Developing a competency framework for trainers of gender-responsive agricultural research training programs

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Despite the recent proliferation of gender training courses in agriculture, it is still not clear what competencies trainers require in order to successfully deliver interdisciplinary applied gender-responsive agricultural research training. This paper presents a competency framework for trainers developed and tested over five years (2016-2021) in the context of the Gender-responsive Researchers Equipped for Agricultural Transformation (GREAT) project. This framework includes competency domains and assessment tools that can guide recruitment, performance assessment, and identification of competency gaps for the capacity development of trainers. Literatures on social research methods, feminist pedagogy, adult learning, competency-based training approaches, coupled with expert consultation, inform this framework. This framework is a novel tool that can be adapted to similar training programs and contribute to the development of gender training as a professional field of practice.

Keywords: Competency Framework, Trainers, Gender, Gender-responsive Agricultural Research.

Introduction

The importance of gender-responsive research in agriculture is now widely accepted, as demonstrated by the call for capacity building targeted at agricultural researchers in the Consultative Group on International Agricultural Research (CGIAR) and at other agricultural research organizations (CGIAR 2013; CGIAR-IEA 2017). There is a need to clarify the competency profiles of different categories of actors in the gender and agriculture ecosystem, particularly within the CGIAR, in order to inform targeted capacity building efforts. Similarly, the International Maize and Wheat Improvement Center (CIMMYT) issued a call for higher technical assistance to develop and pilot a gender competency framework and modular capacity, which can strengthen the competencies of program staff working on maize and wheat, as well as other staff levels and areas of work (CIMMYT 2014). However, in both cases, the list of competencies was narrow in scope and the focus did not include gender trainers. Despite the recent proliferation of numerous gender training courses in agriculture, it is not clear what competencies trainers require in order to successfully deliver applied gender-responsive agricultural research (GRAR) training. Understanding this can allow to lay out the essential foundations for delivering high quality gender training courses and, ultimately, to support equitable and transformative agricultural research programs and interventions that can contribute to food security and other livelihood outcomes

A competency is defined as the knowledge, skills, abilities, and behavior that enable an individual to do a particular job effectively (Wuim-Pam 2014). The competency of trainers is a critical part of the implementation of a successful training. Trainers' competency includes knowledge, skills, attitudes, and behaviors that enable them to successfully deliver on predetermined training outcomes. These outcomes can be measured by looking at participants' capacities to apply the acquired learnings (e.g., Travis et al. this issue). To achieve the intended outcomes, Ayonmike et al. (2014) propose a training of trainers grounded in a competency-based education and training (henceforth, CBET)[1] framework that promotes teaching and learning of concrete skills.

CBET has been widely applied in high-income countries (especially the United States, Australia, and countries of the European Union), and is gaining momentum in sub-Saharan Africa, especially in the context of technical and vocational education and training (TVET) (Obwoge 2016). Applications to the food and agriculture sector vary from university-based training in agricultural economics (Mather et al. 1977), sustainable agriculture and food systems (Galt et al. 2013), and agricultural

engineering (Akudugu 2017), to agricultural extension (Harder et al. 2010; Davis et al. 2017). The application of CBET to gender-responsive training has great potential to advance quality and effective gender training in agricultural research by ensuring that the people delivering these trainings are equipped with the necessary competencies to do so. Competency-based training, however, requires consensus amongst professionals on the core competency domains for a particular field, constituting a basis for designing education programs for certification in professional practice. This consensus often requires reflexive practice; in the case of trainers of gender-responsive agricultural research, the field is still in its infancy.

This paper presents the trainers' competency framework developed and tested over five years (2016-2021) by the Gender-responsive Researchers Equipped for Agricultural Transformation (GREAT) project.[2] The GREAT project, which resulted from a collaboration between Makerere University in Uganda and Cornell University in the United States, pioneered a training model that seeks to challenge the status quo of crop improvement and agricultural research, while confronting entrenched gender norms and triggering attitudinal shifts and practice change. The GREAT model rests on four pillars: 1) self-reflection; 2) interdisciplinarity; 3) applied learning; and 4) a learning community. The course consists of a sandwich model: two parts of in-person instruction and a four-month applied field-training component aimed at enabling the trainees to "learn through practice" (see Tufan et al., this issue) and at developing research capacity in gender-responsive agricultural research (see Travis et al., this issue). Four open-application courses were offered between 2016 and 2021. In addition to these, GREAT also delivered a series of shorter, customized courses for institutions and projects on an on-demand basis.

GREAT courses are delivered to an interdisciplinary audience, with topics ranging from gender concepts, personal reflections on gender relations, gender biases and positionality to a number of applied sessions on gender-responsive social research methods and gender concerns in plant breeding. The breadth of topics called for a team of experienced interdisciplinary trainers composed of plant breeders and social scientists from Cornell University, Makerere University, CGIAR, and independent consultants. Trainers were selected on the basis of their experiences, interests, and capabilities in the respective areas.

The purpose of the framework was to guide assessment of trainers' performances and to identify competency gaps for further capacity development. This framework consists of a set of competency domains and tools for assessing trainers' capacities. In this paper, we describe the theory that underpins this framework; the competency domains and tools; and the process for testing the competency framework on trainers from the GREAT project. We show how this exercise informed the identification of trainers' strengths and gaps, contributing to the implementation of high-quality interdisciplinary gender and agriculture training courses. The framework is a novel tool that can be adapted to related efforts in the development of gender training as a professional field of practice.

Conceptual framing: building competencies for gender and agriculture research

The framework and assessment tools developed in the first two years of the GREAT project were informed by literature on competency-based training approaches, conceptual underpinnings of competence standards, and assessment. The team also drew insights from literature on specific gender and agriculture research training competences, including interdisciplinarity, training methods, and feminist pedagogy. Combining these conceptual understandings provided the objectives for the implementation of the GREAT training and the basis for the resulting GREAT trainers' competency framework domains.

An overview of competency-based training approaches and models

CBET started in the United States in the 1970s and has become increasingly popular in many education and training systems worldwide (Obwoge 2016; Lassnigg 2015). CBET yields benefits for employers, supervisors, students, or trainees alike (Obwoge 2016). It enables to set standards for organizations, as well as national standards against which to measure the performances of professionals in particular fields. For trainees, there is the added benefit of gaining recognition for their skills and of formalizing this recognition through national and international certifications. Moreover, there is an opportunity to apply learning directly to the workplace and to achieve concrete results. In this sense, CBET develops competencies which are suited to immediate job performance needs and which can be widely recognized.

Competency-based learning is based on a set of standards and expected performances (Ayonmike et al. 2014); Obwoge 2016). CBET programs focus on what the participant is expected to be able to do in the workplace, in contrast to just imparting theoretical knowledge. They ensure that learners gain the knowledge, skills, attitudes, and values which are necessary to be successful in the working environment (Ayonmike et al. 2014). A new wave of competency-based learning, mainly advanced by the European Union, has been linked to qualification frameworks (QF), which are concerned with the outcomes of education and training (Lassnigg 2015). This requires to identify the desired/expected competencies before selecting the content, readings, and assignments that support students' attainment of the desired competencies (Obwoge 2016).

