits, including providing students with a sense of empowerment and confidence as they learn to work collaboratively (Rourke, 2012), promoting deeper learning (Gielen, et al., 2011), fostering self-reflection and critical thinking skills (Chin, 2007), and improving student work (Van Zundert, Sluijsmans, & Van Merriënboer, 2010).

Students in CASD 304 engage in peer-assessment several times throughout the semester. One of the early course assignments is the beginnings of an annotated bibliography with three sources. As their final assignment, students must turn in a literature review and a much longer annotated bibliography. Prior to handing in the shorter annotated bibliography, students work in groups to perform a peer-assessment of each other's work using the same rubric that the instructor uses to grade the assignment. Students then have an opportunity to incorporate suggestions from their peers before turning in the assignment for grading. Having the students turn in a short annotated bibliography at the beginning of the semester with formative feedback from their peers serves as way to allow students to practice one of the skills necessary to perform well on their final course assignment, as well as preparing them to develop the senior year experimental project.

In addition to peer feedback from classmates, CASD 304 students also have the opportunity to receive peer-feedback from students outside of their discipline. As a way to promote the interdisciplinary collaboration described in the college's mission statement, CASD 304 students interview students from other disciplines to gain valuable formative feedback for the creation of an evidence-based practical document. For this assignment, students work in groups to address a real or fictional agricultural problem that would be encountered by a particular audience. Some possible audiences include illiterate farmers, agribusinesses, community leaders and educators. The students then work in teams to generate a practical document that describes a possible solution to the problem including a rich picture. Once the document has been created, students consult with those outside their discipline for feedback on their proposed solution. For example, those solving an agribusiness problem will want to consult with business students. The team then incorporates this feedback to create an oral presentation on the problem and solution.

The formative feedback in CASD 304 is unique to the information literacy skills required by Liberian agriculture students. More general examples of formative feedback in flipped information literacy instruction include having students develop a search strategy and then demonstrate it for the class (Datig & Ruswick, 2013), participating in guided discussions (Arnold-Garza, 2014a), and role playing (Lemmer, 2013). Some instructors have found it helpful to incorporate games as an engaging method of formative assessment (Allen, 2014). Knowledge tests are another method for summative assessment, particularly in the form of pre- and post-tests (Radcliff, et al., 2007). Pre- and Post-tests provide one of the methods of summative assessment for the students in CASD 304, but these tests are not a graded assessment. Instead, these tests provide a way to assess the effectiveness of the course.

Higher-order critical thinking skills are best assessed through performative or authentic assessment (Schilling & Applegate, 2012; Whitlock & Nanavati, 2013). The major summative assessment for CASD 304 students is a literature review and an annotated bibliography. The annotated bibliography is a frequently used method of performative assessment in information literacy instruction (Sobel & Sugimoto, 2012). An annotated bibliography is a useful information literacy assignment because it demonstrates several skills at once, such as the ability to locate sources, the evaluation of appropriate sources, and the ability to properly create citations (Knight, 2006).

A rubric can be defined as "a scoring tool that lays out the specific expectations for an assignment" (Stevens and Levi, 2012, p. 3). Rubrics are useful in assessing performance assignments, in which students demonstrate that they can apply what they have learned, since these types of "authentic" activities tend to be more complex than objective tests. One advantage to using a rubric is that it "establishes criteria for how a work will be judged and allows

students to gain a better understanding of areas in which they need to improve or in which they excel" (Radcliff et al., 2007, p.124). In their literature review on the use of rubrics in higher education, Reddy and Andrade (2010) note that students view rubrics as a useful aid to focus learning and engage more deeply with the material. Not only do students value rubrics, but they are able to successfully use them as a learning tool, as "[t]he linkage between rubrics and learning has been explored by several researchers, with results generally suggesting higher achievement and deeper learning by students who have rubrics to guide their work" (Reddy and Andrade, 2010, p. 440).

Rubrics are not only beneficial to students; they are helpful to librarians as well. Oakleaf (2008, p. 245) outlines the many advantages from the librarian's perspective, including "(1) agreed upon values, (2) reliable scoring of student work, (3) detailed result data, (4) a focus on standards-based education, (5) evaluation of student learning across time or multiple programs, and (6) cost." Despite these many advantages, some are hesitant to use rubrics because they may be perceived as being time consuming to create and use, since they must be carefully constructed and require training for proper use. However, Oakleaf (2008) argues that the benefits to rubric use are greater than the limitations, particularly when it comes to performative assessments.

