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Doctor of Education in Organizational Leadership

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Facilitators to Becoming and Remaining Open Defecation Free in Uganda:
Implications for Community-Led Total Sanitation Programming

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Education in Organizational Leadership

by

Danette Lee Cagnet

April 2022

Dedication

This work is dedicated to Kibo Group International. Thank you for putting your neighbor first and for demonstrating what it is to love others well. For when we love our neighbors, we make the world a better place.

Acknowledgments

I am grateful for my committee chair, Professor Kristin O’Byrne, who offered her time, attention, and heart to this work. Thank you for pushing me when I needed to be pushed. Thank you for encouraging me when I needed encouragement. Thank you for walking alongside me, believing in this work, and guiding my steps. I am blessed to call you teacher, mentor, and friend.

I am grateful for my family. Thank you for your support. Thank you for the sacrifices you made. Thank you for reminding me to take “brain breaks” and have fun along the way. I could not have done this without you.

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Abstract

Poor sanitation behaviors, including open defecation, present risks for diarrhea, which is credited with 600,000 deaths a year in children under age five. Although CLTS is a solution to ending open defecation, more than half of the investment in producing open defecation free (ODF) communities is lost during the maintenance phase. The purpose of this qualitative, case study was to understand stakeholder perceptions of the facilitators and hindrances to becoming ODF certified and maintaining ODF status and sanitary behaviors in a small village community located in Uganda, East Africa. The researcher held individual interviews and in-person focus group discussions to gather data. Major thematic findings include that open defecation was no longer an issue, civic pride was significant, and continuous growth and generativity were present. Unity, seeing and experiencing the benefits of being ODF, and having access to durable construction materials and clean water supported the maintenance of ODF sanitation behaviors. In addition, becoming ODF was facilitated by supportive rather than punitive intervention methods by demonstrating open defecation results in “eating shit,” providing access to latrine construction tools and materials, and stacking programs with holistic teaching. While slippage was not a concern for this community, respondents provided advice for those that may struggle to become and remain ODF by inviting others to come to see their success, by serving as ambassadors, and building a unified front. This research is significant as it identified facilitators to becoming and remaining ODF, which has important quality of life and public health benefits. In addition, this research suggests that social outcomes, such as self-efficacy, growth, and generativity, may well move communities beyond maintenance to generate further community development to help stakeholders flourish. These findings are translatable into practice and

provide insight for supportive, holistic community-building and visually rich intervention strategies in the context of CLTS that have the potential to save lives.

Keywords: WASH, CLTS, open defecation free, change leadership, social outcomes, holistic community development

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Chapter 1: Introduction

In 2015, 2.4 billion people lacked the simplest sanitation facilities like pit latrines, 663 million people used fecal contaminated water sources, and only 19% of the world's population washes hands with soap after contact with excreta (Wolf et al., 2018). Poor sanitation and hygiene present a risk for diarrhea, which is credited with 600,000 deaths in children under five each year (Wolf et al., 2018). Unfortunately, more recent data demonstrates that there has been little progress made. Two billion of the global population still do not have access to basic sanitation facilities, with 673 million openly defecating (World Health Organization [WHO], 2019b). The practice of open defecation, defecating in open fields or water sources, and leaving the feces exposed, predisposes people to diarrheal disease (Njuguna, 2016). Open defecation has also been linked to adverse consequences, including infectious diseases (Wolf et al., 2018), poor nutrition (Jacob Arriola et al., 2020), and reduced mental well-being (Delea et al., 2019). As a result, governments, nongovernmental organizations, academia, and the international development community have shifted focus to the provision of sanitation services and education in rural, poverty-stricken communities.

On a global scale, the United Nations member states adopted the 17 Sustainable Development Goals (SDGs) to promote a universal call to action to end poverty, protect the planet, and improve human dignity everywhere (United Nations, 2020). This call to action includes a 15-year plan to achieve goals focused on quality education, health, equality, climate, and poverty (United Nations, 2020). Sustainable Development Goal number six specifically relates to water, sanitation, and hygiene as a right for all and includes an emphasis on ending open defecation (United Nations, 2020). Emphasis is also placed on ensuring the most

marginalized, women, children, and the disabled are equally included in the efforts to provide access to water and sanitation (United Nations, 2020).

Governments have developed health worker programs using village health teams to improve sanitation, but these have demonstrated modest improvements in open defecation behaviors (Benon Turinawe et al., 2015; Musoke et al., 2019; Waterkeyn et al., 2020). There is promise, however, as some governments are continually seeking improvement. Tanzania's national program recently secured formative research assessment data to inform a redesign featuring behavioral change theory for sustainable outcomes (Czerniewska et al., 2019). Some governments have adopted community-based approaches used by many nongovernmental organizations.

Nongovernmental and nonprofit organizations have witnessed greater success due to holistic, contiguous community development that features behavioral change theories, asset-based rather than deficiency-based approaches, community facilitation, stakeholder engagement, and the utilization of existing social structures (Mtika & Kistler, 2017). One holistic, community-driven method, community-led total sanitation (CLTS), developed by Dr. Kamal Kar and Dr. Robert Chambers, circa 2000, has been utilized to increase latrine ownership and latrine usage under certain conditions, thereby decreasing the practice of open defecation (Gebremariam et al., 2018; Pickering et al., 2015; Tessema, 2017; Venkataramanan et al., 2018). CLTS is intended to end open defecation and encourage proper water, sanitation, and hygiene practices, such as handwashing after relieving oneself.

CLTS methods are encompassed under the sustainable community development umbrella and water, sanitation, and hygiene (WASH) programming. CLTS promotes a nonsubsidized, collective effort toward village sanitation (Kar & Chambers, 2008). In the most holistic sense,

CLTS programming includes efforts to influence a wide range of behaviors, including ensuring proper use of a hygienic toilet, washing hands, hygienically handling food and water, and safe disposal of animal and human waste to create safe environments (Kar & Chambers, 2008).

Kar and Chambers (2008) developed the participatory approach to combine three phases implemented by local facilitators. The first phase of CLTS programming is pretriggering: a community is visited, information is gathered about the population, local committees are trained in proper sanitation and mobilization techniques, and connections are made to secure support from local government officials (Harter et al., 2020; Kar & Chambers, 2008; Venkataramanan et al., 2018). The second phase—triggering—includes a community-wide meeting where facilitators conduct participatory exercises to evoke disgust in hopes of motivating changes to the collective sanitary situation, including ending open defecation practices, building latrines, and washing hands before meal preparation and after defecation (Kar & Chambers, 2008). Finally, the posttriggering follow-up includes regular visits to train local leaders on latrine construction. Once a community has met the agreed-upon hygiene standards by demonstrating sustained use of constructed latrines, it is declared *open defecation free* (ODF; Kar & Chambers, 2008). Although there has been success with behavioral change demonstrated by latrine construction and latrine usage in the short term, the post-ODF maintenance stage has proven problematic, and communities have slipped back into open defecation behaviors. This chapter further introduces the sanitation behavior slippage problem, discusses the purpose of this study, highlights pertinent research questions, and defines key terms under consideration.

Statement of the Problem

Poor sanitation and hygiene present a risk for diarrhea, which is credited with 600,000 deaths in children under five each year (Wolf et al., 2018). Although CLTS is a solution to

ending open defecation, more than half of the investment in producing ODF communities is lost during the maintenance phase following the posttriggering activity (Wijesekera & Thomas, 2015). As a result, sustainability (or maintenance) of behaviors, such as pit latrine usage and handwashing, has become the new research “goal post” (Wijesekera & Thomas, 2015, p. 207).

Community change leaders and academics have shown interest in pretriggering (Novotný et al., 2018a), triggering (Bateman & Engel, 2018; Brewis et al., 2019; Engel & Susilo, 2014; Harter et al., 2020; Mukherjee & Mukherjee, 2018; Sigler et al., 2015), and posttriggering transition management (Silvestri et al., 2018; van Welie & Romijn, 2018). Few, however, have considered the maintenance phase as a collective impact of all three phases within the larger, complex system (Valcourt et al., 2020). This holistic view asserts that long-term maintenance will be strengthened only by considering the interplay of the CLTS phases (Valcourt et al., 2020). The favorable and unfavorable factors influencing the CLTS phases deserve further study because the nuanced understanding of the most influential elements can lead to more effective change leadership, conflict resolution strategies, and facilitate maintenance of sanitation ODF communities and long-term sustainability of behaviors.

Purpose of the Study

The purpose of this qualitative, exploratory, case study research was to better understand stakeholder, including village community member, village leadership, and CLTS practitioner, perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors in the maintenance stage of CLTS programming in Uganda, East Africa. This study sought the perspective of and participation of village community stakeholders receiving the CLTS intervention implemented by the nongovernmental organization, Kibo Group International. Kibo Group International is a “faith-inspired, nongovernmental organization that partners with East

Africans to find local solutions for poverty and injustice to help communities flourish” (Kibo Group, 2020, p. 1). Kibo Group International seeks to develop communities holistically through CLTS, water, sanitation, and hygiene (WASH), safe kitchen building, health education, life skills education, and community economic development initiatives (Kibo Group, 2020).

Investigating barriers and facilitators affecting CLTS sustainability within the small village community in the Namutumba district of Uganda generated learning to improve intervention strategies, address barriers to behavior maintenance, strengthen community commitment, and reaffirm maintenance behaviors by seeking community member solutions to combat slippage.

Research Questions

Given the purpose of better understanding the maintenance of sanitation-related behaviors and the interconnected phases of the CLTS process, the following questions were addressed:

RQ1. What are the stakeholder’s perceived barriers and facilitators to remaining ODF and combatting slippage in the maintenance stage in this community?

RQ2. What are the stakeholder’s perceived barriers and facilitators to becoming ODF?

RQ3. What are proposed solutions or advice these stakeholders would give to others who struggle to become or remain ODF?

Definition of Key Terms

Community-led total sanitation (CLTS). CLTS is an integrated approach, including pretriggering, triggering, and posttriggering follow-up actions, to sustain or maintain ODF behaviors (Kar & Chambers, 2008). The process entails community self-analysis, discussions of consequences, and collective action to become verified as ODF (Kar & Chambers, 2008).

Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP). The JMP is a combined effort of the WHO and UNICEF (JMP, 2020). The purpose of the joint effort is to provide indicators and methods for monitoring of water, sanitation, and hygiene programming; maintain global databases with reliable estimates on trends; guidance and tools to support countries as water, sanitation, and hygiene data is collected, analyzed, and reported; and collaborate on analysis of links between water, sanitation, and hygiene and the related sustainable development goal(s) (JMP, 2020).

Latrine toilet. In most cases, a latrine refers to a direct pit (Kar & Chambers, 2008). Pit latrines are the most common form of basic sanitation with an estimated 1.77 billion worldwide using a pit latrine as their method of excreta disposal (Graham et al., 2013; Nakagiri et al., 2016). Pit latrines with no covering or fly-proof lid are still considered open defecation (Kar & Chambers, 2008). Pit latrine toilets are constructed differently, but those built with a slab and enclosure with ventilation are considered as improved sanitation when the latrine is not shared with other households (WHO, 2020a).

Maintenance (sustainability). While these two terms are not perfectly synonymous, they share the concept of long-lasting behavior change. Sustainability is indicated when the general trend in a community is to go up the sanitation ladder by improving sanitation behaviors and maintaining those behaviors over time (Kar & Chambers, 2008). Sustainability or maintenance is visible when latrines are being used and feces contained properly or when a household rebuilds a more durable latrine if pit latrine walls have collapsed (Kar & Chambers, 2008).

Monitoring. Monitoring is the measurement of activities and outcomes of CLTS. The monitoring can be conducted by an implementing organization using internal performance measures, by a regulatory agency, or by a third-party (USAID, 2018).

Natural leaders. Leaders within a community who act as community consultants, sanitation activists, and provide support and encouragement to the community are referred to as natural leaders (Kar & Chambers, 2008).

Open defecation. Open defecation is defecating in open fields or water sources and leaving the feces exposed (Kar & Chambers, 2008.) Open defecation is classified as unimproved sanitation (Jain et al., 2020; Saleem et al., 2019). As noted above, pit latrines with no covering or fly-proof lid are still considered open defecation (Kar & Chambers, 2008).

ODF certification. Certification is the official recognition that a community has reached the ODF achievement (USAID, 2018). The certification is marked by the satisfaction of specific sanitation-related goals, such as toilet ownership, latrine quality, the presence of handwashing stations, the existence of community committee, and created action plans (USAID, 2018).

ODF verification. Verification is the process of assessing ODF behavior change to certify the community as ODF (USAID, 2018). Verification is often performed by a team of individuals and may include governmental leaders, employees of a nongovernmental organization (NGO), community members, teachers, or leaders from a nearby certified ODF community (USAID, 2018).

Sanitation. Sanitation is access to and use of facilities that safely dispose of human feces and urine (World Health, 2018). A safe sanitation system is designed to eliminate human contact from human fecal waste consistent with human rights initiatives (WHO, 2018).

Slippage. Slippage is the return to unhygienic behaviors or the inability of some or all community members to continue to meet all the ODF verification criteria (Hickling, 2019; Jerneck et al., 2016). Slippage is difficult to standardize as it relates directly to the contextualized intervention criteria set by the government or NGO that implemented the program (Hickling,

2019; Jerneck et al., 2016). Further complicating matters is the complexity of defining sustained behavior change and the nonlinear nature of being verified as ODF (Jerneck et al., 2016).

Verification as an ODF community is the first step to reaching behavior change maturity (Jerneck et al., 2016).

Stakeholders. Key stakeholders are those that are affected by the issue at hand, contribute to the effort, or anyone that can impact the work (Stroh, 2015). In this dissertation, the term stakeholder is used to describe, collectively, the CLTS practitioners and village community leadership, including but not limited to the village health team (VHT) members, local council (LC) members, and sanitation committee members, and the village community members with no leadership role as three key groups that have a direct impact on the CLTS intervention.

Sustainable community development. Sustainable development refers to meeting individual and social needs without negatively influencing the environment, so that future generations are not affected (Jidovu, 2018). Adding the “community” element to this sustainable development concept means employing community or social groups with common interests, religion, customs, or values to collectively bring about lasting change (Jidovu, 2018).

Sustainable development goals. The 17 sustainable development goals, adopted by the United Nations member states, provide a shared call to action in a global partnership to improve health and education, environmental preservation, reduce inequality, and spur economic growth (United Nations, 2020). Sustainable development goal number six focuses on equitable and adequate access to water and sanitation for all with a focus on the most marginalized populations, including women (United Nations, 2020).

Water, sanitation, and hygiene (WASH). Safe drinking water, appropriate sanitation facilities, and proper hygiene are crucial elements to health and well-being (WHO, 2020b).

Evidence suggests improvement in these areas can dramatically improve health by reducing disease (WHO, 2020b). As a result, water, sanitation, and hygiene elements are carefully considered as part of the sustainable development goals adopted by the United Nations (United Nations, 2020).

Summary

This chapter provided introductory information about the current study. Poor sanitation and hygiene, especially the practice of open defecation, present a risk for adverse health and psychosocial consequences for the world's most vulnerable populations. As a result, worldwide emphasis has been placed on water, sanitation, and hygiene programming centered on ending open defecation. The study population for this qualitative, exploratory case study included one village community, from the Namutumba district of Uganda, to better understand community perceptions, influential factors, and challenges to the maintenance of sanitation behaviors following CLTS programming in Uganda, East Africa. The learning may significantly improve intervention methodologies, address barriers to community change efforts, and reaffirm maintenance behaviors to enhance the lives of the world's most vulnerable populations.

Next, Chapter 2 summarizes what is known about open defecation and the negative implications of the practice, CLTS processes and behavioral change techniques employed, CLTS outcomes with an emphasis on slippage, and a snapshot of the context of this study. The following literature review also identifies areas that are unknown, especially regarding how communities maintain their commitment to sanitation behaviors in the maintenance phase of the process. Finally, the literature demonstrates that researchers do not agree on the best ways to improve and maintain sanitation behaviors, but most agree that context-specific research is

necessary for gaining an understanding of open defecation slippage behaviors (Garn et al., 2017; Hullah et al., 2015; Venkataramanan et al., 2018).

Chapter 2: Literature Review

If the United Nations' sustainable development goal number six that targets adequate and equitable sanitation and hygiene for all, including ending open defecation, is to be reached by 2030, special attention must be given to slippage or the return to unhygienic behaviors, such as open defecation, unsafe water storage, and lack of handwashing. CLTS programming has demonstrated short term success with behavioral change (Gebremariam et al., 2018; Pickering et al., 2015; Tessema, 2017; Venkataramanan et al., 2018) but has not delivered stable behavioral change (Njuguna, 2019; Wijesekera & Thomas, 2015). Significant “slippage” or the return to open defecation and/or unhygienic behaviors during the maintenance or posttriggering phase is more common than desired (Njuguna, 2019; Wijesekera & Thomas, 2015).