The concept of competence[3] is viewed differently by various scholars and practitioners. While it is often used broadly to include occupational roles, others adopt it narrowly and focus on the routine aspects of a work activity and its associated individual attributes of knowledge, skills, and understanding (Mansfield 2005). Mansfield (2005) presents two types of competence models, namely input/process model and outcome model, that can inform competence development and assessment. Input- and process-oriented models focus on assumptions about aptitudes, knowledge, and skills which individuals possess, while outcome-oriented models describe aspects of work roles which are not confined to descriptions of individual knowledge and skills. Outcome-oriented models are broader in scope and include

considerations of the interaction between the technical role, the organizational environment, and the wider occupational context. They are concerned with concepts such as adaptability, versatility, change, creativity, and innovation, as well as routine activities. Moreover, they have an element of dynamism, since they enable to incorporate changes into work organization and technology. The main difference between the two types of models relates to their different focus: while input-oriented models look at individual-based performance in discrete elements (skills, tasks, etc.), outcome-oriented models are concerned with descriptions of "whole work roles", i.e., role elements, and outcomes of performances. Nonetheless, both input- and outcome-oriented competence models share the view that competence is about performance.

Crucially, the GREAT model is largely rooted in outcome-oriented models since it aims to translate individual gender-responsive research skills to the wider workplace environment. This requires to use the term competency as synonymous to one's ability to perform "whole work roles", which goes beyond knowing about these roles and their related skills and tasks. However, there should still be a set of standards expected in employment and in the context of real working environments. Each occupational/professional field needs to develop its own conception and working definition of competency, given that some fields are more process-oriented than product-oriented (Tuxworth 2005; Obwoge 2016).

The value of competence standards and assessment

Standards are reference descriptions of what an individual should do in order to demonstrate competencies for particular outcomes, acting as benchmarks against which performances are measured and matched (Mansfield 2005). While much of the initial work on setting standards relied on task analysis, functional analysis, which focuses on the outcomes and expectations of work, has been more widely used in recent years (Mitchell 2005). The GREAT trainer competency framework follows this trend, since it encourages to apply the acquired skills at the workplace.

Beyond having competencies and standards in place, there is a need for assessment. As defined by Mitchell (2005), assessment involves the process of getting evidence and making judgements on the evidence in order to inform inferences about an individual's competence. Assessment systems may draw on multiple methods to capture individuals' performance and knowledge, by paying attention to activities naturally occurring in the workplace, simulation of artificial environments, or questioning techniques. Individual knowledge evidence may relate to: reproducing content by answering certain questions correctly; producing a solution to a problem; and synthesizing knowledge in a way which allows to generate new meaning or solutions. If much of the relevant individual knowledge evidence consistently meets these standards, it means that the person has competency.

In addition, Wolf (2005) provides four key elements through which knowledge and understanding can be enhanced: performance derived from knowledge structures; observable behavior; learning "in use"; and contextualized understanding. Finally,

Wolf argues that a large part of the work on knowledge standards has used approaches that involve brainstorming and consensus building by groups of experts, on which the GREAT competency framework draws heavily. However, when unpacking knowledge requires quite detailed contextualization, he calls for a "critical incident" approach, which consists of asking people to describe specific and notable examples of good or bad practices which they have observed. The notion of systematic alignment between training processes and outcomes – with the latter evidenced by observable practices that conform with set standards – should be one of the facets underpinning the trainer profile. In addition, for transformative gender training, feminist principles are important.

The value of feminist pedagogy in gender training

Feminist pedagogy is rooted in feminist theory, which validates differences, challenges universal claims to truth, and seeks to create social transformation in a world of shifting and uncertain meanings (Weiler 1991). Central to a feminist pedagogy is students' empowerment to become critical and creative learners (Shackelford 1992; Welch 2006), meaning that students are encouraged to engage freely with a certain discipline and to be less reliant on the authority of the instructor (Sandell 1991). This student-centered mode of learning contrasts to a subject- or teacher-centered mode, in so far as it is less hierarchical[4] and it emphasizes cooperation and community (Shackelford 1992; Weiler 1991; Sandell 1991). Feminist pedagogy is therefore centered on six key principles: reframing the relationship between teacher and student; empowerment; building community; privileging voice; respecting diverse personal experiences; and challenging traditional views (Webb et al. 2004; Shackelford 1992). Following these principles, the GREAT model privileges learning communities and non-hierarchical learning where participants' experiences, contexts, and voices are key ingredients in the training process.

This approach allows students to compare, contrast, and connect their views and ideas through open dialogues and conversations with others, resulting in students that actively contribute to knowledge production, rather than being passive recipients of teacher-imparted "truth" (Shackelford 1992). Collaboration and peer reviewing encourage students to become responsible, not only for themselves but for each other, thus fostering a sense of community within the classroom (Shackelford 1992; Welch 2006). Furthermore, it reduces the power hierarchies associated with classrooms, while fostering students' empowerment, creativity, and increased agency (Welch 2006). This approach allows teachers to operate as both facilitators and role models for students (Sandell 1991).

Aligning training to the above approach would require to use more inclusive and democratic training methods that allow students to question hierarchical models and their implications, while creating a learning environment that is student-centered rather than teacher-centered. This set up stimulates contextual discussions, critical thinking, and dialogue, fostering life-long and cooperative learning attitudes and skills (Shackelford 1992; Welch 2006). Responding to the above calls, feminist teachers

demonstrate their commitment to promote equality and respect for diversity, not just in *what* they teach but also in *how* they teach it. The GREAT model and the competency framework on which it rests draws heavily on the above presented feminist trainer commitments, as demonstrated in the following sections.

Gender-responsive agriculture research training outcomes: implications for trainers' competencies

Gender-responsive research training programs focus on interdisciplinary skills that challenge participants' assumptions about gender, while enabling them to function in multidisciplinary teams of agricultural and social scientists (Mangheni et al. 2019; Tufan et al. this issue). To be transformative, training needs to go beyond raising awareness of the implications of gender inequality for development and, instead, focus on building knowledge on gender concepts and skills in gender analysis. Training programs should also emphasize the necessity to develop a deep understanding of gender inequalities and of how they are socially constructed (Sarapura Escobar and Puskur 2014), so that participants appreciate the root causes of gender inequality and become active agents of change towards more just and equitable societies.