There are two general categories of rubrics: analytic and holistic. As the names suggest, analytic rubrics separate an assignment into distinct facets, with each facet judged individually, and holistic rubrics assess the assignment as a whole (Moskal, 2003). Whether they are analytic or holistic, rubrics consist of three parts: the elements to be evaluated, an evaluative range for performance quality, and the evaluation scores associated with each level of performance. Most rubrics have three to four levels of performance, which may be categorized developmentally, such as with the terms "Beginning," "Emerging," and "Exemplary" (Cornell University Center for Teaching Excellence, 2014).

Moskal (2003) lists six recommendations for developing rubrics: (1) The criteria set forth within a scoring rubric should be clearly aligned with the requirements of the task and the stated goals and objectives; (2) The criteria set forth in scoring rubrics should be expressed in terms of observable behaviors or product characteristics; (3) Scoring rubrics should be written in specific and clear language that the students understand; (4) The number of points that are used in the scoring rubric should make sense. The points that are assigned to either an analytic or holistic scoring rubric should clearly reflect the value of the activity; (5) The separation between score levels should be clear. The scale used for a scoring rubric should reflect clear differences between the achievement levels. A scale that requires fine distinctions is likely to result in inconsistent scoring; and (6) The statement of the criteria should be fair and free from bias. (pp. 4-5).

### **Concluding Remarks**

Self-assessment tools provide benchmarks for student learning. Peer review, where fellow students critique the work of each other, reinforces learning and provides valuable feedback. While students provide advice to each other, they also develop insight into their own work. The instructor and students serve as guides when others need assistance. Students who do well serve as peer mentors to students needing help or in many cases serve as discussion leaders. In future iterations of the course, it is likely that students will become course contributors and developers to a greater extent. Rubrics are used for the assessment of all assignments in CASD 304, including those assignments that incorporate peer review. These rubrics are provided to the students ahead of time so that they understand how they will be assessed. Almost all of the CASD 304 rubrics are analytic rubrics, enabling students to fully understand what they should focus on when completing assignments.

Flipped instruction may be a new strategy for teaching information literacy, but it is unlikely that this pedagogy is a mere fad. Modern technology has opened up a new world of possibilities for both teaching and learning, and increasing numbers of those in higher education are embracing these changes. This evolution in teaching and

learning also brings an evolution in student assessment, with a greater need for more complex authentic assessment as students participate in active learning environments. CASD 304 may represent a lower tech version of flipped instruction, but many of the same methods of assessment still apply.

**Example 1: Rubric – Information and Communication Technologies**

	<b>Beginning</b>	<b>Emerging</b>	<b>Exemplary</b>	<b>Score</b>
<b>Part 1: Essay</b>	Audience and technology are identified. Superficial discussion about why the selected technology is appropriate for that particular audience.)	Audience and technology are identified. Somewhat detailed discussion about why the selected technology is appropriate for that particular audience. Evidence that other approaches were considered.	Audience and technology are identified. Thorough discussion about why the selected technology is appropriate for that particular audience. Evidence that other approaches were considered. Evidence that creative/critical thought was used in analysis.	
<b>Part 2: Chart</b>	Completed chart with one audience identified for each technology. Audience selected does not always make sense.	Completed chart with one audience identified for each technology. Audience selected for each technology makes sense and shows evidence of critical thinking	Completed chart. Audience selected for each technology makes sense and shows evidence of critical thinking. Chose more than one audience for some technologies or generated additional technologies or audiences not listed in assignment.	

**Example 2: Self-Assessment – Information and Communication Technologies**

<b>Please indicate how strongly you agree with the following (select only one):</b>					
	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
It was helpful to learn about information technologies useful in working with various populations in Liberia today.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It was helpful to learn to use the Internet more effectively and evaluate websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It was helpful to learn about social networking as a tool to engage with various populations including other agriculture professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It was helpful to identify important mobile applications for agriculture for Liberia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It was helpful to learn about new technologies that may have potential in the future for agriculture in Liberia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It was helpful to have a chart to visualize and think about current and potential use of technologies with various populations.					

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