The factors impacting sanitation behavior change success and maintenance have been studied extensively, but researchers do not agree on how to best improve CLTS programming and sanitation behavior maintenance. While researchers do not agree on the best ways to improve and maintain sanitation behaviors, most agree that context-specific research is necessary for an understanding of slippage behavior (Garn et al., 2017; Hulland et al., 2015; Venkataramanan et al., 2018). Accordingly, the purpose of this qualitative, case study research was to better understand stakeholder perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors by attending to the systemic influencers throughout the Kibo Group CLTS intervention in the village community of the Namutumba District of Uganda, East Africa.

The remainder of this chapter presents foundational information regarding the conceptual framework systems thinking, the reasons that individuals practice open defecation, the problems associated with open defecation, and potential solutions to the problem. Additionally, CLTS

stages, key factors of social capital and community participation, and prior research noting influential factors of success at each stage of the CLTS process are noted. Last, I explore a discussion of the contextual considerations for Kibo Group's efforts in Namutumba.

Literature Search Methods

The Abilene Christian University (ACU) library electronic database was the primary information resource for the synthesis of current literature that follows. I accessed research journals emphasizing international development, social science and medicine, global health, sustainability, and hygiene such as MDPI, BMC Public Health, PLOS Medicine, and Social Science and Medicine to secure peer-reviewed, empirical research literature. The combination of search terms included but were not limited to *open defecation*, *open defecation free*, *community-led total sanitation*, *sustainability of community-led total sanitation*, *water*, *sanitation*, and *hygiene*, and *assessment of community-led total sanitation*. Learning hubs, such as the online Sanitation Learning Hub, also provided some insight into the practitioner perspective but were a secondary focus.

Conceptual Frameworks

In this study, I was influenced conceptually by systems thinking, which argues that elements of a process cannot be thought of independently but instead as part of the whole with the process, people, and context as interrelated (Checkland, 1999; Stroh, 2015). These interrelated processes, people, and contextual elements are organized in such a way to achieve a desired purpose, which has a bearing upon the root problem definition and solution (Checkland, 1999; Stroh, 2015). Considering the importance of behavioral change ideologies to the transformation and maintenance of behaviors, Prochaska's transtheoretical model framed this work.

Systems Thinking

Systems thinking is different from conventional, reductionist thinking. Systems thinking assumes there is a relationship between problems and their causes that is not direct or obvious (Stroh, 2015). Systems thinking does not aim for quick fixes that have unintended consequences in the long run (Stroh, 2015). Systems thinking posits that to optimize the whole, the relationships among the parts must be improved (Stroh, 2015). While there are a variety of analyses, methods, and approaches within the systems thinking movement, there is a consistent and foundational understanding that a system has layers of complexity and processes of communication that allow adaptation (Checkland & Haynes, 1994). There is interdependence within system structures and this extraordinary interrelatedness results in extreme complexity that is nonlinear and not divisible (Casarejos, 2020). Systems thinking also suggests the foundation for change should be centered upon collective readiness, effort to engage key community stakeholders, establishing a common ground by creating images of what people desire, and discussing capacities to collaborate (Stroh, 2015).

Application of Systems Theory to the Current Study. Sustainability in international development shares the nonlinearity, complexity, and interrelated notions of a system (Casarejos, 2020). Reductionist thinking is inclined to reduce models of the world to linear relations with single causes and resulting single effects that are too limiting for the global sustainability systems in question (Casarjos, 2020). As a result, some water, sanitation, and hygiene practitioners are embracing a system thinking approach to enhance their understanding of the multitude of factors exerting influence on the success of programming (Valcourt et al., 2020). For this study, I made an effort to engage stakeholders to search for and acknowledge the

complexity of and interrelations or relationships between factors, a fundamental concept of systems thinking.

Transtheoretical Model (TTM)/Stages of Change

The transtheoretical model is more often known as the *stages of change* and is one of the most prominent models used in health behavior research (Clark & Janevic, 2014). The theory is a product of the work of Prochaska and others in the 1970s to identify common elements of psychotherapy and behavior change theories (Clark & Janevic, 2014). Subsequent empirical work resulted in the stages and a process of change rather than the previously discussed single change event (Clark & Janevic, 2014). The change effort is described as more of a continuum that assumes movement backward and forward along the continuum rather than a lock-step movement from one stage to another (Clark & Janevic, 2014). These stages of change include precontemplation, contemplation, preparation, action, maintenance, and termination (Clark & Janevic, 2014).

Precontemplation. This stage represents no intention to change behavior in the future, primarily because there is a lack of awareness that a problem exists (Norcross et al., 2011).

Contemplation. At this stage, individuals are aware that a problem exists and are considering work toward overcoming the problem but have not yet committed to taking action (Norcross et al., 2011).

Preparation. At this point, individuals are intending to take action and are making small behavioral changes but have not yet made substantive changes (Norcross et al., 2011).

Action. Here, individuals make substantive changes to modify behavior, experiences, and/or environment to overcome the problem (Norcross et al., 2011). Overt action is taken that demonstrates a considerable commitment in time and energy (Norcross et al., 2011).

Maintenance. Maintenance is the stage in which individuals work to prevent a relapse of the gains realized in the action stage (Norcross et al., 2011).

Termination. Not all manuscripts mention this final stage, likely because this phase is said to be primarily theoretical. For those that do mention this stage, termination represents a permanent behavior change (Clark & Janevic, 2014).

Processes of Change. The stages of change represent *when* individuals change, while the process represents *how* individuals change (Norcross et al., 2011). At least 10 subsequent processes were selected by examining recommended change strategies across different theories, which explains the term *transtheoretical* (Prochaska et al., 1992). Prochaska et al. (1992) describe these 10 processes as follows:

1. Consciousness raising—increasing information about the problem.
2. Self-reevaluation—assessing feelings and thoughts of oneself concerning the problem.
3. Self-liberation—choosing and committing to act or the belief in the ability to change.
4. Counterconditioning—substituting alternatives for the problem behavior.
5. Stimulus control—avoiding stimuli that bring on the problem behavior or restructuring one’s environment to avoid high-risk cues.
6. Reinforcement management—rewarding one’s self or being rewarded for making changes.
7. Helping relationships—opening up to and trusting another about the struggle.
8. Dramatic relief—expressing feelings about the problem and solutions.
9. Environmental reevaluation—assessing how the problem affects the physical environment.

10. Social liberation—finding alternatives for problem behaviors.

Application of the Transtheoretical Model to the Current Study. While the model is geared toward individual behavior change and CLTS is a collective response, it has application still as each individual makes their own choice to participate in the latrine and handwashing facility construction and use. Behavioral approaches form a blueprint for intervention design and evaluation (Clark & Janevic, 2014). A key tenet of the transtheoretical model is that interventions will likely be more successful when the intervention strategies are matched to the stages of behavior change (Clark & Janevic, 2014). For this study, the alignment or “stage matching” of behaviors and intervention strategies informed the assessment of current CLTS methods as possible barriers to or facilitators of behavior maintenance at the posttriggering stage, the primary CLTS stage for slippage.

Literature

Open Defecation

Open defecation, an aspect of poor sanitation, is the practice of defecating in open fields, waterways, beaches, roadsides, forests, and unprotected trenches without properly disposing of excreta (Jain et al., 2020; Saleem et al., 2019). Open defecation is primarily practiced in low- and middle-income countries, such as Central and Southern Asia, Eastern and Southeast Asia, and Sub-Saharan Africa (United Nations, 2019). Poverty is a primary reason for the practice of practicing open defecation (Njuguna, 2019). Those in poverty-stricken regions have less access to resources, including water and plumbing materials. When financial resources are available, families battle competing priorities for those funds (Kar & Chambers, 2008). Researchers have varying understandings of why individuals choose open defecation, especially after other toilet options, such as a pit latrine, are presented. Abubakar (2018) found that open defecation in

Nigeria was significantly associated with demographic and geographical considerations, such as location of residence, education, wealth, gender, and access to a water source. More specifically, open defecation was practiced more frequently by men, those in more remote locations, those with less-educated heads of household, those with middle- to lower-household incomes, and those who do not have access to an improved water source such as a borehole (Abubakar, 2018). Bhatt et al. (2019) found that those in rural Nepal practice open defecation out of habit, as a way to socialize, and as a matter of convenience. Jain et al. (2020) pushed the notion that individuals “choose” open defecation out of necessity rather than out of a preference for the behavior.

Given the varying reasons and motivations for change, contextualized study is important to further understand the reasons why open defecation is pervasive in each community in which it is practiced. The information is critical for understanding the motivations and influences of open defecation to better inform behavioral change intervention strategies and ultimately the uptake and maintenance of behavioral change. To provide a foundational understanding of open defecation, a discussion of the key problems that result from open defecation, proposed interventions for impacting sanitation behaviors, and present results of behavior change interventions follow.

Problems Associated With Open Defecation

Sanitation within the context of water, sanitation, and hygiene programming is defined as access to and use of facilities to safely dispose of urine and feces (WHO, 2018). A safe sanitation system is designed to keep human waste from human contact at every step of the process (WHO, 2018). The United Nations has judged access to sanitation and clean water as basic human rights (Saleem et al., 2019). Sanitation is known to have direct, positive health ramifications linked to clean water access and the proper disposal of fecal matter (Saleem et al., 2019). Proper sanitation

is a safeguard for human health and has important community and global health implications. Alternatively, poor sanitation, including open defecation, results in the spread of fecal matter throughout the environment and is associated with a variety of negative results, including soil-transmitted infections such as hookworms, diarrheal diseases, trachoma, schistosomiasis, child stunting, and psychosocial stress (Jain et al., 2020; Hullah et al., 2015; Mara, 2017; Pruss-Ustun et al., 2008).

Global and Community Health Concerns. Proper sanitation as a global and community health concern has received worldwide attention. In 2015, the United Nations member states adopted the 17 sustainable development goals (SDGs) to promote a universal call to action to end poverty, protect the planet, and improve human dignity everywhere (United Nations, 2020). This call to action includes a 15-year plan to achieve goals focused on quality education, health, equality, climate, and poverty (United Nations, 2020). SDG number six seeks to ensure access to water and sanitation for all (United Nations, 2020). This SDG goal has several more specific targets related to this overarching goal. Target 6.2 seeks to achieve equitable sanitation and hygiene and end open defecation while paying special attention to the needs of women, girls, and those who are most vulnerable by the year 2030 (United Nations, 2020).

These sustainable development goals expanded upon the eight millennium development goals that preceded the SDGs and started in 2002 to address poverty, hunger, and health (United Nations, 2015). Ultimately, the goal is to move communities up the sanitation ladder. The WHO, in conjunction with UNICEF, monitors sanitation progress using a ladder as the basis for growth markers (Exley et al., 2015). Moving up the rungs of the ladder from open defecation to unimproved, to shared, and to improved marks a likelihood of improved sanitation and reduction of health risks (Exley et al., 2015). Despite the efforts to improve sanitation since 2002, 2.5

billion people still do not have access to improved sanitation facilities, such as a flush latrine or properly managed pit latrine (Saleem et al., 2019), and nearly 673 million worldwide still practice open defecation (United Nations, 2019).

Adverse Physical Health Concerns. Poor human waste disposal increases the risk of pathogens that present significant health risks, such as transferrable infectious diseases, diarrhea, and viral infections (Pruss-Ustun et al., 2008). Just one gram of infected excreta can contain many microbes that include pathogenic viruses and bacterial pathogens (Saleem et al., 2019). Emerson et al. (2001) found that human feces was the best larval medium for trachoma, a blindness causing infectious disease. Schistosomiasis, more commonly known as bilharzia, is also transmitted through human excreta and is highly prevalent in young adolescents (Colley et al., 2014). Once fecal pathogens have invaded a body, intestinal worms and diarrhea set in leading to poor absorption of nutrients and, eventually to malnutrition (Rahman et al., 2020). Malnutrition accounts for nearly half of all deaths among children in developing countries (Rahman et al., 2020).

In addition to the many adverse physical health effects for children under five, there are notable health effects for women as well. According to Padhi et al. (2015), women in India who practiced open defecation or infrequently used pit latrines and bathed in surface water sources are more likely to experience preterm or low-weight births. Inadequate sanitation also increases the risk of diarrheal and helminthic infections as well as malnutrition and mortality in women (Benova et al., 2014).

Adverse Psychosocial Health. In addition to the many adverse physical health effects, there are notable psychological and social effects of open defecation and poor sanitation, again, especially for women. It is helpful to understand the expectations placed on women in other

regions of the world. For example, women in many Sub-Saharan African countries are responsible for all domestic-related duties, including cooking, cleaning, bathing children, and tending to smaller-scale home gardens (Pommells et al., 2018). These responsibilities all require water. Additionally, water is related to women's personal hygiene needs for menstrual management and ritual personal cleansing practices in India (Sahoo et al., 2015; Hullah et al., 2015).

Pommells et al. (2018) noted that African women spend roughly 200 million hours a day fetching water and traveling to distant water sources while carrying heavy jerry cans of water. During these journeys to and from home, women have experienced violence, rape, and sexual assault (Corburn & Hildebrand, 2015; Pommells et al., 2018). The same incidence of rape, violence, and sexual assault has been found in India (Hullah et al., 2015; Sahoo et al., 2015). In a similar vein, open defecation sites are not always near the home (Hullah et al., 2015). When open defecation sites or water sources are not near the home, women must navigate socially stressful situations, with some experiencing harassment and/or sexual violence as they travel to and from their homes (Corburn & Hildebrand, 2015; Pommells et al., 2018; Sahoo et al., 2015).

Hullah et al. (2015) examined women's sanitation-related psychosocial stress across three geographic sites in Odisha, India using ranking and rating techniques in addition to structured interviews. Of the 60 female participants, menstruation was ranked the most stressful sanitation behavior followed by defecation and urination (Hullah et al., 2015). It is critical to further understand sanitation needs and the complex factors that influence open defecation. This information can help leaders address behavior change interventions and infrastructure development (Hullah et al., 2015).

Potential Solutions to the Open Defecation Problem

Differing public health approaches exist for addressing the open defecation problem. The foundational principles of all approaches, however, rest upon education and both individual and community behavioral change and toilet construction, management, and use (WHO, 2018). Proper waste management methods, such as toilet construction and the continued use of a toilet, are tools of both governmental and NGO agencies to end open defecation, though, the process may differ. The remainder of this section highlights waste management methods suggested by both governments and nongovernmental agencies, common governmental approaches to behavioral change, and community-based strategies employed.

Toilet Construction and Use. The WHO (2018) recommends the use of a toilet to capture excreta. If a toilet is not available, there should be a place where excreta is captured. There are several types of toilets, including but not limited to pour- and cistern-flush toilets, dry toilets including pit latrines, and urine-diverting toilets (WHO, 2018). Pit latrines, used by an estimated 1.77 billion people, are the most commonly used, low-cost sanitation solution for developing countries (Graham & Polizzotto, 2013). The superstructure of a toilet may be a standalone structure or located within a building, such as a home or a school, and should be maintained through cleaning (WHO, 2018). If it is a standalone unit, it should be designed to prevent the intrusion of rainwater, animals, and rodents (World Health, 2018). The choice of sanitation system is driven by a given context, location, climate, population density, soil conditions, and human capability (WHO, 2018).

Government Approaches. The WHO (2018) suggests government-led, multisectoral policies, planning, coordination, and accountability frameworks for monitoring. Governments tailor their approaches in terms of support, staffing, and resourcing with some providing

hardware or facilities, some offering financial subsidies, and still others providing only education (WHO, 2018). Uganda, for example, established a community health worker program through a national health policy to mobilize communities for better health outcomes (Musoke et al., 2019). At the local level, the community health worker volunteers are called village health teams and are tasked with raising health awareness and treating minor childhood diseases to decrease the burden on health facilities (Musoke et al., 2019). This program has shown mixed results in human resources alone. A study of this program reported high attrition up to 77% and poor performance for those who did stay (Musoke et al., 2019). Benon Turinawe et al. (2015) found that the selection process was wrought with mistrust, which damaged the program's image leading to unsuccessful programming. The Rwanda Ministry of Health chose to frame its Community Health Club program after noting the successful effort in Zimbabwe (Waterkeyn et al., 2020). This method focuses on education asking households to participate in 24, two-hour free health promotion sessions over a six-month period utilizing both education and participatory group activities coordinated by the village health worker (Waterkeyn et al., 2020). However, the method was unsuccessful in the case study of the Rusizi District and was not recommended for scaling up the use of community health clubs (Waterkeyn et al., 2020). Ethiopia, which is operated by a command-and-control type government, demonstrated political commitment and effort toward community-based approaches (Novotný et al., 2018b). However, while the uptake was notable, the latrines were too quickly constructed with weak foundations and have largely gone unused (Novotný et al., 2018b).