Training participants should develop the capacity, right attitudes, and supportive relationships with peers and their organizational environment in order to apply the lessons of the training and integrate gender responsiveness into all the processes of the research cycle (Njuki 2016; Njuki and Miller 2013; Sarapura Escobar and Puskur 2014). It is one thing to acquire the right attitude, knowledge, and skills through training and capacity development, and another thing to succeed in applying what was learned during the training to one's own work. This is because gender attitudes and practices are strictly tied to entrenched societal and organizational cultures, as well as individuals' demographic characteristics (Mangheni et al. 2010; Sarapura Escobar and Puskur 2014; Yamnill and McLean 2005).

Another area that needs due attention in gender-responsive training is interdisciplinarity. The GREAT model is based on both trainers and participants interacting in interdisciplinary teams, comprised of both biophysical scientists (e.g., plant or animal breeders, agronomists, pathologists) and social scientists (e.g., gender specialists, anthropologists, sociologists, economists). Tickamyer and Sexsmith (2019) refer to interdisciplinarity as foundational to feminist gender research in agriculture because this kind of research requires joint thinking, decision-making, and action by scientists equipped with different disciplinary perspectives. Gender studies and agriculture are two distinct disciplines, each anchored in bodies of knowledge governed by well-established ontologies and epistemologies. It is important that gender trainers understand the diverse disciplinary contexts of social science and agriculture in order to deliver training that bridges disciplinary divides (Lombardo and Mergaert 2016). Gender trainers should therefore have competencies to function in interdisciplinary trainer teams, in addition to developing the same competencies in training participants.

While the above outlines the objectives of a gender-responsive agricultural training, trainers themselves should be cognizant of what competencies they need in order to effectively deliver trainings (Carioca et al. 2009). According to Carioca et al. (2009), there are four main impact areas for trainer engagement:

i. *The learning space*, i.e., the place in which the pedagogical relationship between teacher/trainer and learners is developed. Here, principal competencies include: technical-scientific competences, pedagogical-didactic competences, and diagnostic competences.

ii. *Organization*, i.e., the system of the institution as a learning organization. Here, principal competencies include: participation competences, relational competences, competences for realizing the educational project, and organizational development competences.

iii. *Community/society*, i.e., trainers' role in changing social processes and in developing local communities. Here, principal competencies include: community awareness, collaboration and interaction, and community development competences.

iv. *Professional*, i.e., actions which pertain to trainers' own learning and professional development process. Here, principal competencies include: accounting for one's own professional practices, strategic intelligence, working for and in a multicultural context, contribution to the profession, and ethical and deontological competences.

Wong et al. (2016) suggest some mainstream, conventional standards for gender trainers across the knowledge, skills, and attitude competencies (see Table 1).

Besides these mainstream standards, Wong et al. (2016), suggest four additional core elements to which gender trainers should pay attention: reflexivity, intersectionality, resistance, and praxis (i.e., theory and practice). This is due to the fact that gender training is a feminist project concerned with feminist knowledge transfer. However, gender trainers rarely pay attention to these elements, due to several limiting factors: funding challenges and constraints placed by hiring institutions on the use of feminist pedagogies; prevalence of one-off workshop-based events that are limited in relevant content scope; excessive focus on memorization/information transfer; limited conceptual clarity; and the depoliticization of gender and development theory (Wong et al. 2016). In response to these challenges, GREAT established four key pillars, namely self-reflection, interdisciplinarity, applied learning, enabling environment and learning community, which map closely to these core elements, ultimately enabling transformative agricultural research outcomes (see Tufan et al. this issue).

Gender-responsive training methods

Competency-based training emphasizes the need to support participants' capacity development to navigate and overcome challenges associated with post-training application of skills through the exposure to relevant content and training strategies. Baldwin and Ford (1988) call for "generalization" and "maintenance" of what one learns from a training back to his or her workplace. Generalization is the ability to apply the new knowledge and

Competencies	Descriptors
Knowledge	Gender and theory up to date with current academic debates, research questions and acquaintance with gender analysis instruments; knowledge of methods and competence in their application; understanding of the participants' working field, making trainers' competence another highly contextual element of gender and training; possessing a higher education degree and competence in workshop design and implementation; having comprehensive knowledge of gender issues; analyzing and reflecting on gender issues; having knowhow of group dynamics; being able to design processes guided by self-discovery; being able to set up gender-sensitive work in the group.
Skills	Training and adult pedagogy; a personal ability to clearly communicate goals and contents of gender and training while raising interest and questions; high interpersonal competence conducive to participants' learning about gender equality; high competence in sustaining the process of change involved in achieving gender equality; usage of non-discriminatory and gender-sensitive language; ability to reflect and promote self-reflexivity and openness; reliance on reflection on gender roles; intercultural skills with an ability to resolve conflicts; ability to establish connections to gender equality.
Attitudes	Possesses personal traits and attitudes which encourage learning; highly focused on continuous self-development.

Table 1 Examples of existing standards for gender trainers. *(Source: Wong et al. (2016))*

skills learned in settings that are dissimilar to the way one was trained, while maintenance is about sustained use of the skills over time. Support by trainers to generalization and maintenance includes examples and opportunities that relate to the trainees' work and its structure, as well as clear strategies for application, such as post-training support.

Trainers should demonstrate awareness of learners' work environments, within which application will occur. Strategies to do this may include, among other things, opportunities to use the training knowledge and skills; supervisor and peer support; supporting policies; presence of an accountability and feedback system; absence of prohibitive cultures to transferring new learning; and a reward system for using new learnings (Martin 2010; Velada et al. 2007). Contextual sensitivity by gender trainers of learners' cultural, political, and sectoral contexts is crucial. To address this, GREAT trainers provide mentorship to participants and focus on the practical application of the material, including the context in which they are applying the lessons. In this way, trainers must have the skills to bridge theoretical training with application by providing field-based technical coaching, from the conceptualization of the research to the design, development of data collection tools, research implementation, and gender-informed analysis.

The GREAT trainer competency framework domains

The GREAT competency framework domains were based on the literature presented above, and largely informed by feminist pedagogy (Wong et al. 2016; Webb et al. 2004; Shackelford 1992; Welch 2006) and by the outcome-based competence approach (Mansfield 2005). The GREAT framework was agreed upon prior to its implementation in a series of workshops led by the project management team and attended by trainers. It was fur-

ther subjected to technical review and validation by four external experts[5], as articulated by Wolf (2005). The framework was revised to incorporate the reviewers' feedback. This framework defines standards for trainers of the GREAT training program, which was specifically intended to train agricultural researchers working in plant breeding programs and mainly belonging to national agricultural research institutes in sub-Saharan Africa.