Participatory Approaches. As Novotný et al. (2018b) have noted, top-down approaches have been met with mixed results. Greater success, with quicker uptake, has been noted with community-based approaches (Garn et al., 2017; Gebremariam et al., 2018; McMichael &

Robinson, 2016; Okolimong et al., 2020; Pickering et al., 2015). Numerous community-based approaches focus on sanitation-related behaviors or “software” elements as well as “hardware” or sanitation technology elements to address open defecation (McMichael & Robinson, 2016). These approaches include, but are not limited to, engaging children in participatory hygiene education, participatory hygiene and sanitation transformation (PHAST), the integrated behavioral model for water, sanitation, and hygiene (IBM-WASH), and CLTS (McMichael & Robinson, 2016). As noted, though, the sustainability of sanitation behaviors is in question and the influences vary across contexts (Garn et al., 2017; Novotný et al., 2018a; Venkataramanan et al., 2018), suggesting that a situationally specific study is necessary for better intervention strategies for the maintenance of behaviors.

CLTS Processes

The CLTS process was developed in response to the harmful effects of poor sanitation and hygiene, including the transmission of diarrheal diseases, related to the practice of open defecation (Kar & Chambers, 2008). For example, rather than just constructing toilets to bring about ODF communities, the aim was to ignite change in sanitation behaviors so that individuals would actually use the toilets (Kar & Chambers 2008). As previously mentioned, moving communities up the sanitation ladder toward improved sanitation is the goal implying improved sanitation and health benefits as a result (Exley et al., 2015). CLTS seeks to move communities up the sanitation ladder and ultimately designate them as “ODF” and verify the declaration with surprise visits, inspections of latrines, and monitoring the visible markers of hygiene behaviors (Kar & Chambers, 2008).

CLTS focuses on community rather than individual effort hoping to gain momentum found in a community’s social capital and social solidarity (Kar & Chambers, 2008). Other

important characteristics include the use of natural leaders (NLs) to mobilize community efforts, context-driven methodologies, local innovation and supplies for the construction of low-cost toilets, and nonsubsidized toilet construction (Kar & Chambers, 2008). CLTS includes three participation-driven stages to influence behaviors, including proper use of a hygienic toilet, washing hands, handling food and water in a hygienic manner, and safe disposal of animal and human waste, to create safe environments (Kar & Chambers, 2008). These community-level pretriggering, triggering, and posttriggering stages (Kar & Chambers, 2008) are similar to the individual level stages of change described in the transtheoretical model (Prochaska et al., 1992). Each stage is described below.

Pretriggering. Pretriggering is the first stage of the process. The goal is to visit a potential community with the purpose of building rapport with local leaders, guiding communities through a sanitation self-analysis, gathering of baseline information to note starting number of latrines and community characteristics, and coordinating local government leaders for intervention efforts (Kar & Chambers, 2008). Adequate preparation in the pretriggering stage has been emphasized in research literature with the majority of attention given to systematic community selection and favorable conditions for implementation (Jiménez et al., 2019; Tribbe et al., 2021; Venkataramanan et al., 2018). Results from the gathered baseline data inform the contextualized intervention strategies and resources needed to bring about successful participation that leads to the uptake of concepts and ultimately improvements in the sustainability of new sanitation behaviors (Jiménez et al., 2019; Kar & Chambers 2008). Community participation is at the heart of CLTS programming intending to give poverty-stricken stakeholders a voice and a role to play in community outcomes that directly impact their lives (Kar & Chambers, 2008). This participation has demonstrated longer-term sustainability or

maintenance of ODF communities (Kar & Chambers, 2008). As part of the pretriggering phase, it is important to understand the social environment to assess the likelihood of participation and social cohesion (Kar & Chambers, 2008). While understanding elements of social cohesion is important, early assessments of a community must also be understood in relation to other contextual considerations. Based on an in-depth literature review to identify how participation outcomes are realized in water and sanitation, Jiménez et al. (2019) found that understanding the enabling participatory environment also meant understanding demographic, cultural, historical, geographical, and economic elements of participation as key considerations for reaching improved sanitation goals. The findings highlight the need for added emphasis of contextual understanding on the design and implementation of early participatory processes in pretriggering planning to impact sustainability at large (Jiménez et al., 2019).

Pretriggering Context. Two systematic literature reviews highlight and discuss primary, influential contextual concerns. Hulland et al. (2015) noted contextual considerations, such as psychosocial, demographic/socioeconomic called “contextual”, and technology factors as key considerations in the works they reviewed. Vekataramanan et al. (2018) added national latrine standards and political policy, including the provision of subsidies as a key constraint in most cases. Other studies support notions of political, locational, and ecological interrelations (Bardosh, 2015; O’Reilly & Louis, 2014) as key contextual considerations for success for uptake. Still, others support the value of understanding community social capital in the uptake and use of sanitation technologies (Dickin et al., 2017; Harter et al., 2019a). Each of these key contextual considerations is discussed below. While these studies advance the value of understanding the context of sanitation behavior change, there are notably few research connections made between the context and longer-term maintenance of sanitation behaviors.

Psychosocial Context and Social Capital. Kar and Chambers (2008) assert collective community action and participative decision making are components of a successful CLTS intervention. As a result, social capital, social identification, community cohesion, and community efficacy have gained the attention of researchers. Numerous articles suggest that a community's social capital and psychosocial environment are linked to the success of all CLTS phases and in particular the probability of individuals constructing and using a latrine (Cameron et al., 2015; Dickin et al., 2017; Harter et al., 2018a; Kelly et al., 2017; Susilo et al., 2020). Harter et al. (2018a) asserted that “positive social context factors seem to be a prerequisite for a successful CLTS process” (p. 394).

Social Capital. Social capital has been defined in several ways, but in this context, it refers to a range of attributes, such as social networks, trust that promotes cooperation and information sharing, and social identification that promotes a desire to change for the sake of others (Dickin et al., 2017). Cameron et al. (2015) gathered data from a randomized field experiment of CLTS in Indonesia that supports the value of social capital. Villages with high initial social capital reduced open defecation by using constructed latrines (Cameron et al., 2015). Similarly, Dickin et al. (2017) examined how sanitation challenges can be framed as a community matter and examined how collective action can contribute to latrine use. The authors gathered qualitative data using two main methods. First, they completed an exploratory case study in Burkina Faso. That data contributed to the interview guide questions that were used in 26 semistructured interviews of the Koassanga community leaders, adults who ranged in age between 25 and 73. Three key themes emerged related to the use of and success of collective action processes, one of which included the key driver—social capital (Dickin et al., 2017). The researchers found that voluntary groups that met regularly and shared information in these group

discussions were key drivers of CLTS implementation success (Dickin et al., 2017). Dickin et al. (2017) noted the need for further research on how social capital can be used to sustainably manage sanitation conditions.

Harter et al. (2019a) took a similar interest in social capital as they focused on the role of social identification in eradicating open defecation. These researchers wondered if social identification, an individual's belonging to a social group and the perceived emotional value of that membership and social norms act as a moderator for those more successful communities (Harter et al., 2019a). The cluster-randomized controlled trial with 3,216 households in 132 Ghanaian communities supported their initial hypothesis that the preexisting social identification conditions need to be considered in CLTS planning (Harter et al., 2019a). Harter et al. (2019a) suggested that further open defecation studies should address social identification and the influence beyond the planning phase to better understand the possible impact on long-term behavior change. While the randomized control trial data is remarkable, Harter et al.'s (2019a) study lacked the qualitative dimension that would give a deeper understanding of why and how social identification is impacting the process and how it may impact the process beyond the planning phase.

Community Conflict. There is a notable lack of research regarding the role of community conflict in the CLTS process. It does stand to reason that it has an impact, however. There have been related studies noting the value of social action within water and sanitation. Apipalakul et al. (2015) used two phases of focus group discussions to study a conflict centered on water and water source management in the Pong River Basin near the Ubonratana dam in Thailand. Apipalakul et al. (2015) found that conflict impacts social action and solutions. The researchers recommended that stakeholders be more actively engaged in local policy

administration. This research supports the importance of community social action and involvement in the planning, use, and management of community water sources (Apipalakul et al., 2015). It also supports the importance of asking key stakeholders about their needs. Finally, the research points to the importance of designing equitable and meaningful systems to help minimize conflict.

Kooy et al. (2016) took another approach to understand water, sanitation, and hygiene, and conflict. These researchers used semistructured interviews, focus group discussions, and observation methods to explore ways that water, sanitation, and hygiene programs can build up and enhance fragile or conflict-ridden contexts (Kooy et al., 2016). The final assertion is that the broad social context, including conflict dynamics, should be viewed as conditioning factors for water, sanitation, and hygiene programming as they shape the context for service delivery and set boundaries for intervention choices (Kooy et al., 2016). There is remarkably little work dedicated to the understanding of conflict as an influencer on the CLTS process. This study is intended to dig deeper to gain insight on the barriers, such as interpersonal and/or community conflict, upon the uptake of sanitation and maintenance of sanitation behaviors.

Socioeconomic Conditions. Munimati et al. (2016) took an interest in the determinants of sanitation success in Sub-Saharan Africa. As they performed regression and cluster analyses on data taken from several Sub-Saharan African countries, they found greater sanitation gains are associated with countries with greater education, incomes, population density, and political stability. This conclusion is supported by Seleman and Bhat's (2016) work that asserts family income and education level are strong determinants of household improvement in sanitation. Both studies demonstrate these socioeconomic conditions as key determinants of sanitation change, and both note the value of using this information to support better intervention strategies

and assessment approaches. Specifically, Seleman and Bhat (2016) suggest future studies explore the nonlinear relationships between various determinants of sanitation success. Of course, “success” in the framework of this study is valued as a longer-term maintenance of behavior where determinant information is less available.

Technology Design and Building Resources Available. Garn et al. (2017) systematically reviewed literature and used meta-analysis to characterize varying sanitation interventions and the impact on latrine coverage and use. The review included both quantitative and qualitative works related to understanding how different structural and design characteristics are associated with latrine use. Results indicate individuals are more likely to use a latrine when they are well-maintained, functional, clean, and private (Garn et al., 2017). Also, noted was the importance of affordable, local construction materials for building the functional, private facility (Garn et al., 2017). While the purpose of Nakagiri et al. (2016) was not directly related to construction, the implications of their study devoted to understanding pit latrine performance in terms of filling, odor, and fly prevalence also noted the need for a stronger emphasis on the design of latrine structures to improve long-term use of latrines.

Politics, Ecology, and Location. A political ecology approach takes into account the human-to-environment relationship and the intersection of politics, social norms, and power (O’Reilly & Louis, 2014). Jewitt et al. (2018) explain that location influences the sustainability of sanitation behaviors as it relates to the use of sanitation technologies including pit latrines. The findings from the mixed-methods case study work in Northeastern India indicate that poor latrine construction and maintenance coupled with geographical considerations, such as seasonal flooding, directly impacted the length of time families used pit latrines (Jewitt et al., 2018). Seasonal flooding in the region, for example, washed away poorly constructed structures

surrounding pit latrines causing families to revert to open defecation (Jewitt et al., 2018). The implications of the learning support the notion of obtaining better quality data on spatial variations early in the sanitation process for tailored interventions resulting in the likelihood of stronger sustainability of ODF zones (Jewitt et al., 2018).

In their research, O'Reilly and Louis (2014) used the political ecology framework to examine the building of, adoption of, and sustained use of latrines for the reduction of open defecation. The mixed-methods approach in West Bengal and Himachal Pradesh over eight months produced the toilet tripod metaphor (O'Reilly & Louis, 2014). The metaphor demonstrates how geography, politics, and social pressure intertwine to impact sanitation behaviors (O'Reilly & Louis, 2014). Key components of the results indicate industries, such as fishing, pressured some to stop openly defecating into bodies of water, well-draining soil has led to latrine construction and use, and the capacity of latrines aided change. O'Reilly and Louis (2014) further suggest that sustainable efforts can only be understood by synthesizing multiple elements of environmental context, governmental regulation, and social relations.

In another study, Bardosh (2015) continued to draw attention to political and ecological influences as he studied pit latrine construction in Eastern Zambia. The implications include encouragement for practitioners to avoid pitfalls by paying more attention to the political ecology of sanitation in local contexts. Included in the challenge are key elements of village leadership, access to durable materials, and socioeconomic disparities (Bardosh, 2015). Bardosh (2015) asked donors, planners, and interventionists to strongly consider “new politics of inclusion” and greater reflection on issues of power and politics in sanitation governance (p. 62).

Triggering. Triggering is the second step of the CLTS process. The goal of the facilitator is to help community members see that open defecation has negative consequences (Kar &

Chambers, 2008). Facilitators use the information gathered in the pretriggering phase to prepare a triggering event designed to motivate collective sanitation behavioral change for the good of the community (Kar & Chambers, 2008). Triggering includes organizing a community meeting where interventionists or facilitators use participatory exercises intended to trigger shame and disgust (Kar & Chambers, 2008). The participatory exercises include mapping defecation areas with a transect walk, calculating the amount of feces, calculating medical expenses likely related to unsanitary practices, and inciting disgust with visual representations of how feces is transmitted by flies, rainwater, wind, and animals to food and drink (Kar & Chambers, 2008).

Transect Walks. Community members walk through the village from one side to the other observing and asking questions while drawing attention to areas of open defecation and unhygienic latrines. One key to transect walks involves standing in areas of open defecation inhaling the unpleasant aromas and observing the unpleasant sight of feces (Kar & Chambers, 2008). Transect walks or “walks of disgust” invoke embarrassment as outsiders or facilitators draw attention to and help the community analyze the situation (Kar & Chambers, 2008).

Defecation Mapping. During the walk, facilitators find a suitable large open area for mapping or creating a visual analysis of the community sanitation situation (Kar & Chambers, 2008). All households are engaged in marking the ground with a stone or leaf to show whether they have a latrine or not and marking zones of open defecation (Kar & Chambers, 2008). During the mapping activity, the community may be asked to stand in small groups according to their neighborhoods and then rank the dirtiest neighborhoods with a secret ballot; usually, the groups identify the same one or two neighborhoods as the dirtiest (Kar & Chambers, 2008). Last, the facilitator asks the individuals to note where they go for open defecation (Kar & Chambers, 2008). It is at this point that many realize that others may be coming into their neighborhood to

relieve themselves, which provokes discussion about how to stop others from defecating in their neighborhoods (Kar & Chambers, 2008). This mapping activity is designed to highlight the distance some walk to defecate, the dirtiest open defecation sites, and to trace the flow of feces to ponds or other bodies of water (Kar & Chambers, 2008).

Calculation of Feces and Medical Expenses. Calculating the amount of feces serves to help communities understand how much they produce and contribute to the open defecation concern (Kar & Chambers, 2008). Facilitators can have some fun with this point by congratulating the family that produces the most feces and asking those that produce the least to eat more so they can produce more (Kar & Chambers, 2008). The point becomes clear through the humor and then the facilitator turns the focus to medical expense calculations by asking community members to discuss how much they spend and who spends the most on medical expenses (Kar & Chambers, 2008). The calculations of feces and medical expenses can then be held side by side and analyzed in light of the mapping of defecation areas (Kar & Chambers, 2008). The facilitator asks if those spending the most also live near the dirtiest neighborhoods (Kar & Chambers, 2008).

“Eating Shit”. Last, facilitators ask the community where all of the “shit” goes (Kar and Chambers, 2008). Facilitators purposefully use the most vulgar word for feces in the local language as it is part of the process to incite disgust (Kar & Chambers, 2008). As they near the close of the triggering event, facilitators ask for a glass of water (Kar & Chambers, 2008). They ask if anyone would drink that water and several will respond in the affirmative (Kar & Chambers, 2008). They pull a hair from their head and drop the hair into the feces, then they put that hair into the water and ask again who would be willing to drink the water (Kar & Chambers, 2008). At this point, no one will respond positively (Kar & Chambers, 2008). The facilitator

explains that a fly has more legs than this one hair yet flies land on feces and then land upon food (Kar & Chambers, 2008). The community quickly realizes that open defecation can lead to eating one another's feces and the moment helps the community visualize the consequences in yet one more way (Kar & Chambers, 2008).

Triggering Facilitation and Leadership. Kar and Chambers (2008) assert triggering methods should be contextualized. The implication for researchers and practitioners alike is to carefully consider each context for enablers and constraints to CLTS triggering implementation (Venkataramanan et al., 2018). While there are many contextualized considerations for discussion, broad triggering research emphasis has been placed on the importance of facilitation and leadership (Crocker et al., 2016a; Harter et al., 2019b; Venkataramanan, 2016; Venkataramanan et al., 2018), including focused efforts on persuasive communication efforts built on psychology and behavioral change theories (Czerniewska et al., 2019; Friedrich et al., 2020; Harter et al., 2019b; Lawrence et al., 2016; Sigler et al., 2015). Facilitating a triggering requires an individual or group of individuals who have a combination of boldness, empathy, and humor (Kar & Chambers, 2008). The process demands a hands-off approach without lecturing to facilitate and enable communities to confront the reality of the unsanitary practices of open defecation (Kar & Chambers, 2008). Skilled facilitators can elicit the shame and disgust and/or pride in improved health to bring about effective behavioral change (Venkataramanan et al., 2018), and well-trained local leaders or natural leaders can continue the momentum gained at triggering (Crocker et al., 2016a; Harter et al., 2019b).

Leadership and Sustainable Development. At a broad level, it is appropriate to ask if leadership influences international development change efforts. Dartey-Baah (2014) asked this question using a literature review approach. Dartey-Baah (2014) asserted that if sustainable

development initiatives are to succeed, an effective leadership approach skewed toward transformational leadership must be employed. The discussion highlighted an old Nigerian adage that states “a fish starts to get rotten from the head,” meaning if leadership (head) is good, the bottom will most likely be good too (Dartey-Baah, 2014). This closing notion reminds development practitioners that if effective leadership is not present, sustainable development work will not likely thrive (Dartey-Baah, 2014). The remainder of this section speaks to these notions and to literature highlighting the value of well-trained facilitators, including a discussion of the importance of training community leaders and involving youth as change agents.

While their study did not directly focus on leadership, Lawrence et al. (2016) explored community member knowledge, perceptions, and behaviors in six districts of Zambia 12–18 months after CLTS implementation. The authors conducted 67 in-depth interviews and 23 focus groups centered upon triggering activities and the barriers and challenges to sanitation. One key finding demonstrated that a hierarchical leadership structure with leader pressure and leader influence was a key indicator of behavior change during the triggering phase (Lawrence et al., 2016).

Facilitator Skill. In a comprehensive literature review of CLTS research, Venkataramanan et al. (2018) located 200 documents that met highly selective eligibility criteria. They identified two major categories of implementation-related factors, and community-related factors emerged from the work. One of the key implementation factors included the importance of facilitator skill (Venkataramanan et al., 2018). Literature supported that the most skilled facilitators were able to illicit motivators of pride, dignity, and improved health during triggering (Venkataramanan et al., 2018). Less-skilled motivators resorted to lecturing or falling

back on the use of shame or disgust as triggering techniques with little thought to context (Venkataramanan, 2016).

Training Facilitators. In 2010, Dr. Kar expanded upon the materials available for CLTS practitioners by providing a manual for training facilitators. The work was based on his 10 years of implementation of over 100 triggering events across 25 different countries in Asia, Africa, and Latin America (Kar, 2010). The training procedures include an emphasis on a hands-on, practical approach and mirrors the facilitation concepts of the minimal use of lecture-based training (Kar, 2010). One notable weakness in the manual is the emphasis upon assessment and evaluation of the training workshop. On the final page of the document, Kar (2010) suggests that the trainer provides an “informal assessment” to the sponsoring organizations of the trainees. The suggestion includes giving “feedback . . . on those who really have the flair and have ‘got it’” (p. 30). This weakness is further illustrated by the 2016 work of Crocker et al. as they assessed a seven-month CLTS management training program delivered to 42 governmental officials of Kenya. Crocker et al. (2016c) reviewed training evaluation literature and developed a conceptual framework to more rigorously evaluate the CLTS training program. Trainees were given a pretraining questionnaire and were then interviewed at two weeks and again at seven months after training (Crocker et al., 2016c). The results indicated the training did not achieve target outcomes among the majority of participants (Crocker et al., 2016c). The program did increase awareness of sanitation issues among the trainees but missed the mark of providing the necessary focus on soft skills (Crocker et al., 2016c). This work demonstrates the growing need for capacity building of the interventionists/facilitators, as this may have implications for improving CLTS outcomes (Crocker et al., 2016c).

Training Natural Leaders. Natural leaders (NLs) are motivated community leaders who influence others during the CLTS process (Kar & Chambers, 2008). NLs emerge from the start of the triggering process and can be women, men, children, elderly, village political leaders, or others (Kar & Chambers, 2008). NLs are active during the entire CLTS process and they are crucial for spreading knowledge, support, and encouragement throughout a community (Kar & Chambers, 2008). In some communities, NLs are honored with time to speak at local gatherings or provided a t-shirt or other symbols of recognition (Kar & Chambers, 2008). Still in other communities, they are trained further to act as trainers and facilitators (Kar & Chambers, 2008). The ability of these NLs to impact behavior change cannot be overstated (Crocker et al., 2016a; Crocker et al., 2017). Crocker et al. (2016a) refer to Shakya et al.'s (2014) cross-sectional study in India that found individuals were more influenced by their peers, and suggested that socially relevant and influential community members could be trained to influence their neighbors. Crocker et al. (2016a) in conjunction with Plan International Ghana implemented CLTS in 60 villages in three regions. After five months of implementation, Plan International trained eight NLs from a randomly selected half of the villages and then continued implementing CLTS in all the villages for 12 more months (Crocker et al., 2016a). The study findings demonstrated that those villages that had been influenced by NLs that had received the training showed increased time spent by the community on CLTS, increased latrine construction, and a 19.9% reduction in open defecation (Crocker et al., 2016a).

Crocker et al. (2016b, 2017) built on their 2016 study to evaluate the sustainability of CLTS outcomes in Ethiopia and Ghana. In this research, they surveyed 3,831 households one year after implementation ended and analyzed latrine quality and use to assess the postintervention changes to determine if their original conclusions were robust (Crocker et al.,

2017). Three of the four follow-up studies demonstrated sustained ODF behaviors one year later (Crocker et al., 2017). These three locations had trained local leaders to engage their peers, further demonstrating how this peer-to-peer influence can impact sanitation behavior outcomes and supported their previous work (Crocker et al., 2017). These studies provide new evidence for training local leaders and the potential outcomes on the longer-term sustainability of CLTS outcomes (Crocker et al., 2017).

Training Youth. Given that children are greatly impacted by poor sanitation and hygiene and diarrhea-related diseases are credited with 600,000 deaths in children under five each year (Wolf et al., 2018), it stands to reason children would be included in the community effort to end open defecation. Kar and Chambers (2008) suggest that triggering in schools in conjunction with the traditional community triggering can be an effective way to engage children as agents of change within their homes, school, and community. This approach has been called school-led total sanitation (SLTS) and originated in Nepal (Joshi et al., 2016). Kar and Chambers (2008) assert that all the same methods can be used to trigger youth to generate synergy between parents, students, and teachers.

While SLTS methods have met success in India and Zambia (Kar & Chambers, 2008), some express concerns over the question of children's rights asking the question: "Is development for children or children for development?" (Joshi et al., 2016). Joshi et al. (2016) present an exploratory case study from Ghana of SLTS in four rural schools to assert there are contradictions between CLTS and SLTS that run counter to claims made regarding "positive" relationships between children and their participation in development initiatives. The greatest concern resulting from the semistructured interviews of community members, teachers, SLTS facilitators, and local health officials is the authoritative teacher and lecture-style instruction used

to influence children (Joshi et al., 2016). In short, Joshi et al. (2016) asserted that SLTS is not free of manipulation and pressure and thus not in a child's best interest.

The conversation has shifted to providing instruction on water, sanitation, and hygiene without an actual triggering event. Bresee et al. (2016) studied the diffusion of information from children to their parents using focus group discussions with three distinct populations (boys 8–12 years old, girls 8–12 years old, and guardians) in Eastern Zambia. Data collection spanned five weeks and five schools (Bresee et al., 2016). The WASHplus program Schools Promoting Learning Achievement through Sanitation and Hygiene (SPLASH) promotes hygiene behavior change and is funded by the United States Agency for International Development (USAID; Bresee et al., 2016). This particular SPLASH intervention promoted behavior change and consisted of WASH clubs, teacher training, picture-based assignments, water point construction and rehabilitation, latrine construction and rehabilitation to fit norms of student-to-latrine ratios, handwashing facilities with needed supplies to practice handwashing, drinking water facilities, and hand hygiene promotional materials (Bresee et al., 2016). The guardians expressed a high level of trust with their children and the school-based learning (Bresee et al., 2016). The results show that students were change agents within their homes by communicating with their family members about WASH behaviors by using picture-based homework to talk to their families (Bresee et al., 2016). Second, students discussed how they directly influenced their home by building handwashing facilities themselves (Bresee et al., 2016).

Most recently, “Wash from the START,” or preschool programming, has received attention (Wagner & Pramling Samuelsson, 2019). Wagner and Pramling Samuelsson (2019) present a theoretical, political, and practical rationale for teaching preschool-aged students about WASH principles. Their assertions are based on (a) the unique characteristics of children that

create opportunities for developing positive WASH-related habits; (b) scientific evidence on the benefits of early education; (c) implications of studies on WASH programs with older children; (d) government data and reports; and (e) anecdotal accounts of WASH activities with young children (Wagner & Pramling Samuelsson, 2019).

Appealing to Shame, Disgust, and Pride. Triggering is based on stimulating a collective sense of disgust and shame as communities confront the negative impacts of open defecation (Kar & Chambers, 2008). As previously noted, the facilitator's goal is to help a community see the consequences of open defecation, and to do so they will use a range of techniques designed to ignite or trigger action, including triggering psychological and emotional responses of disgust, embarrassment, and pride (Kar & Chambers, 2008). As with SLTS approaches, the use of shame and embarrassment has incited human rights concerns, especially related to those facilitators that are not sensitive to the local context or adaptive triggering options available (Venkataramanan et al., 2018). The primary concerns rest with the use of shame as an emotional trigger. Specifically, literature notes concern with power dynamics and human rights (Galvin, 2014), stigmatizing hygiene norm violators (Brewis et al., 2019), coercive, race-based, colonial public health practices (Engel & Susilo, 2014), and shame as a harmful emotion (Bateman & Engel, 2016).

While not an empirical study, Galvin (2014) draws on cross-disciplinary literature to understand the interplay of power dynamics and human rights related to CLTS programming. Galvin (2014) questions whether CLTS triggers emotion and the resulting action that creates a conflict between an individual's right and the communal right to sanitation. The advanced review is noted in the works of Bateman and Engel (2016), Brewis et al. (2019), and Joshi et al. (2016) as foundational support for their works. These are discussed further below.

In the largest and most methodologically sound of these shame studies, Brewis et al. (2019) conducted 267 interviews across four global sites (Guatemala, Fiji, New Zealand, and the United States) to question the regularity of being stigmatized by negative moral judgment labels and blamed for the failure to meet sanitation norms (Brewis et al., 2019). The findings show that the sanitation norm violators are consistently subject to contempt resulting in tones of moral failures, such as being labeled “disgusting” or “lazy” (Brewis et al., 2019). Interestingly the stigmatization was not based on fear-related concerns, such as fear of disease, contagion, or physical danger (Brewis et al., 2019). Brewis et al. (2019) call for further cultural context-oriented research addressing how and why disgust aligns socially in ways that might damage others by imposing contempt-related stigmas upon norm violators.

Engel and Susilo (2014) reviewed the literature to argue that the use of CLTS shaming approaches implemented by the World Bank Water and Sanitation Program (WSP) in Indonesia were derogatory, coercive, and echoed colonial public health practices. Engel and Susilo (2014) argued that shaming approaches undermined the effectiveness of CLTS and long-term behavioral change. In addition to the review of literature, they conducted empirical, qualitative research by interviewing regional officials and individuals from seven households to establish a historical perspective of development in Indonesia (Engel & Susilo, 2014). The authors did provide a perspective not often discussed in literature, but the work lacked strong evidence to support the assertions made.

The concern with shaming and coercion is shared by Bateman and Engel (2016), who discuss shame as a volatile and harmful emotion, especially considering specific cultural contexts with heightened sensitivities to its use as a triggering emotion. After an introduction of CLTS practices, Bateman and Engel (2016) highlighted the psychosocial dimensions of shame,

demonstrating how each phase of CLTS programming includes shame. They further discuss the stigma of shame in Cambodia's CLTS programs, and conclude with a critique of CLTS practice. They highlight the urgent need for research on the psychosocial impact of CLTS upon those who have been subjected to shame (Bateman & Engel, 2016).

Despite the call for closer analysis regarding the potential human rights implications of CLTS (Bateman & Engel, 2016; Engel & Susilo, 2014; Galvin, 2014), Venkataramanan et al. (2018) were unable to find studies for their systematic review of literature on the relative effectiveness of using triggering adaptations of shame. The literature review to assess the quality of CLTS evidence, summarize the impact of CLTS on sanitation and health outcomes, and identify factors of implementation that affect the effectiveness, did, however, find that while shame and disgust were popular emotions used to trigger, they were not reported as universal motivators (Venkataramanan et al., 2018). Rather, improved health, dignity, and pride were cited more often as community motivators toward collective sanitation action (Venkataramanan et al., 2018). These implications demonstrate a need for further research, such as this study, to see what triggering methods and emotional behavioral triggers facilitate the maintenance of sanitation behaviors.

Posttriggering. The final stage of the CLTS process is posttriggering follow-up. Posttriggering is generally defined as all the actions that take place after the triggering event (Kar & Chambers, 2008). The goal of the facilitator in this phase is to provide sensitive support and encouragement through additional education, and also to facilitate community discussions as they determine their strategies for becoming an ODF community (Kar & Chambers, 2008). At this stage, members of the community decide if they will act together to end open defecation (Kar & Chambers, 2008). Community actions vary in terms of response and timing, but

responses typically include communities asking questions about and searching for alternative approaches to latrine construction, action planning, selecting a sanitation committee, and discussing a timeline and monitoring activities (Kar & Chambers, 2008). Facilitators take a supportive role but stay alert to what is happening within communities as they discuss the next steps (Kar & Chambers, 2008). Assuming the triggered community does make a plan of action, facilitators should ask NLs within the community to report on community activity, plans for aiding weaker and poorer members of the community, plans for reaching ODF status, and what indicators they will use to monitor progress (Kar & Chambers, 2008). It should be noted that NLs may be obvious as the process unfolds, but careful attention to marginalized community members, such as women, should be included as NLs (Kar & Chambers, 2008). Recognition of local political leaders, religious leaders, and children as influencers may also benefit the posttriggering action phase (Kar & Chambers, 2008).

ODF Declaration and Maintenance. A marker of success for a CLTS intervention is the certification that a community is ODF (Kar & Chambers, 2008). Typically, the organization and/or government that facilitated the intervention is the body that verifies the activity and then certifies the community. Once a community has reached this milestone, there is often a celebration and official ceremony where local politicians, journalists, heads of neighboring communities, and community members are invited to speak about their progress and plans (Kar & Chambers, 2008). This activity appeals to the pride of a community and awakens interest among visitors in doing the same thing in their communities (Kar & Chambers, 2008). At this celebration event, communities may receive a sign that can be placed at their community's entrance to highlight the accomplishment (Kar & Chambers, 2008). While not considered an official phase of CLTS programming, it is at this point that maintenance of the ODF verification

and individual sanitation behaviors begin.

Criteria for ODF Declaration. To be designated as an ODF community, a community must demonstrate various markers of progress and sustained success. Kar and Chambers (2008) suggest the markers include sustained use of latrines for a minimum of six months, the use of inspection teams from other ODF-certified communities, conversations with children and the elderly, observations noting latrine usage, observation of soap and water at handwashing stations, and visiting former open defecation sites to ensure they are no longer being used. Jerneck et al. (2016) suggest that ODF becomes a “state of mind” rather than just a physical or visual observation of cleanliness and latrine usage (p. 3). Those communities that received a high-quality and supportive CLTS intervention demonstrate this state of mind and are more prone to advance toward maturity than communities that display a more superficial internalization (Jerneck et al., 2016).

In line with other adaptive CLTS practices, the ODF-verification activities are similarly marked by context and choice. Currently, verification methods differ in terms of the definitions of *household* and *community*, sampling strategies, and knowledge of the context (Jerneck et al., 2016). This adaptive approach has created confusion, significant discrepancies in reported results, and delayed CLTS learning (Jerneck et al., 2016). The discrepancies and confusion create challenges for those who are monitoring ODF slippage and CLTS outcomes (Hickling, 2019).