The framework consists of the following four major domains[6] of competencies: foundational, core subject-matter, adult learning, and field training (see Figure 1). These areas map to the underlying objectives of the GREAT program, which inform the key competencies that GREAT trainers should possess in order to support the implementation of the training program. For each of these domains, we describe the competencies of interest in terms of three sub-domains: knowledge, skill and attitudes, and behavior. We add competency statements in measurable form and indicate the assessment criteria for each domain.
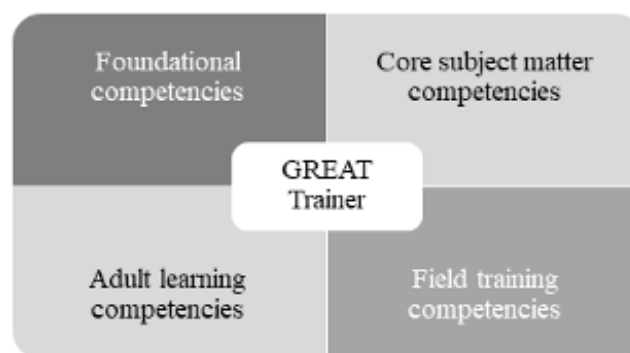

Figure 1 Illustration of the competency framework domains.

Foundational competencies

Foundational competencies are operationalized as the minimum cross-cutting competencies required for all trainers to function optimally in the GREAT program (see Table 2). The foundational competencies are rooted in a shared understanding of what GREAT seeks to achieve and why. In essence, the foundational competencies domain is grounded in the basic philosophy and values of feminist pedagogy, inclusive development, and gender equity. This domain also expects all trainers to internalize the GREAT glossary for an understanding of the course terminology. The domain includes: the knowledge of the definition of gender and of how it applies to agriculture; consciousness of and respect for intersecting identities (e.g., age, religion, race, discipline, ethnicity, class, project focus) (Wong et al. 2016); appreciation of the cultural, economic, religious, institutional, and political landscapes of countries in sub-Saharan Africa and other GREAT intervention countries (Lombardo and Mergaert 2016); knowledge of the basic concepts and terminologies in relevant agricultural disciplines, as well as the centrality of the agricultural sector for livelihoods in sub-Saharan Africa; knowledge and application of ICT tools and computer software for research; and knowledge and application of ICT tools for professional networking (e.g., group email, listservs, social media, such as Twitter and Facebook) to promote dialogue and interaction among learners and contribute to the GREAT community of practice for gender and agriculture.

Core subject-matter competencies

In addition to the cross-cutting foundational competencies, trainers are required to possess competencies specific to the subject-matter of their sessions. As part of the curriculum, core subjects were identified and assigned to different facilitators. The core subject-matter competencies consisted of a group of technical skills or attributes that GREAT trainers need to have in order to lead training in specific areas. Each session required a set of competencies that do not necessarily apply to all trainers. These are demonstrated by the 17 sub-domains covered in the course: 1) gender concepts; 2) relevance of gender to agriculture and development and reflections on gender; 3) gender-responsive agricultural research; 4) interdisciplinary research: 5) theory, concepts, and principles of gender and agricultural research (Tickamyer and Sexsmith 2019); 6) research methods; 7) principles and practices of gender-responsive qualitative research; 8) principles of quantitative gender-responsive research; 9) research ethics; 10) mixed methods; 11) case study research; 12) gender-responsive breeding processes; 13) theory of change (ToC); 14) stakeholder analysis (SH) and impact pathways; 15) gender-responsive monitoring, learning, and evaluation (MLE); 16) institutional transformation and gender mainstreaming in institutions; and 17) principles of communicating GRAR. The descriptions of the domains and the competency statements are presented in Appendix 1.

Competencies	Competencies description	Competency statement
Gender (knowledge)	Knowledge of the definition of gender and of how it applies to agriculture.	Trainer demonstrates knowledge of gender and of how it constructs and defines women's and men's roles and positions in society
		Application of gender concepts to the respective training sessions using relevant agricultural examples.
Diversity (knowledge, skill, behavior)	Consciousness of and respect for all identities and characteristics, e.g., age, religion, race, discipline, ethnicity, class, project focus, etc.	Demonstrates customization of the learning to the various contexts of the learners, for example by using relevant examples.
		Demonstrates values of inclusiveness.
Socio-cultural and economic contexts in sub-Saharan Africa (SSA)	Appreciation of cultural, economic, religious, institutional, and political landscapes of the GREAT intervention countries.	Demonstrates knowledge and customization of content to the socio-cultural and economic contexts in SSA
Agriculture	Knowledge of the basic concepts and terminologies relevant for agricultural disciplines and of the centrality of the agricultural sector for livelihood in SSA.	Demonstrates knowledge of key agricultural concepts and terms.
		Demonstrates application of session content to relevant agricultural commodity value chains.
ICT and computer software	Knowledge and application of ICT tools and computer software to research.	Demonstrates application of relevant computer software to research.
	Knowledge and application of ICT tools to professional networking, in order to promote dialogue and interaction among learners and contribute to the GREAT community of practice in gender and agriculture.	Demonstrates application of relevant ICT tools to professional networking, for example through online professional social media participation.

Table 2 Foundational domains of the competency framework.

Adult training competencies

We operationalized the domain of adult training competencies as the trainers' demonstrated abilities to apply principles of feminist pedagogy (Welch 2006; Shackelford 1992) and of adult learning to the training design and delivery. This entails the creation of a conducive learning environment to facilitate learning and transformation of practices amongst learners (Wong et al. 2016). Key sub-domains considered in this framework included: curriculum design; training delivery skills; facilitation of adult learning; interpersonal relations/teamwork; transfer of learning; and, professionalism. This domain addresses the ability to engage participants to identify their own learning needs; set personal learning objectives; draw on and incorporate participants' past experiences and expertise; use experiential and interactive training techniques; help participants to apply training content to their roles and responsibilities in the workplace; and create practice opportunities during the training sessions (Table 3).

Field training competencies

The GREAT course model is designed in a way that allows trainers to support the course participants to apply the learn-

ing to their ongoing research work. Trainers provide support to participants at various stages of the research process such as conceptualization of the research, including formulation of research hypotheses and questions and data collection tools; field data collection; gender analysis; integration of mixed methods data; and writing and publication (see Tufan et al., this issue). To successfully guide/coach GREAT participants in the application of gender skills, trainers need technical subject-matter skills, as well as interpersonal and soft skills or attributes. Against this backdrop, we categorized the competency domain for trainers into two areas: 1) field-based skills training, and 2) interpersonal skills.

Field-based skills training includes skills for guiding the application of gender-responsive agricultural research to field case studies (specifically, in the research design and implementation). To measure this, the trainer should demonstrate skills for guiding the application of gender-responsive mixed methods research design and implementation; the trainer should thus support the teams in the development of gender research concepts (gender-responsive research questions), quantitative and qualitative tools, interviewing, note taking in the field, data analysis, and writing up mixed methods. Interpersonal skills, instead, refer to people's skills. For this competency, the trainer should

Competencies	Competencies description	Competency statement (observable and measurable)
Curriculum design	Ability to design learning experiences that promote reflection, knowledge acquisition, and application of GRAR skills, combining theory and practice in curriculum design.	Demonstrates knowledge of curriculum design, concepts, and principles that promote acquisition of knowledge and skills.
Training delivery knowledge	Knowledge and application of skills for facilitating adult learning. Contextual awareness.	Demonstrates outstanding presentation skills. Understands the values and culture of the group and their work organizations and uses this understanding to promote learning
Facilitation of adult learning	Knowledge and application of principles of adult learning to training design and delivery.	Demonstrates skills of facilitating adult learning.
Interpersonal / teamwork	Ability to connect and function effectively in diverse teams, including collaborative design and delivery of training sessions.	Exhibits a character that enables teamwork and collaborative engagement. Appreciates diversity and flexibility in large and complex teams. Demonstrates skills of co-facilitation when working with other co-facilitators.
Transfer of learning	Knowledge and application of the concept of learning as a "process rather than an event" and ability to identify opportunities and activities which can promote transfer of knowledge before, during, and after the training event.	Demonstrates knowledge of the learners' work environment and of how the skills acquired in the course can be applied to the work, for example by using relevant work-related examples and exercises.
Professionalism and ethics	Ability to understand the importance of maintaining a professional demeanor in the training environment.	Demonstrates professional and ethical practice (e.g., respect for fellow trainers and trainees, respect for deadlines, accurate referencing of resources, dress code, etc.)

Table   3 Adult training domains of the competency framework.

demonstrate skills that enable smooth interaction with the participants, for example, by engaging a trainee into a productive mentoring relationship; setting targets; agreeing on a mode of communication; communicating in a timely manner; and following a professional conduct during communication and technical support.

Tool development

Three tools were developed to assess trainers' competencies and operationalize the framework:

i. Tool 1 assessed the trainers' secondary information contained in their curriculum vitae (CV). Information was collected on: academic qualifications, experience in adult training, experience in research and research leadership, publications, use of ICT platforms for professional networking, and use of computer software for qualitative and quantitative research. For each of these components, a rating scale of 0-3 was applied, where 0 signifies that the trainer "does not meet the minimum requirements", 1 that she "meets the minimum requirements with low rating", 2 that she "meets the requirements with high rating", and 3 that she "meets the requirements with exceptional rating". Given that the trainers were already working on the training program, this tool was used retrospectively.

ii. Tool 2 was rooted in the competency framework. This tool had 28 areas of competency categorized into: foundational domains (6), core subject-matter (14), adult training (6), and field training (2); the description of the competency statement, the scale on which to rate the person assessed, and a provision for remarks for each of the domains. Each domain was rated on a scale of 0-3, which followed the same legend used for tool 1. This scoring omits a fourth option, namely "don't know", as all trainers had the opportunity to ask questions and to fully understand the questions. Tool 2 was used for both self and peer assessment on the various competency domains.

iii. Tool 3 was part of the external project monitoring, learning, and evaluation component of the GREAT project. The tool captured the satisfaction of course participants with the trainers' competency and delivery skills. Satisfaction was measured on a scale of 0-4, where: 0 signifies "not satisfied at all", 1 "partly satisfied", 2 "satisfied", 3 "extremely satisfied", and 4 signifies "don't know".

The tool development process was anchored in the feminist pedagogy principles of empowerment, reflexivity, participatory classroom communities, and democratic, collaborative approaches (Sandel 1991).

Methodology for testing the competency framework

This framework was tested in 2019. An action research approach employed multiple data sources (see Table 4) to assess the competency of six GREAT trainers (five women and one man). These six trainers were selected because of their role as core trainers of the GREAT program at Makerere University. Data were collected through trainer self-assessment, peer assessment, and participants' evaluation of their respective trainers. According to Frost and Nolas (2011), using multiple data sources is essential for triangulation. In this paper, assessment refers to gathering information about "how" (i.e., behaviors) someone does "what" (i.e., task or skill) (Lasse 2020), and the use of this information for assessment purposes.[7] Since participants of the assessment were also members of the research team, an Institutional Review Board (IRB) was not required and oral consent was given as part of the process.

In this paper, we present results from the assessment of two courses: the fourth open-enrollment GREAT course (course 4), delivered between July 2019 and January 2020, and a customized course for the tropical legumes III project, held in October 2018. Course 4 was chosen because it was delivered by five out of the six trainers who participated in the trainer competency assessment exercise that tested the framework. Results for the trainer who did not participate in course 4 were based on the tropical legumes III course. In addition, we chose these courses because they were the closest to the trainer assessment workshop, which allowed easier reflections in order to more accurately inform ratings. Out of the 33 sessions evaluated in course 4 and 19 in the tropical legumes III course, only five and one were considered, respectively. These sessions were selected because they were delivered by or led primarily by at least one of the six trainers. Out of the four competency framework domains assessed (foundational, core subject-matter, adult learning, and field training), we present results for the core subject-matter domain as an illustration.

Data collection

Table 4 presents more details on the data collection process.

To collect the data using tools 1 and 2, we organized a workshop in a relaxed setting, away from the workplace, in order to create an atmosphere conducive for reflection and teamwork. The workshop was attended by six GREAT trainers and the project administrator. Building a trusting environment in which all members are respected and both men and women have equal opportunities and rights to participate was emphasized. The seating was arranged so that all six participants sat at a round table, allowing to break hierarchies and create an atmosphere of mutual respect; contributions were sought from each individual.

The team facilitator communicated the objective of the assessment and invited thoughts from the trainers. The team facilitator presented the assessment framework, which had been previously developed by the team, and each domain was discussed to ensure a common interpretation and understanding prior to the assessment. This collaborative approach aimed at

Data collection method	Data collection date	Data collected	Description
Trainer's self-assessment in a workshop setting	April 24, 2019	Perceptions of the competence levels for the four competence domains.	Trainers had an opportunity to rate themselves on all domains.
Peer-assessment in a workshop setting	April 24, 2019	Perceptions of the competence levels for the four competence domains.	Employing principles of feminist pedagogy, each trainer was assessed by five peers (whom they had trained with) in a collegial environment. Peer assessment was viewed as an opportunity for feedback and growth.
End-of-course self-administered survey of participants/trainees	July 31, 2019	Participants' rating of course content and delivery methods for their respective trainers	Survey was administered by the GREAT external monitoring learning and evaluation partner (ALINe Impact).

Table 4 Data collection methods used for the assessment of trainers' competence.

creating a democratic and empowering atmosphere, conducive for self and peer critique. Such an environment enabled trainers to take charge of the assessment and to use the results for self-improvement. In the workshop, two types of assessment were executed: self-assessment and peer assessment.