ODF Maintenance Challenges. An ODF verification is a marker of success, but it captures only a moment in time rather the full picture of post-ODF community efforts to sustain the verification by maintaining the ODF behaviors and handwashing behaviors. In CLTS literature, many refer to this community-wide maintenance activity as “sustained” adoption of

the ODF behaviors (Crocker et al., 2017; Jiménez et al., 2017; Martin et al., 2018). Crocker et al. (2017) evaluated the sustainability of CLTS outcomes in Ethiopia and Ghana by resurveying 3,831 households one year after CLTS implementation ended to analyze latrine use and latrine quality to assess postintervention changes. In one of the four interventions, there was an eight-percentage point increase in open defecation (Crocker et al., 2017). The other three sustained their initial decreases with no significant changes in open defecation one year later (Crocker et al., 2017). Crocker et al. (2017) found very few studies that revisit villages after the initial evaluation to evaluate the sustainability of outcomes. Their study provides new evidence that CLTS can be sustained with an effort to address barriers households face (Crocker et al., 2017). Still, they assert that researchers need to focus on longer-term sustainability and assessment of resource constraints (Crocker et al., 2017).

Martin et al. (2018) completed a systematic literature review of water, sanitation, and hygiene (WASH) literature between 1990 and 2013 to understand factors influencing the sustainability of WASH technologies and behaviors. Due to the inconsistencies in definitions of sustainability, the authors adopted a new research question to learn how sustained use is defined and measured (Martin et al., 2018). The authors suggest that a definition of sustained adoption should include three components—behavior, frequency of behavior, and length of time behavior—that are measured to be considered “sustained” (Martin et al., 2018). The authors suggest that Prochaska’s transtheoretical model of behavioral change, particularly in the “maintenance” period, is closest to their definition of sustainability (Martin et al., 2018). Ultimately, the research highlights the need for more systematic definitions of sustained adoption and more rigorous evaluations of water and sanitation interventions.

Just one year prior, Jiménez et al. (2017) also addressed the sustainability question by studying the use of a framework for sustainable programming built by UNICEF. UNICEF's Framework for Sustainability is composed of five main activities, including bottleneck analysis, sustainability compacts, sustainability checks, action plans, and joint responses from government and UNICEF representatives (Jiménez et al., 2017). The research team implemented the UNICEF framework in eight West African countries between 2013 and 2015 to demonstrate the usefulness of the tool in identifying sustainability challenges so action can be taken to improve outcomes (Jiménez et al., 2017). The research found a total of 83 bottlenecks recorded in the sustainability compacts and suggest that sustainability compacts are useful at the national level but have not been operationalized at the local level to promote “buy in” (Jiménez et al., 2017, p. 403). The action plans proved useful in operationalizing a strategy to address the bottlenecks (Jiménez et al., 2017). Last, the work reveals that sustainability checks provided focus on the key factors critical to sustainability—quality of hardware, poor quality of post-ODF follow-up, unsatisfactory natural leader training, quality of triggering effort, and limited affordable options for latrine construction materials (Jiménez et al., 2017). Ultimately, Jiménez et al. (2017) promote a shift in programming to focus on longer periods of implementation which most likely increase cost but improve capacity and sustainability. This work highlights the long journey of, the complexity of, and the context specificity of sustainability or maintenance of behaviors and suggests further work using the framework to continually involve stakeholders in the process (Jiménez et al., 2017).

Systematic Behavior Change

New behaviors, change, and innovation, even with obvious advantages, can be difficult (Rogers, 2003). The diffusion process of innovation and change is a key consideration in any

change leadership effort (Rogers, 2003). As the new concepts of ending open-defecation and using pit latrines are introduced practitioners must consider diffusing or communicating the new idea in a manner that induces social change and reduces uncertainty (Rogers, 2003). To help communicate the value of change, individual community members must perceive a relative advantage for the change (Rogers, 2003). In this case, a cleaner and healthier community is the advantage. Individuals must believe the change is compatible with their values, past experiences, and needs (Rogers, 2003). Practitioners must make the change easy to comprehend and individuals need to observe the positive outcomes of the change (Rogers, 2003). Finally, to take hold, community members must be able to try the new behavior to help remove uncertainty (Rogers, 2003).

In addition to the attributes of any innovation, it is helpful for change leaders, in this case, CLTS practitioners, to understand that individuals and communities adopt new behaviors at a different speed, called the “rate of adoption” (Rogers, 2003, p. 221). Those that see the relative advantage, sense personal compatibility with the proposed change, and feel that the innovation is not overly complex will likely be *innovators* and *early adopters* or the very first individuals within a community to make a change (Rogers, 2003, p. 270). These adopters tend to be more venturesome and act as role models for the rest of the community (Rogers, 2003). The next group to adopt is called the *early majority*, followed by the late majority (Rogers, 2003, p. 270). These adopters tend to be more deliberate and skeptical (Rogers, 2003). The last category of adopters, or the last to change, are referred to as *laggards* (Rogers, 2003, p. 270). These individuals tend to be more traditional, suspicious, and want to be certain before they make a change (Rogers, 2003). As CLTS practitioners consider the CLTS change process, the diffusion of innovation model (Rogers, 2003) has a great number of implications for how change is

managed. CLTS is a behavioral change approach (Kar & Chambers, 2008) and has been applied in an estimated 66 countries worldwide (Sigler et al., 2015). The CLTS approach to behavioral change seems to have evolved from existing behavior change theory (Sigler et al., 2015). The following portion of this writing highlights the most common behavior change theoretical approaches, frameworks, and techniques discussed in CLTS literature.

Transtheoretical Model (TTM). Sigler et al. (2015) spoke with 10 CLTS practitioners to learn more about the behavior change frameworks most common in interventions, describe how activities are implemented during interventions, and determine which activities were considered most valuable by the practitioners. Sigler et al. (2015) found that the most used behavioral change technique was the transtheoretical model, followed by the social cognitive theory, and health belief model. While the transtheoretical model was most used, the work demonstrates that there was an overlap of models described by the program facilitators (Sigler et al., 2015).

All 10 of those sampled included the use of the “shit” calculation, open defecation mapping, and the “walk of shame” as most used triggering approaches (Sigler et al., 2015). These CLTS practitioners note monitoring activities, ODF verification, and the “shit” calculation as the most important CLTS activities for sustained change (Sigler et al., 2015). While the results primarily focused on Asia, the work emphasizes the importance of combining multiple frameworks used throughout the CLTS intervention (Sigler et al., 2015). It should be noted that the program facilitators did not specifically identify the behavior change frameworks they were using (Sigler et al., 2015). This suggests that more intentional, evidence- and theory-based work can be done to improve behavior maintenance by using relevant frameworks to support planning and assessment efforts (Sigler et al., 2015). The work was limited to the perspectives of CLTS

program managers and did not include the perspectives of the community members who participated in the program (Sigler et al., 2015). However, Sigler et al. (2015) felt the perspectives of community stakeholders would be of great benefit in the discussion of long-term habit formation and behavior change maintenance.

RANAS Model. Mosler (2012) suggests the application of and use of the risk, attitude, norm, ability, and self-regulation (RANAS) model of behavior change as a way to conceptualize the reasons behind behavior and as a way to form and assess intervention strategies. The RANAS approach to systematic behavior change provides a protocol for a systematic approach to designing and evaluating behavioral change strategies (Mosler, 2012; Mosler & Contzen, 2016). The complete approach takes a significant investment of time but has resulted in successful interventions tailored to the context and local conditions (Mosler & Contzen, 2016). RANAS is particularly significant because it was originally designed for water, sanitation, and hygiene programming (Mosler & Contzen, 2016). It has, however, been extended to other behavior change interventions in a variety of settings with a variety of populations (Mosler & Contzen, 2016). Most recently, Inauen et al. (2020) used RANAS behavioral insights to systematically refine a handwashing intervention in Zimbabwe to increase remembering and disgust levels to increase the creation of and use of handwashing stations.

The RANAS approach has four phases, including identifying potential behavioral factors, measuring and determining the behavioral factors, designing behavior change strategies using behavioral change techniques (BCTs), and implementation and evaluation (Mosler & Contzen, 2016).

RANAS Model of Behavior Change. The RANAS model of behavior change is the core of the RANAS approach to systematic behavior change (Mosler & Contzen, 2016). The RANAS

model of behavior change includes four components, including psychosocial factors, behavior change techniques that correspond to the psychological factor blocks, behavioral outcomes, and contextual considerations (Mosler & Contzen, 2016).

Psychosocial Factor Blocks and Behavior Change Techniques. The first block—risk—represents an individual’s understanding and awareness of health risk, including the understanding of both perceived vulnerability and perceived severity (Mosler, 2012). Informational behavioral change techniques are applied to present factual details of risk information that are tailored and targeted to the audience (Mosler & Contzen, 2016). The second block—attitude factors—are an individual’s positive or negative stance toward a behavior and are addressed with persuasive techniques (Mosler, 2012). Third—norm factors—include perceived social pressure and can be targeted with approaches, such as gaining a public commitment or imagining anticipated regret (Mosler, 2012). The fourth—ability factors—include details, such as confidence and perceived ability to practice the behavior or implement the suggested change (Mosler & Contzen 2016). Behavioral change techniques target infrastructure, skill, resources, and ability challenges (Mosler, 2012). Finally, self-regulation factors or a person’s attempt to self-monitor behavior and manage conflicting goals to avoid relapse are considered (Mosler & Contzen, 2016). Behavioral change approaches for self-regulation include possibilities, such as coping planning, contingency management, and daily routine planning (Mosler, 2012).

Behavioral Outcomes. The psychosocial factors determine the behavior (Mosler & Contzen, 2016). The RANAS model considers four behavioral outcomes—behavior, intention, use, and habit (Mosler & Contzen, 2016). Behavior is captured by the execution of or taking action (Mosler & Contzen, 2016). When considering behavior, both the desired and competing

behavior are considered (Mosler & Contzen, 2016). Intention represents an individual's readiness to practice the new behavior or the willingness to implement the behavior (Mosler & Contzen, 2016). Habit is routinized behavior that is consistently and nearly automatic behavior that occurs without significant cognitive effort (Mosler & Contzen, 2016).

Contextual Factors. Both the psychosocial factors and behavioral outcomes are situated within a particular context and influence behavior (Mosler & Contzen, 2016). The contextual factors can be divided into social, physical, and personal categories (Mosler & Contzen, 2016). Social considerations include notions of culture and social relations, laws and policies, economic conditions, and information networks (Mosler & Contzen, 2016). Physical considerations include the natural and the built environment and the personal considerations include socio-demographic factors, such as age and education as well as the physical and mental health of an individual (Mosler & Contzen, 2016).

Psychological Theories of Behavioral Change Supporting RANAS. Each of the factor blocks and behavioral change concepts is grounded in previous theories related to change, health belief, health action, health motivation, and planned behavior (Mosler, 2012). Mosler (2012) specifically mentions the risk perception work found in Rosenstock's health belief model, Floyd's protection motivation theory, and Schwartz's health action process. Attitudinal, normative, and ability factors are described by Fishbein's and Azjen's theory of planned behavior (Mosler, 2012). Finally, self-regulation factors are supported by Prochaska's and DiClemente's work on the continuance or maintenance of behavior (Mosler, 2012).

Research Studies Advancing the RANAS Model. Mosler (2012) references several research publications since 2008 that have demonstrated success using the RANAS model factors to explain influences on behavioral change interventions in the water, sanitation, and

hygiene sector. More recently, Morse et al. (2019) used a mixed-methods approach that included the RANAS model to identify four thematic areas of focus. The team of researchers used formative research to design appropriate intervention packages for communities in rural Malawi (Morse et al., 2019). Nunbogu et al. (2019) used the RANAS model as an assessment and evaluation tool, instead, to assess factors associated with latrine completion and use in Northern Ghana. Among the findings from this study, those who perceived greater risk as associated with diarrhea were significantly more likely to complete a latrine and use it (Nunbogu et al., 2019). Additionally, while socioeconomic differences were not significantly associated with latrine completion, they found social context was a significant determinant of household decision to build a latrine (Nunbogu et al., 2019).

CLTS Outcomes

Perhaps the most widely expressed concern is whether CLTS can result in sustained change in both community and individual behaviors (USAID, 2018). CLTS practitioners report general satisfaction and success with the CLTS approach (Ficek & Novotný, 2019). The successes reported, however, are linked only to context-specific evidence, and the perception of positive results demonstrated only short-term targets (Ficek & Novotný, 2019). In 2017, Crocker et al. stated “there are no journal-published studies on the sustainability of CLTS outcomes” (2017, p. 551). A USAID (2018) report on the impact of CLTS stated that it is challenging in part because “what to measure is not as straightforward as it may seem” (p. 15). Some accept the argument that CLTS is about the elimination of open defecation and choose to count toilets as an indicator or outcome that the community no longer openly defecates, while others assert the existence of a toilet does not capture the use or the end of open defecation (USAID, 2018). Still,

other governing bodies, such as the Joint Monitoring Project, measure success instead by categories along the sanitation ladder.

What outcomes evidence does exist demonstrates that definitions of success vary widely and therefore outcomes vary widely across projects, slippage rates, and long-term effects (Harter et al., 2019b). While there is minimal evidence on sustainability and the maintenance of behavior change, outcome data have been presented in four main areas—sanitation and hygiene knowledge, diarrheal disease, latrine construction/coverage, and latrine usage with ultimate impact on the reduction of open defecation. Additionally, and to a lesser degree, social outcomes have also been added to the conversation regarding outcomes. Each of these outcome categories is discussed in brief below.

Sanitation Knowledge. Lawrence et al. (2016) found that those who have adequate knowledge of sanitation and hygiene are more likely to adopt handwashing stations and pit latrines. Okolimong et al. (2020) conducted a comparative cross-sectional study to determine the potential learning and knowledge effects of CLTS by comparing a subcounty of the Pallisa District in Uganda that had received a CLTS intervention with a subcounty that had not received the intervention. The results reveal that those in the CLTS intervention area had higher knowledge of sanitation and hygiene than those that did not receive the intervention (Okolimong et al., 2020). Most notably, the work found that the prevalence of diarrhea was lower in the intervention subcounty (Okolimong et al., 2020). Ultimately, the authors suggest CLTS is effective at equipping communities with the knowledge that may lead to the reduction of open defecation and the burden of diarrheal diseases (Okolimong et al., 2020).

Impact on Diarrheal Disease. In a meta-analysis of studies reporting on interventions examining water, sanitation, and hygiene that were published between 1970 and 2013, Bateman

and Engel (2016) reported a link between improvements in sanitation and hygiene and the reduction of diarrheal disease. While a link was established, the impact CLTS has on the reduction of diarrheal disease has not been established. In the first randomized controlled trial on the effectiveness of CLTS in Mali, there was no observed difference in the prevalence of diarrhea among children in the CLTS and control villages (Pickering et al., 2015). However, access to private latrines was almost twice as high in the intervention villages and there was a reported decrease in open defecation (Pickering et al., 2015). Njuguna (2016) did report positive results in Nambale, Kenya where the monthly mean of diarrheal cases declined after the CLTS intervention and there was observed elimination of open defecation. Studies conducted by Soboksa et al. (2019) and Cumming et al. (2019) both reported CLTS had limited results on the prevalence of diarrhea. In these studies, there was impact but not enough to be considered significant. Both studies suggest greater emphasis should be placed on context-specific program design. In summary, CLTS seems to promote increased access to sanitation facilities but has not demonstrated a significant impact on diarrheal disease.

Latrine Coverage. To assess the implementation of CLTS in the Diretiyara District in Eastern Ethiopia, Tessema (2017) used both qualitative and quantitative approaches to engage 420 households in June 2014. The study showed 66% of respondents have knowledge of CLTS and that CLTS increased the extent of latrine ownership and decreased the practice of open defecation (Tessema, 2017). Harter and Mosler (2018b) also sought answers to the CLTS effectiveness question. In particular, the aim was to determine which elements of the CLTS implementation process were most efficient in increasing latrine coverage and under which social conditions CLTS is most effective (Harter & Mosler, 2018b). The study consisted of two phases, the first stage included two cross-sectional studies in Cambodia and Mozambique that

investigated CLTS effects six months after implementation and the second was a randomized control trial in Ghana with 3,216 households across four interventions (Harter & Mosler, 2018b). The overall findings corroborated that CLTS is effective at increasing latrine construction and the eradication of open defecation (Harter & Mosler, 2018b).