Self-assessment: Each trainer carried out a self-assessment against each competency domain. The self-assessment approach was used because it captures the trainers' perceptions of their strengths and competency gaps (Allen and van der Velden 2005). While this assessment is based on self-knowledge and it is unlikely to be objective (Allen and van der Velden 2005), it is considered the best way for assessing higher-level competency (Connally et al. 2002). The self-assessment process gave the GREAT trainers the chance to reflect on personal issues – a form of self-critique – and to discuss these issues with their peers. The process of constructing competences depends on the image that people have of themselves, revealing the interaction between their emotions and aspects of their identity and professional performance. The self-assessment approach is becoming increasingly popular and it is in line with the standards developed by the Joint Committee on Standards for Educational Evaluation (1994).

Peer assessment: This approach was used to complement trainers' self-assessment and to reveal both strengths and areas for improvement that a trainer was not personally aware of, but which could be identified by peers. We gave each trainer a hard copy of tool 2 and several cards to assess their peers in the various competency domains. This exercise was done anonymously in order to elicit honest responses.

In the cases in which the assessors had not had an opportunity to observe a person exhibiting the competency area(s) in question, that component was left blank. For each of the six trainers, the five co-trainers attending the workshop tabulated the peer ratings in relevant columns for each tool, and the sixth trainer's self-assessment results were compared in plenary with the anonymous peer assessment results and discussed. Silva (2020) encourages to maintain cooperation and dialogue between the assessor and the subject. The group reached a consensus and agreed on a score which became the final score of each domain for each of the trainers (for a sample of the data entry sheet, see Appendix 2).

For this paper, we present results of only the core subject-matter competencies and consider one area of assessment for each of the six trainers that participated to align with the sessions they facilitated in the GREAT courses. This is to illustrate the kind of results generated from the assessment process.

Participants' assessment: As part of the course implementation, an independent monitoring, evaluation, and learning (MEL) team collected and synthesized participants' experiences (see Travis et al., this issue). The MEL team collected information on the perceptions of course participants of trainers' competency. At the end of each course, participants were asked to rate their level of satisfaction with the various sessions based on the session content, delivery methods, and whether the session added value to them and their work. A scale of 1-4 was used (1="not satisfied at all", 2="partly satisfied", 3="satisfied", and 4="extremely satisfied") and weighted averages were computed. In sessions where participants were not satisfied or partly satisfied, they were asked to describe the areas of concern and any recommendations for improvement. In addition, course participants were asked to rate the overall trainers' competence and delivery methods on a scale of: not satisfied at all (1), partly satisfied (2), satisfied (3), extremely satisfied (4), and don't know (DK).

The competency assessment processes included a formative assessment, empowering learners by giving them the possibility to give feedback on trainers' performances, and open peer- and self-assessment that are in line with critical feminist pedagogy.

We acknowledged that individuals had a deep knowledge of their environment and that their experiences and perspectives were worthwhile. Consequently, GREAT trainers were involved throughout the development of the competency framework and tools and in planning the assessment. The climate of open communication, trust, and respect amongst the project management team and trainers was cultivated over four years; this, coupled with the participatory nature of the tool development and of the data collection exercise, is likely to have contributed to trainers' responsiveness to the assessment. We held four workshops wherein we used the input of trainers, working in small groups and engaging in dialogue, both with the training team leader and with one another.

Trainer code (Pseudo)	Selected sessions (GREAT course 4, July 2019)	Assessment scores			
		Self*	Peer*	Consensus*	Participants**
T1	Principles of qualitative gender research: a focus on data collection methods and tools	3	3.0	3	(3.57)
T2	Principles of quantitative gender research: a focus on research question design, intro to data collection tools and analysis	3	2.4	3	(3.31)
T3	Introduction to gender-responsive agricultural research, introduction to the field case study concept and framework to be adapted by teams to their project contexts	3	3.0	3	(3.48)
T4	Gender concepts and why gender matters in agriculture: a focus on sub-Saharan Africa	3	3.0	3	(3.64)
T5	Personal reflections on gender: understanding the self, workplace, and discipline	3	3.0	3	(3.45)
T6	Gender-responsive plant breeding: setting breeding priorities***	2	2.4	2	(3.38)

*Scale 0-3 where: 0=does not meet the minimum requirements,1=meets the minimum requirements with low rank, 2=meets the requirements with high rank, and 3=meets the requirements with exceptional rank. Peer scores are an average of scores awarded from five peer trainers.
**Figures in parentheses are weighted averages out of 4. Scale used was 1-4 where 1=not satisfied at all, 2=partly satisfied, 3=satisfied, and 4=extremely satisfied.
***Session was delivered in October 2018. Trainer T6 did not deliver the session in course 4.

Table 5 Participants' ratings of trainers for selected sessions.

Results

Assessment scores from the four data sources (self, peer, consensus, and participants) for a sample of the sessions delivered by the six assessed trainers are presented in Table 5.

The assessment results indicated that all trainers met the requirements set by the GREAT course. The majority of the trainers scored 3 (i.e., they met the requirements with exceptional rating) in key competencies or 2 (i.e., they met the requirements with high rank) across most domains of the competency framework. While a few trainers scored 1 (i.e., they met the minimum requirements with low rank) in a few domains, no trainer scored 0 (i.e., she did not meet the minimum requirements). The ratings of participants administered by an external evaluator buttress the self and peer ratings, further corroborating the results.

Ratings on trainers' competency were consistently high in both the gender-responsive plant breeding course and the tropical legumes III course. The majority of the participants (76 percent and 75 percent, respectively) indicated that they were extremely satisfied with trainers' competencies. Discipline-disaggregated data reveal that a slightly higher proportion of biophysical scientists were extremely satisfied compared to the social scientists in the gender-responsive plant breeding course, as shown in Figure 2.

The participants' survey gave the option to provide a qualitative explanation for their rating of trainers' competence. Their feedback was also sought through key informant interviews,

where the sampling of participants was conducted by the external evaluator. The qualitative assessment of trainers' competencies and delivery methods was in agreement with the quantitative scores. Participants appreciated the trainers for their eloquence in presenting the information, using a host of methods to deliver
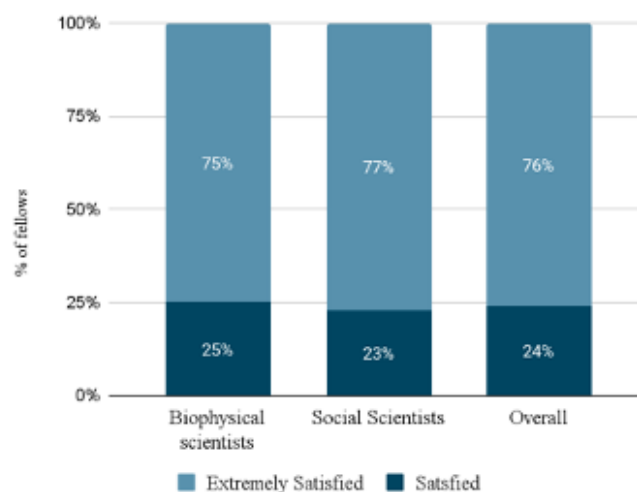

Figure 2 Distribution of fellows' self-reported level of satisfaction with the trainers' technical competence and delivery methods. *(Source: MLE report, Course 4 Week 1.)*

the messages and enable participants to understand, and skillfully responding to questions and points of clarification. Trainers were also highly rated in terms of subject-matter competence, professionalism, and delivery approach. A few selected quotes are presented below to illustrate participants' sentiments:

> [T]he trainers, who delivered the training sessions, are experts in the field. They are very experienced, high class professionals. They gave practical examples based on their own experiences to guide us on what we should do to be able to get to where we want to be. The practical examples and exercises have given us a better understanding of the concepts and how to move forward to practice quality gender-responsive research.
> (Key informant interview, female social scientist, participant of GREAT, 2020)

> Trainers were very good, and the delivery methods were wonderful. The trainers explained the concepts in a manner that everybody can understand. The exercises allowed us to have hands-on practice. They were very good.
> (Key informant interview, male social scientist, participant of GREAT, 2020)

> The trainers are very experienced, well prepared to deliver the content and they know what they are talking about. It is a strong team of trainers. They tried to make the sessions interactive and were innovative though at times it would be more of a lecture mode.
> (Key informant interview, male biophysical scientist, participant of GREAT, 2020)

From participants' narratives, it is evident that the ratings of trainers were highly satisfactory. On the basis of Kirkpatrick's (1994) four levels of training/learning evaluation, the participants' reaction to the training is an important model of evaluation and can influence the application of the learnings. Moore (2009) also asserts that trainees' satisfaction is one of the measures to identify the quality of trainings. While an optimistic reaction does not ensure learning, an unfavorable one makes it less likely that the participant will use what has been learnt in the training (Kirkpatrick 1994).

Discussion

We have presented a framework to assess the competencies of trainers involved in an applied interdisciplinary gender-responsive agricultural research training course that employs feminist and adult learning pedagogical approaches through an outcome-based competency framework. At the start of the course, there were no resources to directly draw from for the team to conceptualize the GREAT training and identify key criteria to select trainers for the course. This paper documents the formative process of developing a conceptual framework to do so, testing this framework on a core set of trainers. The trainers involved in the testing were intimately involved in developing the framework, making this a participatory and reflective process. We found that the conceptual framework and the associated competencies were informative in evaluating the ability of trainers to join the GREAT training team. We found that the three tools employed were suited for the purpose of the exercise, despite still necessitating further reflection and refinement. During the application, we realized that the competency statements at times fell short of being measurable and would thus need some refinements in order to be scaled within GREAT and applied to other training programs. The operationalization of the framework requires a high level of trust amongst the team of trainers in order to enable them to be open with each other and to accept feedback. Another key requirement is that the training program should employ an external person to collect objective feedback from participants, thus inflating the program's costs.

Limitations and reflections on this process offer lessons for using the conceptual framework presented in this paper by GREAT and other training programs. We have not yet tested the full framework with newly recruited trainers; this will be critical in going forward and to further refine the framework. The GREAT training program has also evolved and the competencies required to support it may therefore need to be adjusted. We note that as the program evolved, we adapted the curriculum to be more focused on feminist approaches and gender transformative programming, which requires adaptation of some of the core competencies.

A key limitation of this study is that we have not applied the framework across all listed competencies, instead illustrating the use of the framework with those competencies presented in Appendix 1. We also note that participants' qualitative reflections on the trainers' performances do not reflect competencies as defined in the framework or on specific trainers, but focus broadly on trainers' performances. These leave open gaps, which can be addressed by future research that focuses on the results of the full application of the framework. We also note that there are limitations with using CVs, self-assessment, and participant feedback assessment tools. While these tools were developed and agreed upon by the team of trainers, there were some limitations to their operationalization. Firstly, CVs do not always present a full picture of one's skills, attitudes, behaviors, or knowledge. Rather, they are written to signal one's qualifications and academic achievements to specific audiences and for specific objectives (Teixeira da Silva et al. 2020). It is possible that the objectives of the presentation of the CV have influenced the information presented, obscuring or inflating skills of interest. Secondly, there is potential respondent bias from course participants in reporting their satisfaction with each trainer. This could, for instance, be influenced by participants' previous or potential future professional relationships and collaborations. Adaptation of the framework would need to employ multiple methods to triangulate the data and enhance the credibility of the findings.

Testing the framework with other gender training programs for agricultural researchers would provide valuable learning and feedback to further develop the framework. In our experience, this would require adjustments of the subject-matter competencies, but not necessarily of the core and adult learning competencies, as these would ideally remain constant across gender training programs.

Conclusion

The competency framework presented in this paper guided the GREAT project to develop a standard against which to assess the competence of the team of trainers offering gender-responsive plant breeding courses for interdisciplinary teams of social scientists and biophysical agricultural researchers. We recommend the use of the competencies identified in the foundational, core subject-matter, adult learning, and field training domains for other courses aiming at similar or related outcomes. This competency framework contributes valuable insights and theoretical rigor to the discussion of gender trainer competency measurement, standards, and professionalism.

However, it will likely require adaptation to suit various training contexts. Indeed, the application of the framework to assess the competency of GREAT trainers relied on several assumptions that may not be applicable to a typical training. For instance, the GREAT team of trainers worked together for a period of three years and peer assessors observed fellow trainers. While the peer approach has some evident strengths, the strong relationships between trainers may limit the reliability of the scores assigned. However, without these prior strong relationships, peer assessment may not work effectively. In light of this, we do not claim that the competency framework presented in this paper is a perfect guide for assessing the competency of gender trainers; rather, we view this framework as a helpful tool that can be used and adapted to take into consideration specific aspects of different training contexts. Finally, even though it wasn't used this way by GREAT, we envision that the adaptation of the framework and tools could appropriately be used in hiring transformative gender trainers.

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Notes

1. Competency-based education and training is also referred to as competency-based education (CBE) and competence-based education (CBE), and may be used interchangeably (e.g., Lassnigg 2015).

2. The full GREAT trainers' competency framework can be found online at: https://tinyurl.com/great-competencies.

3. While often used interchangeably, Moore et al. (2002) define competency as the performance when one carries out her job, while competence as one's ability to perform her job. In this paper, we follow Moore et al. (2002) and distinguish between the two terms.

4. Hierarchy refers here to a system in which individuals are ranked according to their status, creating unequal relationships of subordination (Child 2019).

5. Experts consulted by the research team were professionals from the fields of competency-based training, gender training, gender-responsive agricultural research, development studies and social sciences.

6. We define domain as a specific sphere of activity or knowledge.

7. Evaluation refers here to the determination of the quality or value of an object, usually for the purpose of reporting or decision-making (Davidson 2005).

Appendix 1 Core session-specific subject-matter domains of the competency framework.