In 2019, Yeboah-Antwi et al. reported results from a pre-and postintervention study between 2013 and 2016 to consider the effectiveness of CLTS in Zambia. While the impact evaluation of CLTS demonstrated little change in sanitation knowledge, it reports a significant increase in the latrine coverage, fewer self-reports of open defecation, and improvements in handwashing with soap (Yeboah-Antwi et al., 2019). This work corroborated studies in Ghana (Crocker et al., 2016a; Harter et al., 2020), Tanzania (Briceño et al., 2017), and Mali (Pickering et al., 2015).

Latrine Usage. Last, outcomes data are presented concerning questions of increased latrine usage. Gebremariam et al. (2018) and Gebremariam and Tshehaye (2019) focused their studies on latrine usage, post-CLTS programming. Both cross-sectional studies focused on the same rural community of Laelay Maichew District, Tigray, Northern Ethiopia. The first studied the district between November 2016 and January 2017 (Gebremariam et al., 2018), and the second studied the district between February 2017 and April 2017 (Gebremariam & Tshehaye, 2019). Both studies confirm that it is possible to increase latrine usage through coordinated CLTS efforts (Gebremariam et al., 2018; Gebremariam & Tshehaye, 2019).

Social Outcomes. While less documented than health-related outcomes, social benefits of water, sanitation, and hygiene interventions have been noted (Malolo et al., 2021). Malolo et al. (2021) gathered qualitative data using in-depth interviews, focus group discussions, and key informant interviews in a case study in Malawi. The research identified eight social outcomes,

including formation and strengthening of relationships, becoming role models to community members, women's empowerment, time-saving, receiving rewards, change of status, reduced medical costs, and obtaining new skills (Malolo et al., 2021). While difficult to quantify social outcomes, these researchers suggest that social benefits should be a bigger part of the measurement and outcomes conversation as organizations, NGOs, and countries continue to invest in CLTS efforts (Malolo et al., 2021).

In summary, CLTS has a data problem (USAID, 2018). There is not enough reliable information on the impact of CLTS programming on the elimination of diarrheal disease, latrine usage, or latrine and handwashing station adoption. Although behavior change brought about by CLTS has resulted in positive outcomes, such as improved health and reduced open defecation, further research is needed to determine the facilitators and barriers to these outcomes. A USAID (2018) report suggests that CLTS should not be critiqued for failing to achieve goals it was never intended for, such as the elimination of diarrheal disease. The report suggests more research to assess the circumstances in which CLTS works best and the best implementation methods (USAID, 2018). Additionally, this report suggests that in areas where CLTS has not transformed mindsets and slippage is frequent, further research is needed to explore links between gains in behavior change and the CLTS intervention processes (USAID, 2018).

Slippage

In addition to the lack of consistent outcome data, the reasons communities slip back into open defecation also plague researchers (Hickling, 2019; Jerneck et al., 2016; USAID, 2018). Slippage is intricately linked to ODF certification, CLTS outcomes, and questions regarding the realization of true and sustained sanitation behavior change. Slippage is the return to unhygienic behaviors or the inability of some or all community members to continue to meet all the ODF-

verification criteria (Hickling, 2019; Jerneck et al., 2016). Slippage is difficult to standardize as it relates directly to the contextualized intervention criteria set by the government or NGO that implemented the program (Hickling, 2019; Jerneck et al., 2016). The questions driving this research and the CLTS community at this time are many and varied, but all point to improving the longer-term maintenance of ODF behaviors to create safer, hygienic living conditions and ultimately improve the lives of those in the global community. Defining and monitoring slippage, understanding patterns of slippage, and the main reasons for behavior slippage have taken center stage in research literature. Each is described below.

Defining and Monitoring Slippage. First, it must be understood that slippage is linked to the definition of ODF and the criteria used to certify the community as ODF (Hickling, 2019; Jerneck et al., 2016). Countries and individual programs do not use equally stringent ODF criteria (Jerneck et al., 2016). In Global Sanitation Fund (GSF) programs, for example, there must be no presence of feces, all latrines must be flyproof with evidence of continued use, and handwashing facilities must be available with water and soap or ash (Jerneck et al., 2016). In other countries, such as Malawi and Tanzania, the national definition of ODF refers solely to the elimination of feces (Jerneck et al., 2016). Monitoring ODF indicators within communities often stops at the ODF certification in most instances (Hickling, 2019). Some programs, such as UNICEF, provide a secondary data point after a certain interval to measure the extent of slippage (Hickling, 2019). Still, only two data points, one from the ODF declaration and one from a sustainability survey at a single point in time, provide little insight into the permanency of behavior maintenance (Hickling, 2019).

Main Factors for Slippage. As slippage is related to behavior change, it is also dynamic and context-specific (Jerneck et al., 2016). Slippage likely occurs in all CLTS programs but does

not always lead to the removal of ODF status (Hickling, 2019). Understanding patterns of slippage and the patterns that contribute to it is a starting point for addressing the issues (Hickling, 2019). Slippage depends on internal and external factors over which communities have no control (Jerneck et al., 2016). Hickling (2019) suggests there are four broad, interrelated slippage factors—poverty (socioeconomic vulnerabilities), technology (latrine design, quality, and durability), behavior (inadequate social norm changes), and external (geological shocks, climate changes). Jerneck et al (2016) use a similar list but add a category called *institutional slippage factors*, which includes governmental policies, poor coordination between institutions leading to overlapping interventions, and conflicting policies, such as subsidy- or nonsubsidy-driven methods. Abebe and Tucho (2020) screened 1,382 studies to find 12 to meet their criteria for inclusion in their systematic review to provide consolidated data on the level of slippage and the associated factors in Ethiopia. Their study reported similar findings to those of Jerneck et al. (2016) and Hickling (2019) for slippage factors but added a lack of sanitation marketing to the discussion (Abebe and Tucho, 2020).

Addressing and Mitigating Slippage. Hickling (2019) and Jerneck et al. (2016) suggest that once the main factors are identified, plans may be drawn to impact the slippage rate. First, Jerneck et al. (2016) acknowledge the importance of pretriggering and triggering processes on the outcome and maintenance of CLTS. The understanding of community dynamics, including potential conflict, vulnerable populations, and triggering tools, have a bearing on the maintenance phase.

Odagiri et al. (2017) surveyed 587 households and held focus group discussions in six ODF villages two years after ODF certification to explore associations between slippage and the strength of social norms. The findings suggest that latrine adoption and use can be sustained for

longer periods with strong community engagement of NLS, reinforcement of normative expectations, community support mechanisms for removing barriers, and continued encouragement to pursue community services for stabilizing new social norms (Odagiri et al., 2017). Follow-up and frequent personal contact between communities and WASH facilitators for accountability over an extended period was the most widely cited solution to sustaining ODF behavior (Hulland et al., 2015; Kafle & Pradhan, 2018; Odagiri et al., 2017; USAID, 2018; Venkataramanan et al., 2018). The areas of emphasis for further study include social norms and slippage (Abebe & Tucho, 2020; Odagiri et al., 2017), socioeconomic issues, such as lack of space for rebuilding latrines and the lack of local and available materials (Abebe & Tucho, 2020), technical issues, such as the lack of technical skill and soft or sandy soil (Abebe & Tucho, 2020), triggering and social engagement (Ababe & Tucho, 2020), the interaction of the CLTS phases and ODF maintenance (Jerneck et al., 2017; Valcourt et al., 2020) and follow-up programming and/or sequencing to different sanitation or WASH approaches during the post-ODF stage for longer intervention periods (Venkataramanan et al., 2018). The current study builds on those suggestions for future study and focused on understanding stakeholder ideas for improvement while considering the perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors. Furthermore, the current study focused on a village that was successful in the maintenance phase.

Contextual Considerations: Namutumba District, Uganda, East Africa

The Republic of Uganda is a landlocked, fertile, densely populated country located in East Africa (Central Intelligence Agency [CIA], 2020). The country is bordered to the west by the Democratic Republic of Congo, to the south by Rwanda and Tanzania, to the east by Kenya, and to the north by the Republic of South Sudan (CIA, 2020). The country houses the Nile River

and shares Lake Victoria, the world's largest tropical lake and second-largest freshwater lake, with Kenya and Tanzania (CIA, 2020). Uganda is ranked fifth in the world for population growth and houses approximately 43,252,966 people living in 134 districts (CIA, 2020). The majority of the Ugandan population (65%) earn a living from subsistence farming and the illiteracy rate is around 70% for those 10 and older (Uganda Bureau of Statistics, 2017). Uganda faces many economic challenges, including poor economic management, corruption, and failure to invest adequately in health and education (CIA, 2020). This failure to invest in health and education results in several negative implications for the country's health and some indicators, including access to sanitation facilities, have suffered.

The Namutumba district is located in the eastern Busoga region and its headquarters is located approximately 56 miles northeast of Jinja the largest city in the region (Namutumba District, 2020). Namutumba district is bordered by the Kibuku, Pallisa, Butaleja, Bugiri, Iganga, and Kaliro districts (Namutumba District, 2020). The Namutumba district is further divided into the Bukono and Busiki counties, which include the nine subcounties of Nangonde, Ivukula, Nabweyo, Kibaale, Nsinze, Magada, Namutumba (TC), Namutumba, and Bulange (Uganda Bureau of Statistics, 2017). According to the 2014 census, Namutumba is the home to 422,771 people (Uganda Bureau of Statistics, 2017). The remainder of this section provides a snapshot of the sanitation profiles of Uganda and Namutumba.

Uganda: Sanitation Profile. Uganda participates in the Water and Sanitation Program (WSP), a multidonor funded program administered by the World Bank (CLTS Knowledge Hub, 2020). In partnership with WSP, the ministry of health implemented a 10-year sanitation and hygiene strategy to promote large-scale programming (including CLTS), identify solutions, and disseminate information to improve sanitation and hygiene (CLTS Knowledge Hub, 2020).

While the country has seen improvements over the years in villages that are declared ODF, there is still a high average slippage rate reported—as high as 50% in some districts (Uganda Ministry of Health, 2020). According to Uganda’s 2018-2019 Annual Health Sector Performance Report, the country demonstrated a reduction in latrine coverage from 83% in 2017-2018 to 77% (Uganda Ministry of Health, 2020). In addition, handwashing facilities also decreased from 36.5% in 2017-2018 to 36.2% in 2018-2019 (Uganda Ministry of Health, 2020). The majority of the population or 58.4% use unimproved sanitation facilities and over 8.7 million (22.4%) still practice open defecation (Uganda Ministry of Health, 2020).

Namutumba District: Sanitation Profile. Little is available regarding the specifics of sanitation in the Namutumba district. According to the Uganda Bureau of Statistics (2017), 71.9% of those living in Namutumba use a borehole for their source of drinking water and only 7% of households are without access to toilet facilities.

Kibo Group International

Kibo Group International is a “faith-inspired, nongovernmental organization that partners with East Africans to find local solutions for poverty and injustice to help communities flourish” (Kibo Group, 2020, p. 1). Kibo seeks to develop communities holistically through CLTS, drilling and repairing wells, safe kitchen building, health education, life skills education, reforestation, and community economic development initiatives (Kibo Group, 2020). The Kibo Group founders care about what is done but care more about the way things are done. The *Kibo Way* promotes five core guiding principles in community work:

1. Asking good questions and utilizing a community asset-based approach rather than importing solutions and assuming outside contributions matter most.

2. Leading with local community leaders to pursue a holistic approach rather than assuming a “one-size fits all” approach. Kibo assumes multilayered problems require multilayered solutions.
3. Working with communities rather than seeking to improve the lives of single individuals.
4. Promoting interdependence rather than independence. This interdependence requires the cooperation of stakeholders to share responsibilities.
5. Treating the root cause rather than secondary symptoms of the problem(s). (Kibo Group, 2020)

Key Personnel. A group of 14 individuals, including myself, make up the board of trustees for Kibo Group (Kibo Group, 2020). Kibo employs 22 Ugandan staff members and four U.S.-based employees (Kibo Group, 2020).

Summary

Eliminating open defecation and encouraging handwashing are more complex matters than they may appear on the surface. Understanding the multifaceted problems associated with open defecation, reasons individuals choose open defecation, dynamics of community context, use of CLTS processes, applications of behavior change techniques, and reasons for slippage is critical if the United Nations’ Sustainable Development Goal number six targeting adequate and equitable sanitation and hygiene for all is to be reached by 2030. While the literature does not point to a single best way to improve and maintain sanitation behaviors, most agree that context-specific research is necessary for gaining an understanding of slippage behavior during the maintenance phase of the CLTS process (Garn et al., 2017; Hulland et al., 2015; Venkataramanan et al., 2018).

This literature review reveals an imbalance of research weighted toward the beginning stages of the CLTS process. Much is known about the triggering phase of the process (Bateman & Engel, 2018; Brewis et al., 2019; Engel & Susilo, 2014; Harter & Mosler, 2018; Harter et al., 2020; Mukherjee & Mukherjee, 2018; Sigler et al., 2015). Few, however, have considered the maintenance phase as a cumulative impact of all three CLTS phases (Valcourt et al., 2020). Little is known about the maintenance phase and slippage has received scant attention. Additionally, no studies were found in this review that directly asks stakeholders for their ideas on how to sustain behaviors in the maintenance stage.

More understanding in these little-known areas can help mitigate the return to open defecation behaviors and the resulting loss of investment in the maintenance phase. Therefore, it is critical to gain an understanding of stakeholder ideas for improvement and stakeholder perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors. The current study does so by attending to the systemic influencers throughout the Kibo Group CLTS intervention in the village community of the Namutumba District of Uganda, East Africa.

Chapter 3: Research Method

Little progress has been made in the global fight against open defecation (WHO, 2019). The practice of open defecation, defecating in open fields or water sources, and leaving the feces exposed, predisposes people to diarrheal disease, which accounts for millions of deaths each year (Njuguna, 2016). Additionally, open defecation has been linked to adverse consequences, including infectious diseases (Wolf et al., 2018), poor nutrition (Jacob Arriola et al., 2020), and reduced mental well-being (Delea et al., 2019). Failure to invest in health and education results in several negative implications, including lack of access to proper sanitation and increased sickness. Because those in poverty-stricken, developing nations have increased risks for these negative health and psychological ramifications, understanding of the facilitators and barriers to sanitation behavior change may be used to improve the lives of those in these low- to middle-income nations.

CLTS programming is designed to lead communities through behavioral changes to end open defecation but has demonstrated only short-term sanitation behavior change (Gebremariam et al., 2018; Pickering et al., 2015; Tessema, 2017; Venkataramanan et al., 2018). Slippage to open defecation and/or unhygienic behaviors during the maintenance or posttriggering phase is more common than desired (Njuguna, 2019; Wijesekera & Thomas, 2015). As a result, academics and practitioners have focused on the maintenance of behavioral change in the CLTS process. This research sought to better understand stakeholders'—village leaders, village community members in a nonleadership role, and CLTS practitioners—perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors by attending to the systemic influencers throughout the CLTS intervention by asking about the perceived barriers and facilitators to the CLTS process that may contribute to sustained use of pit latrines and

handwashing facilities at the maintenance stage and stakeholder solutions proposed to combat slippage. This chapter highlights this study's design, population sample, data collection methods, data analysis procedures, ethical considerations, assumptions, and limitations.

Research Method and Design

The purpose of this research was to capture the nuances of context and to better understand the facilitators and barriers to the usage of pit latrines and handwashing in the maintenance stage of CLTS programming. The goal was to improve intervention strategies and to find ways to address barriers to behavior maintenance by seeking village community member, community leader, and Kibo Group CLTS practitioner solutions to combat slippage. Given these goals of better understanding the maintenance of sanitation-related behaviors and the interconnected phases of the CLTS process, the following research questions were addressed:

RQ1. What are the stakeholder's perceived barriers and facilitators to remaining ODF and combatting slippage in the maintenance phase in this community?

RQ2. What are the stakeholder's perceived barriers and facilitators of becoming ODF?

RQ3. What are proposed solutions or advice these stakeholders would give to others who struggle to become or remain ODF?

This study sought stakeholder perspectives from village leaders, village community members who have received the CLTS intervention, and CLTS practitioners who implemented the intervention within this village community. These three stakeholder groups were best equipped to provide first-hand experience and knowledge of the facilitators and barriers at each stage of the CLTS process. In addition, these individuals were the best equipped to provide contextualized ideas for how to improve the maintenance of sanitation behaviors.