Competencies	Competencies description	Competency statements
Gender concepts	Knowledge and appreciation of key gender concepts related to agricultural development.	Demonstrates knowledge of gender and agricultural development (e.g., concepts, stereotypes, roles, power relations, opportunities, and constraints).
Relevance of gender in agriculture and development	Knowledge of gender issues in agriculture and development.	Demonstrates knowledge of the relevance of gender in agriculture and development.
Personal reflections on gender: understanding the self, workplace, and discipline	Knowledge of the self as a gendered being in relation to others. Knowledge of how gender manifests itself in agricultural research teams, institutions, and organizations. Knowledge of issues of positionality and how these relate to the research process.	Demonstrates knowledge of how gender shapes the self, perceptions, and relations with others in different contexts, e.g., workplace and discipline.
Gender-responsive agricultural research (GRAR)	Knowledge and experience of how to integrate gender into the entire research process.	Demonstrates knowledge of the importance of gender to the agricultural research process (e.g., conceptualization, design, implementation, and dissemination of research results) and of how to systematically integrate gender into each stage of the research process
Interdisciplinary research: theory, concepts, and principles of gender and agricultural research	Knowledge of how to approach agricultural research problems from different disciplinary perspectives. Skills in using mixed methods data for triangulation and validity.	Demonstrates knowledge of how issues around the construction of science, ontology, and epistemology of biophysical and social sciences and how these differ. Demonstrates knowledge of the relevance of both qualitative and quantitative data in scientific research; Illustrates what constitutes as valid data from an interdisciplinary perspective (including biophysical and social sciences viewpoints).
Research methods: principles and practices of gender-responsive qualitative research	Knowledge and application of principles and practices of gender-responsive qualitative research methods. Knowledge of the benefits and limitations of qualitative methods for doing gender analysis.	Demonstrates knowledge and skill in gender-responsive qualitative research conceptualization, design, data collection, analysis, and reporting. Illustrates good practices in gender-responsive qualitative research conceptualization, design, data collection, analysis, and reporting. Demonstrates knowledge of the benefits and limitations of qualitative methods for doing gender analysis.
Research methods: principles of quantitative gender-responsive research	Knowledge and application of the principles of quantitative sex-disaggregated data collection and analysis. Knowledge of the benefits and limitations of quantitative methods for doing gender analysis.	Demonstrates knowledge and skill in gender-responsive quantitative research conceptualization, design, data collection, analysis, reporting and research ethics. Demonstrates knowledge of the benefits and limitations of quantitative methods for doing gender analysis. Illustrates good practices in gender-responsive quantitative research conceptualization, design, data collection, analysis, and reporting. Demonstrates knowledge and application of statistical tests used in quantitative gender analysis.
Research ethics	Knowledge and application of gender to research ethics.	Demonstrates knowledge of research ethics and of how gender can be integrated.
Mixed methods	Knowledge and application of the principles of mixed methods data collection, analysis, and write up.	Demonstrates the value of the mixed methods approach in GRAR. Demonstrates how mixed methods approaches are used in conducting GRAR, as well as how qualitative and quantitative data work together to mutually enhance the validity of the findings. Demonstrates knowledge of some exemplar datasets/projects that have used mixed methods in GRAR, e.g., WEAI and GENNOVATE.

Case study research	Knowledge and application of the case study research design to mixed methods GRAR.	Demonstrates application of the case study research design to GRAR.
Gender-responsive breeding processes	Knowledge and application of gender to breeding processes.	Demonstrates knowledge of gender-responsive breeding and participatory breeding tools. Demonstrates knowledge of processes guiding breeding decision-making and of how gender data can influence these processes. Demonstrates knowledge of how to use gender data to guide breeding decisions.
Theory of change (ToC), stakeholder analysis (SH), and impact pathways	Knowledge and application of the conceptual models for ToC, SH, and impact pathways to GRAR.	Application of a theory of change framework that demonstrates SH involvement and impact pathways in GRAR. Demonstrates application of SH and impact pathways mapping.
Gender-responsive monitoring, learning, and evaluation (MLE)	Knowledge and skills of integrating gender into MLE of research projects.	Demonstrates knowledge and application of the concepts, principles, and processes of MLE to GRAR.
Institutional transformation and gender mainstreaming in institutions	Application of institutional gender-transformative approaches in practice. Knowledge of the value, origin, and process of mainstreaming gender in institutions.	Demonstrates knowledge of effective strategies for gender-responsive institutional transformation. Demonstrates knowledge of concepts and principles of gender mainstreaming in institutions.
Principles of communicating GRAR	Knowledge of concepts and approaches of communicating GRAR to peers/scientists, communities, and policy. Knowledge of key entry points of gender responsiveness in communication strategies, including to policymakers, peers, and communities	Demonstrates application of communication concepts, principles, and approaches to GRAR. Illustrates application of gender-responsive communication principles to diverse audiences of GRAR, such as peers/scientists, communities, and policymakers.

Appendix 2 Summary assessment of the core subject-matter competency domain.

Knowledge (K); skill (S); behavior (B)	Competencies	Scores* Row 2: T1-T6= codes for the trainers Row 3: S=self-assessment; P=peer assessment; C=consensus																
	Trainer:	(T1)			(T2)			(T3)			(T4)			(T5)			(T6)		
	Score source**:	S	P	C	S	P	C	S	P	C	S	P	C	S	P	C	S	P	C
Competency domain 2: core subject-matter competencies																			
2.1 K, S	Gender concepts	3		3	2		2	2	2,3,3,3,3	2	3	3,3,3,3,3	3	3	3,3,3,3,3	3	2	1,1,3,3,2	2
2.2 K, S, B	Personal reflections on gender: understanding the self, workplace, and discipline	2		2	2	3,2,2,3,3	2	3		3	3		3	3	3,3,3,3,3	3	2		2
2.3 K, S	Gender-responsive agricultural research (GRAR)	2		2	3		3	3	3, 3, 3,3,3	3	1		1	2		2	2		2
2.4 K,S	Interdisciplinary research: theory, concepts, and principles of gender and agricultural research	2		2	3		3	3	2,3,3,3,3	3	2		2	1		1	2		2
2.5 K, S	Principles and practices of gender-responsive qualitative research	3	3,3,3,3,3	3				3		3	2	2,3	2	1		1	1		1
2.6 K, S	Principles of quantitative gender-responsive research	2		2	3	2,2,3,3,2	3	2	3,3,3,3,2	2	1		1	1		1	1		1
2.7 K, S	Gender-responsive breeding processes	1			1		1	2		2	1		1	1		1	2	2,2,3,2,3	2

*Scale/Score: 0=does not meet the minimum requirements; 1=meets the minimum requirements with low rank/not satisfied/partially satisfied; 2=meets the requirements with high rank/satisfied; 3=meets the requirements with exceptional rank/extremely satisfied

**3: S=self-assessment; P=peer-assessment; C=consensus