A qualitative method was implemented to attend to the context and conditions of the CLTS intervention stages that may contribute to sustained use of pit latrines and handwashing facilities at the maintenance stage. Qualitative research is an umbrella term that includes methods to study natural social life, documents human actions, and explores the meanings of those actions (Saldaña & Omasta, 2018). Qualitative methods can be designed to capture “process theory” or ways of seeing the world in terms of people, situations, events, and the connections between them (Maxwell, 2013; Yin, 2009). Additionally, qualitative methods are used to explain how some situations, events, people, and processes influence the other elements (Maxwell, 2013). Qualitative methods capture the nuances of the context (Yin, 2009) and are best suited to capture context, connections, and characteristics needed to address the research questions proposed for this study. Qualitative methods are the optimum choice for seeking a rich picture of the interactions of routines, relationships, roles, rules, and rituals (Saldaña & Omasta, 2018) related to open defecation behaviors and community action and interaction with CLTS activities.

Most of the research in this area has been focused on the use of field experimentation or randomized control trials (RCTs), which focus on the earlier stages of the CLTS process and the initial uptake (Delea et al., 2019; Harter et al., 2019a; Harter et al., 2020; Inauen et al., 2020). These researchers have studied the CLTS intervention with a focus on evaluating the triggering phase with quantitative attention to comparing those who received the intervention and those that did not. Although quantitative data are well-suited to capture pre-intervention and postintervention data, including measures such as the number of latrines and handwashing stations or knowledge gained, it is critical to obtain rich data to understand the barriers and facilitators to remain ODF in the maintenance stage. This can only be done through qualitative measures. Others have used quantitative measures to focus on the intervention sustainability,

assessment, and outcomes in terms of numbers of latrines and numbers of handwashing stations remaining and used after a designated time (Crocker et al., 2017; Mosler et al., 2018; Njuguna, 2019). Quantitative data are also well-suited to capture the numbers of community members that slip back to open defecation behavior.

Still, few studies have focused on the “why” behind the community member choices and the interrelated factors that act as facilitators and barriers to long-term maintenance (Valcourt et al., 2020). This qualitative study was designed to capture “what,” “why,” and “how” questions related to the process, people, and context (Yin, 2009). This study focused on questions of facilitators and barriers that will help explain the “why” behind thought processes, behavior change, and contextual subtleties that cannot be captured completely by quantitative data (Yin, 2009).

A case study design with three embedded units was executed. I used the case study approach to seek an in-depth understanding of a phenomenon where the boundaries between the phenomenon and context are unclear and the variables uncontrollable (Yin, 2009). On the whole, the case study research allowed for three main variables to contribute to the learning—conditions over time, in-depth inquiry, and contextual considerations (Yin, 2012). This case study research relied on multiple sources of evidence to add breadth and depth to data collection to ultimately form conclusions and implications similar processes and systems (Yin, 2009, 2012). Here, the single case focuses on a village community in the Namutumba District of Uganda, East Africa where Kibo Group International facilitated a CLTS intervention. This community was chosen because the Kibo Group intervention had been completed, the village had been certified as ODF, and the village had been in the maintenance phase for more than one year. The embedded units focused on three different stakeholder categories—community leaders, community members

who received the intervention but did not hold a leadership role, and Kibo Group CLTS practitioners—within the case context. Embedded units add significant opportunity for extending analysis and enhancing insight into the single case (Yin, 2009). Looking at the three embedded units within this context allowed for analysis to take place within each unit and between units with all information supporting learning of the single case in question (Yin, 2009).

The in-depth understanding of this prevailing but obscurely understood context produced revelatory, invaluable, and insightful knowledge that could potentially result in new behaviors, practices, and meaning for Kibo and for similar CLTS processes worldwide (Yin, 2009; Yin, 2012). The village context is complex, and this case study allowed for descriptive, evaluative, and explanatory variables to be discussed in light of the research questions. However, the main focus of this work was exploratory.

Population

Broadly speaking, the population included those who have been exposed to, have practiced, or currently practice the behavior of open defecation. Open defecation is primarily practiced in low- and middle-income countries, such as Central and Southern Asia, Eastern and Southeast Asia, and Sub-Saharan Africa (United Nations, 2019). For this case study, the population included the Sub-Saharan African nation, Uganda. Uganda, like many other low- to middle-income countries, faces several economic challenges, including poor economic conditions, governmental corruption, and failure to invest adequately in health and education (CIA, 2020).

Study Sample

Three groups or units were included in the sample for this work. These participants engaged in the CLTS intervention and had direct knowledge of processes and procedures used.

The first group included were village leaders. These individuals were part of the local council (LC), village health team (VHT), or Kibo Group designated sanitation committee members. The second group included village community members that did not hold a leadership position that participated in the Kibo Group CLTS intervention. Each participant had direct knowledge and experience of their community and the entirety of the Kibo Group CLTS process within their community. The final group for this study included Kibo Group CLTS practitioners or those who supported the village community from pretriggering until their ODF status certification. The Kibo Group CLTS practitioner(s) also had direct knowledge and experience with the village community selected.

To provide learning and a perspective of the Kibo Group CLTS practitioners, co-managers, CLTS assistants, and water source assistants were approached for participation. The criteria for inclusion included those that had been employed by Kibo Group for a minimum of five years and those who had worked directly with water, sanitation, and hygiene projects. These Kibo Group practitioners worked directly with the effort in this community. Their experiences directly contributed to a rich, in-depth understanding of the case, population, sample, and process in review.

Case Selection

In consultation with the Kibo Group CLTS leadership, this particular community was chosen because they had been in the maintenance phase for over one year. I also selected the village because they are not among the largest or the smallest of the villages in which Kibo Group has operated. The village had active sanitation committee leaders and village community members that were mobilized easily. Kibo Group's internal records reported that the community reached the 100% mark for ODF early in 2020. However, the effort was not without some

struggle. At the third evaluation of four, Kibo Group found that some of the early constructed latrines had collapsed. At that assessment cycle, the community had dropped from 100% ODF to 89.9% ODF status. It should be noted that there is always a cycle of latrines collapsing and then a lag time of digging and reconstructing. The most important factor is that residents reconstruct after the collapse. The sanitation committee worked to ensure that the residents reconstructed the collapsed latrines. The community members, village leaders, and Kibo Group practitioners understand the struggles of building and rebuilding and the joys of reaching 100% ODF certification. As a result, they were positioned to speak to all of the research questions.

Instrumentation and Materials

To best address the three separate units of the sample, I used two different instruments or interview guides. These instruments differ primarily in terms of perspective but ask similar questions. A focus group guide was tailored toward the village community members and village leaders. An individual, semistructured interview guide was tailored to gain the perspective of the Kibo Group CLTS practitioner. Each guide is described in greater detail below.

Focus Group Interview Guide: Community Participants

Data collection for the community participants consisted of qualitative interviews in the form of focus group discussions. Focus group research is a qualitative method used to discuss a specific set of issues with a predetermined group to gain an understanding of those issues from the perspective of the participants (Hennink, 2007). Focus group discussions had the advantage of spontaneity of participant responses as it replicates everyday social interactions more than a one-on-one interview (Hennink, 2007). The community-led efforts foundational to the CLTS intervention supported a focus group discussion also. The two community groups, village leadership and village community members in a nonleadership role, were already familiar with

community meetings. The community members and leaders were best suited to offer thoughts on attitudes and behaviors related to the research questions.

The work was supported by an interview guide and protocol that I developed (see Appendix A). The interview guide consisted of four key areas of interest: demographic information, CLTS procedural reflections, facilitators and barriers discussions, and idea generation for sanitation behavior maintenance. I developed this interview guide by consulting the RANAS-approach practical guide (Mosler & Contzen, 2016) and existing sample interview protocols (Saldaña & Omasta, 2018). The interview guide included space for the interviewer's comments, observations, and reflective notes to help categorize themes (Saldaña & Omasta, 2018). The interview guide helped to ensure I adhered to the allotted time: approximately 90 minutes. I also utilized the guide to prevent leading responses or being suggestive about possible influences. The interview questions and interview protocol were field tested by two CLTS experts, the country director of Kibo Group, Henry Oyier, and a former missionary to Uganda who helped start the Kibo Group WASH program, Dr. Spencer Bogle. Dr. Bogle currently works as the program director for the Water Project, Inc. a nonprofit organization that works to provide reliable water sources to communities in sub-Saharan Africa. I used their feedback to improve the interview questions before both signed a letter of support for the protocol (see Appendix B).

Semistructured, Individual Interview Guide: CLTS Practitioners

Data collection from the Kibo Group CLTS practitioners consisted of individual, semistructured interviews facilitated by the researcher-developed interview guide and protocol (see Appendix C). Interviews were essential to the case study research as the well-informed participants provided insight into behaviors and actions (Yin, 2009). In this matter, the Kibo Group CLTS practitioners provided a history of the village in question as well as a history of the

Kibo Group intervention philosophies. Additionally, the practitioners knew the facilitators and barriers to the maintenance of sanitation behaviors. Finally, these individuals were well-suited to offer advice on how to improve the maintenance of behaviors. To promote converging lines of inquiry, the interview guide consisted of similar questions to those presented in the community participant interview guide. This interview guide was developed by consulting the RANAS approach practical guide (Mosler & Contzen, 2016) and existing sample interview protocols (Saldaña & Omasta, 2018). The interview guide included space for the interviewer's comments, observations, and reflective notes to help categorize themes (Saldaña & Omasta, 2018). The field-tested interview guide (see Appendix B) helped ensure I adhered to the allotted time: approximately 60 minutes. I also used the guide to prevent leading responses or being suggestive about possible influences.

Data Collection

Data was collected in three main ways, including semistructured individual interviews with CLTS practitioners, focus group discussions with village community leaders, and document analysis of files from the stakeholder units. The remainder of this section demonstrates the step-by-step process for data collection including a discussion of research protocol registration, timeline goals, cost estimates, onsite data collection procedures, record-keeping strategies, and data collection validation.

Research Approval and Protocol Registration

The Kibo Group board of directors provided unanimous approval for the study as documented in a letter from the president of the board (see Appendix D). Before data collection, approval from the Abilene Christian University's Institutional Review Board (IRB; see Appendix E) was obtained. Immediately following the IRB approval, the registration permit

application was submitted to the Uganda Christian University, a Ugandan research ethics committee (REC; see Appendix F). Upon approval from the REC, the proposal was submitted to the Uganda National Council for Science and Technology (UNCST; see Appendix G) online platform and gained final approval.

Predeparture: Timeline, Budget, and Communication

After the IRB proposal was approved and the Uganda REC and UNCST registration process were complete an email was sent to the Kibo Group executive director and country director to finalize the timeline, begin purchasing necessary equipment and initiate communication with the community.

Timeline. Given the Covid-19 travel restrictions and protocols, October was selected for Zoom interviews with Kibo Group practitioners, and December was chosen for a face-to-face visit. I gathered the research over three months with the most concentrated effort taking place during one week in Uganda.

Budget. A budget was prepared to outline the primary costs for the research (see Table 1). Several items are not included in this outline because of my previous travels to Uganda. For example, required vaccinations, such as the yellow fever vaccination, had already been secured. Additionally, a passport had already been secured and the passport fees had been paid previously. Last, the interpreter fees have been left off because Kibo Group has agreed to offer the service to show support for the research and to provide additional cultural guidance as needed and required by the UNCST while in the village community.

Table 1*Research Budget Estimation*

Budget description	Estimated expense
UNCST registration fee	\$300.00
UCU research ethics committee fee	\$300.00
Airfare	\$1,500.00
East Africa tourist visa	\$100.00
Overnight in Entebbe	\$75.00
Special hire transportation to Jinja	\$75.00
Kibo apartment Fee	\$150.00
Roke WiFi access	\$30.00
Food	\$200.00
Malaria prophylaxis	\$15.00
Special hire transportation to village community (4 trips)	\$300.00
Sony ICD-PX series DVR with microphone	\$50.00
Sony ICD-PX370 DVR	\$43.00
Energizer AAA batteries (20 count)	\$14.00
Thank you gifts (40 count)	\$40.00
Miscellaneous office supplies	\$20.00
Special hire to Entebbe	\$75.00
Estimated total expense	\$3,287.00

Preliminary Communication. Before arrival in Uganda, email communication was used to make arrangements for the focus group discussions, secure and organize the interpreter's schedule, ensure all Kibo Group personnel were aware of the research purposes, and verify that the Kibo Group housing was prepared. The communications were with the Kibo Group country director and executive director, who provided details to the employees as needed. Arrangements included determining specific days for each village visit and each village audience requested for each focus group discussion. The following table documents the research schedule followed (see Table 2).

Table 2*Research Schedule*

Sample group	Collection method	Date	Details
Kibo Group CLTS practitioner	Individual Interview	Tuesday, October 26, 2021	The interview lasted 60 minutes and utilized Zoom.
Kibo Group CLTS practitioner	Individual Interview	Thursday, October 28, 2021	The interview lasted 60 minutes and utilized Zoom.
Village members, male nonleaders	Focus group discussion	Monday, December 13, 2021	The focus group interview lasted 60 minutes. Ten male residents participated.
Village leadership	Focus group discussion	Wednesday, December 15, 2021	The focus group included a VHT, LC, and sanitation committee members. The focus group lasted 60 minutes. Ten leaders participated.
Village members, female nonleaders	Focus group discussion	Friday, December 17, 2021	The focus group interview lasted 60 minutes. Twelve female residents participated.

Once the schedule was finalized, a Kibo Group representative reached out to both the village sanitation committee chairperson and the local council leadership, who communicated with and secured participants for the specific meetings in their village. These individuals were told that there was a follow-up meeting to discuss the progress of CLTS efforts in their community. It was explained that the follow-up research meeting was a part of a U.S.-based university student research project that was registered properly with the UNCTD. The local

sanitation committee chairperson also secured a location for the meeting. The local sanitation committee chairperson mobilized their community and ensured the appropriate sample group was scheduled and gathered per the agreed upon schedule.

On-Site: Communication and Data Collection

Upon arrival in Jinja, Uganda, I secured keys for the provided housing and settled into the Kibo Group apartment. This included securing additional supplies, such as Roke WiFi access and connecting both my mobile device and MacBook Pro to the apartment WiFi. Once these devices were equipped with WiFi, further preparations were made for the purchase of snacks and sodas for the focus group discussions. Last, I planned a meeting for the next day to make final arrangements with the interpreter(s) and discuss communication with the village communities. The remainder of this section provides insight into the communication reminders with the villages and the daily schedule while on-site in Uganda.

Communication Efforts. Soon after arrival, a Kibo Group representative reached out to both the village sanitation committee chairperson and the local council leadership to remind them of the meeting days and reminded them to secure 6–10 participants as noted on the agreed-upon schedule for the meetings. These individuals were reminded that this was a follow-up meeting to discuss the progress of CLTS efforts in their community. Again, the communication reminded them that the meeting was a part of a research project that had been registered properly with the UNCST. The local chairperson communicated with and mobilized their community and secured a quiet venue for each focus group discussion.

Individual Interviews. I used semistructured individual interviews to gather information from the Kibo Group CLTS practitioners. The semistructured interviews created a certain amount of structure and also offered the flexibility that allowed the conversation to go in a

direction that provided richer data (Saldaña & Omasta, 2018). Two CLTS practitioners agreed to participate in the study. There was an established rapport with each of these individuals that resulted in comfort and transparency. On a practical note, these individuals spoke English, which made the transcribing of interviews more manageable and a translator unnecessary.

The individual interviews with the CLTS practitioners took place on Tuesday, October 26, 2021, and Thursday, October 28, 2021, when the CLTS personnel were not working in the surrounding village communities. Upon completion, I downloaded the interviews from the Sony ICD-PX Series digital voice recorder to my password- and touch ID-secured MacBook Pro computer. Once the download was complete, the file was named and loaded to a Google Drive database that was shared only with my dissertation chairperson. While the file was loading, I prepared an analytic memo including reflections and observations made during each interview.

Focus Group Participant Recruitment. Focus group participants had direct knowledge and experience of their community and the entirety of the Kibo Group process within their community. These individuals were recruited by the village sanitation committee using the established sampling criteria. The committee purposefully recruited these participants based on their engagement in Kibo programming, minimum age of 18, desire to participate, and availability. There was one slight difference for the male nonleadership focus group. While still purposeful, the male respondents reported that a snowball recruiting technique was used to secure the final one or two participants (I. Bazonoona, personal communication, December 13, 2021). These individuals were told that there would be a follow-up meeting to discuss the progress of CLTS efforts in their community. It was also clearly explained that the follow-up research meeting was a part of a U.S.-based university student research project that had been registered properly with the UNCST.

Regarding the number of participants recruited, the committee was asked to recruit between six and 10 different individuals for each group. This number was chosen because the typical size of a focus group is between 10 and 12 (Morgan, 2019). In recent years, however, the recommended size has shrunk to between six and eight participants (Morgan, 2019). This is most likely because that the participants are purposefully recruited because of their engagement and interest in the discussion topic and then actively contributed to the discussion (Morgan, 2019). If too many are present, each respondent may not be able to contribute in a meaningful way (Morgan, 2019). The numbers six and 10 were selected to find a nice balance between the two recommendations. All three groups fell within the 10–12 range. Still, there was no notable lack of engagement for participants because of the larger focus group size.

Focus Group Discussions. Focus group discussions were used to discuss facilitators and barriers to the maintenance of sanitation behavior and ideas for combatting slippage. The selected village community already work together in committee format and the collective response via focus group discussions continued that common practice of social and community-driven conversation (Hennink, 2007). This format also allowed for observation of group dynamics to see how the community leaders and nonleader groups functioned (Hennink, 2007; Saldaña & Omasta, 2018). To ensure open communication and lessen the male over female power dominance concern as well as the sensitivity to intimate details of sanitation behaviors, I split the nonleader community conversations by gender.

The village leader and nonleader community focus group discussions took place after the early morning harvest time but before the late afternoon midday meal. These community conversations were held on the property of the sanitation committee treasurer, a quiet venue between 1:00 and 2:00 p.m. on Monday, December 13, 2021, Wednesday, December 15, 2021,

and Friday, December 17, 2021. Once the village community members were settled into the quiet location, greetings and any acknowledgments of dignitaries present took place. After the initial greetings, I read the protocol with a moment to pause for signing the consent form. An interpreter was used throughout the entire process to ensure understanding. I read the protocol in English and paused for the Ugandan interpreter to translate the verbiage into Lusoga, the native language of those in the Namutumba district. Once the interpreter was sure there was understanding, respondents were given time to respond and sign the form. I then read the next portion of the protocol. Again, the interpreter translated to Lusoga and verified understanding. This process happened until all questions were posed, responded to, and translated. The translator wore a lapel microphone and the Sony ICD-PX Series DVR device to capture the questions and responses in English for my later transcription. Throughout the process, I asked further clarifying questions as needed. I also took notes of responses on the protocol document that was later used for analytic memos.

Upon returning from Namutumba to Jinja town, the focus group discussions and interviews were downloaded from the Sony ICD-PX Series DVR to my password- and touch ID-secured MacBook Pro computer. Once the download was complete, the file was named and loaded to an ACU Google Drive database that was shared only with my dissertation committee chairperson. While the file was loading, I prepared an analytic memo of reflections or observations made during each focus group discussion.

Document Analysis. I employed document analysis for both Kibo procedural documents and village agreement documents that were available and not deemed confidential by participants. Analyzing documents helped to gather key terminology and concerns expressed by Kibo Group CLTS practitioners and village community leadership. Documents allowed me to

code them into categories and themes, topics, concepts, and images that had contrasting or supporting notions to those found in the individual interview and focus group results (Saldaña & Omasta, 2018). There was only one document from each group reviewed. Neither proved to be noteworthy.

Community Documents. In this case, the community had developed a pact or constitution demonstrating agreed-upon guidelines for how they work together. This document primarily demonstrated efforts by the Kibo Group Mvule project and had no direct application to the study at hand.

Kibo Group Documents. Kibo Group had already made two databases available, including their Zoho Analytics website that houses internal records of baseline, first, and second evaluations of each village and the internal Google Doc “Villages Progress Board” that houses internal notes, records, and communication notes for each village Kibo Group is currently working in. In addition to these internal documents, a flip chart book used during triggering was photographed with images secured using my password-protected iPhone 12 mini device. These files were only viewed by me and only used for historical and procedural understanding. These files were not distributed to anyone and proved to be of minimal importance to the study.

Data Collection and Validation

In addition to the key informant question and interview protocol review, construct validation of data was achieved through triangulation (Saldaña & Omasta, 2018; Yin, 2009). Triangulation considers data from at least three different sources to help ensure multidimensional perspectives to help make warranted assertions about the research questions (Saldaña & Omasta, 2018; Yin, 2009). The sources included nonleader community member perspectives, community leader perspectives, CLTS practitioner perspectives, and document analysis. Theoretical

validation was achieved by ongoing research comparing the emerging information with academic research related to CLTS. Further key informant validation was achieved by discussing findings and conclusions with the CLTS practitioners and Kibo Group senior leadership. Finally, to further increase the reliability of this work, a Google folder was created so that only I viewed and reviewed the evidence beyond the final written dissertation report (Yin, 2009). The folder includes interviewer case study notes, observations of open defecation, latrines, and handwashing facilities captured in photographs, and analytic memos to capture interviewer reflections expanding upon observations and field notes to transcend the descriptive and seek richer revelatory insight (Saldaña & Omasta, 2018). The database included documents that were not deemed confidential by the community leaders or Kibo Group leadership to protect private information and the individual identities of research participants in village communities.

Data Analysis

I carefully transcribed data collected from the focus group discussions and individual interviews. Once transcribed, the information was added to the password- and touch-ID-protected Google Drive folder accessible only by myself and my committee chairperson. While the analysis was a lengthy, diligent process throughout the project, efforts focused on synthesizing, condensing, and unifying the data to provide themes that helped make sense of and provide meaningful responses to the research questions (Saldaña & Omasta, 2018).

Thematic Analysis

Thematic analysis methods were employed to identify, organize, and report themes found within the collection of data (Nowell et al., 2017). Thematic analysis offered theoretical freedom and a highly flexible approach (Nowell et al. 2017). Thematic analysis was a “useful method for examining the perspectives of different research participants, highlighting similarities and

differences, and generating unanticipated insights” (Nowell et al., 2017, p. 2). All codes were sorted into themes and subthemes to provide the major concepts for writing the research findings. For the sake of credibility and transparent reporting, the common and subthemes were systematically organized under each research question (see Table 3).

Table 3

Theme Organization Sample

Research question	Themes	Subthemes
RQ1: What are the stakeholder’s perceived barriers and facilitators to remaining ODF and combatting slippage in the maintenance phase in this community?	In Vivo themes Action themes Emotion themes	In Vivo subthemes Action subthemes Emotion subthemes

To provide rigorous analysis and trustworthy results, I used a step-by-step approach adapted from Nowell et al. (2017) to conduct the thematic analysis. The first phase began with transcribing the data and time engaging the data. The data was triangulated and all reflective notes were carefully considered (Nowell et al., 2017). The second phase included generating initial codes and sorting, analyzing, and organizing data (Nowell et al., 2017). The third phase included unifying codes to develop overarching themes to build an understanding of the research questions (Nowell et al., 2017). In the fourth phase, the themes were vetted and carefully scrutinized to ensure the code was supported by data (Nowell et al., 2017). In the fifth phase, compelling theme names were chosen to represent the data (Nowell et al., 2017). Coding frameworks and methods employed during phase two for each embedded sample unit are described in greater detail below.

Data Coding: Community Leaders

Focus Group Discussions. In Vivo coding captured phrases that seemed to “stand out” as if they should be bolded (Saldaña & Omasta, 2018, p. 121). A second coding pass analyzed

the human actions (Saldaña & Omasta, 2018) that pointed to the CLTS processes and systemic interactions between each phase. Finally, emotion coding explored the “intrapersonal and interpersonal participant experiences and actions” (Saldaña & Omasta, 2018, p. 131).

Researcher Reflective Data. The interview guide (see Appendix A) included space for my reflections to record notes and key observations during the interview. I prepared these reflective notes and the analytic memos following each interview and coded them using the In Vivo coding method for any overarching “stand-out” themes (Saldaña & Omasta, 2018, p. 121).

Document Analysis. Operating under the assumption that written documents reflect something about the writer’s perceived identity, I used the gathered documents and images to further determine the value systems, standards, and perceptions of the community leaders who created them. Documents were reviewed and coded first with the identity in mind to seek clues regarding the context of the community (Saldaña & Omasta, 2018). I further analyzed the community pact document to consider spaces of “belonging” within the community (Saldaña & Omasta, 2018, p. 74). Finally, I coded the documents to analyze processes and procedures to search for routines, rituals, or other human actions demonstrated in the CLTS intervention (Saldaña & Omasta, 2018).

Data Coding: Nonleader Community Members

Focus Group Discussions. In Vivo coding was used again to capture phrases that seem to “stand out” as if they should be bolded (Saldaña & Omasta, 2018, p. 121). A second coding pass employed process coding to analyze the human actions (Saldaña & Omasta, 2018) that pointed to the CLTS processes and systemic interactions between each phase. Finally, I used emotion coding to explore “intrapersonal and interpersonal participant experiences and actions” (Saldaña & Omasta, 2018, p. 131).

Researcher Reflective Data. The interview guide (see Appendix A) included space for my reflections to record notes and key observations during the interview. I prepared these reflective notes and the analytic memos following each interview and coded them using the In Vivo coding method for any overarching “stand-out” themes (Saldaña & Omasta, 2018, p. 121).

Data Coding: Kibo Group CLTS Practitioners

Individual Interviews. In Vivo coding was used to capture phrases that seemed to “stand out” as if they should be bolded (Saldaña & Omasta, 2018, p. 121). Consistently, a second coding pass was employed to analyze the human actions (Saldaña & Omasta, 2018) that could point to the CLTS processes and systemic interactions between each phase. Finally, emotion coding was used to explore “intrapersonal and interpersonal participant experiences and actions” (Saldaña & Omasta, 2018, p. 131).

Researcher Reflective Data. The interview guide (see Appendix C) included space for researcher reflection to record notes and key observations during the interview. These reflective notes and the analytic memos were prepared following each interview and were coded using the In Vivo coding method for any overarching “stand-out” themes (Saldaña & Omasta, 2018, p. 121).

Document Analysis. Operating under the assumption that written documents reflect something about the writer’s perceived identity, gathered planning, training, and procedural documents were used to further determine the value systems, standards, and perceptions of the Kibo Group CLTS practitioners who created them. Documents were reviewed and coded first with the identity in mind to seek clues regarding decision-making and thoughts behind procedures in place at Kibo Group (Saldaña & Omasta, 2018). The documents were coded

further to analyze processes and procedures to search for routines, rituals, or other human actions demonstrated in the CLTS intervention (Saldaña & Omasta, 2018).

Ethical Considerations

Research should consider the needs and rights of each human participant. According to the Belmont Report, three basic ethical principles should be considered in each research project (Saldaña & Omasta, 2018). These include respect for human subjects, including information protection, maximization of benefits and minimization of possible harms, and consideration of justice and balance amongst the beneficiaries of the information (Saldaña & Omasta, 2018). The principles from the Belmont Report have been widely adopted and each researcher must consider ethical practices by considering the informed consent and confidentiality of each participant (Saldaña & Omasta, 2018). Additionally, researchers make effort to ensure that sufficient information is provided to participants before the research begins (Saldaña & Omasta, 2018). Researchers are accountable for ensuring that each research participant understands the consent form and other materials (Saldaña & Omasta, 2018). Finally, researchers are asked to avoid conflicts of interest that could keep the researcher from reasonably and objectively fulfilling the duties of the research (Saldaña & Omasta, 2018).

Because this research involves human participants, rigor, reflexivity, respect, and ethical practice served as the foundation for this work. Specifically, four practices provided an underpinning for ethical research. These include solicitation of institutional review board (IRB) approval, solicitation of a research ethics committee (REC) approval, and Uganda National Council of Science and Technology (UNCST) registration, strategies to prevent coercion including the use of informed consent, use of privacy and information protection protocols, and use of conflict-of-interest accountability mechanisms.

Institutional Review Board Approval, REC Approval, and UNCST Registration

The research plan was submitted and approved by the Abilene Christian University institutional review board (IRB) before any work began. The application included notations of the benefits for sustainable development work and my relationship with the organization as a board member. This relationship with the organization minimally interfered with the ability to conduct the study. Still, the relationship is noted for ethical and transparency reasons.

To further demonstrate a commitment to conduct research in Uganda without compromising the rights and welfare of the participants and to further demonstrate an effort to respect the national governmental procedures of Uganda, this research was reviewed and approved by a local Ugandan university research ethics committee (REC) before proceeding. This approval required a \$300.00 payment. To gain final clearance, a copy of this dissertation protocol, written IRB approval from Abilene Christian University, the Ugandan university REC approval letter, and, and passport-sized photos of me were submitted to the UNCST. Additionally, a fee of \$300.00 was submitted with the online, registration application. All were approved and stamped to ensure ethical treatment of respondents.

Strategies to Prevent Coercion

To minimize coercion or undue influence, two primary strategies were employed: early communication measures and informed consent. Both took a place of prominence in the introductory statements of the interview protocol (see Appendix A and C).

Communication Measures. Within the first few moments of reading the interview protocol, I informed potential participants that their participation was voluntary and that there were no direct benefits, financial or nonfinancial, that would result from participation. It was also made clear that no Kibo Group service would be withheld from them if they chose not to

participate. The protocol discussed the primary benefit as an increased understanding of CLTS. It was made clear that participants could leave at any time during the interview for any reason with no penalty. Finally, it was explained that all records of participation would be confidential. Names and identifiable information of individuals were not included in any information used in potential presentations, final reports, or any writings for publication.

Informed Consent. Informed consent forms are central to ethical practice. A consent form included an introduction or purpose statement, a discussion of the research procedures, a statement of disclosure of any risks associated with the research, a statement of benefits anticipated, a right to withdraw clause, a promise of confidentiality, a statement of approval from the IRB committee, and a research statement with contact information for any participant that wanted to contact me at a later date (Saldaña & Omasta, 2018). I verbalized each of these and had it translated into Lusoga during the initial phases of the interview protocol (see Appendix A and C). I asked participants to provide consent by signing or making a mark on a consent form and informed them that the information gathered was confidential (Saldaña & Omasta, 2018). I also informed participants of the nature of the study, of the expectations of participants, what would be done with the information, my commitment to confidentiality, including the use of pseudonyms where necessary, and the plans to destroy data. It was my intention in the analysis and reporting phase to “bring together elements of interviews from different participants” in composite narratives to further safeguard participant confidentiality (Saldaña & Omasta, 2018, p. 194). To ensure understanding, an interpreter was present at all times. The interpreter made it clear that participants could revoke their consent at any point in the data collection phase.

Privacy and Data Protection Protocols

The protection of data and information is of paramount importance. To protect the privacy and confidentiality of participants, no identifiable names, titles, or distinguishing characteristics were used in any communication, report, writing, or presentation that resulted from this work. In addition, names, titles, and distinguishing characteristics were not used in the storage of or analysis of data. The following efforts were made to ensure the protection of the personal information of each participant for each type of data gathered during the collection, analysis, and reporting phases of this work.

Individual Interviews. I downloaded the individual interviews from the Sony ICD-PX Series DVR the same day as the interview to my password- and touch-ID-secured MacBook Pro computer. Once the download was complete, I loaded the audio files and my prepared analytic memos from each individual interview to an ACU Google Drive folder that is shared only with my dissertation committee chairperson. At this time, I deleted the original interview from the Sony ICD-PX Series DVR. Additionally, I scanned the informed consent forms using the Adobe scan iPhone 12 mini application and uploaded to the ACU Google Drive folder. Hardcopies of the informed consent forms were kept in a locked filing cabinet. After 10 years from the dissertation defense all data will be deleted from the database. Names and identifiable information of individuals will not be included in any information used in potential presentations, final reports, or any writings for publication.

Focus Group Discussions. The focus group discussions were downloaded from the Sony ICD-PX Series DVR the same day of collection to my password and touch ID secured MacBook pro computer. Once the download was complete, I loaded the audio file and reflective memo to an ACU Google Drive folder that is shared only with my dissertation chair. At this time, I

deleted the original interview from the Sony ICD-PX Series Digital Voice Recorder device. Additionally, I scanned the informed consent forms using the Adobe scan iPhone 12 mini application and loaded them to the ACU Google Drive folder. Hardcopies of the informed consent forms will be kept in a locked filing cabinet. After 10 years from the dissertation defense, all data will be deleted from the folder. Names and identifiable information of individuals will not be included in any information used in potential presentations, final reports, or any writings for publication.

Document Analysis. I employed document analysis for both Kibo procedural documents and village agreement documents that were available and not deemed confidential by participants. Analyzing documents was helpful for gathering key terminology and concerns expressed by Kibo Group CLTS practitioners and village community leadership. After 10 years from the dissertation defense, all data will be deleted from the folder. Names and identifiable information of individuals will not be included in any information used in potential presentations, final reports, or any writings for publication.

Community Documents. I loaded photographs taken with my iPhone 12 mini device and uploaded them to the ACU Google drive folder. The Adobe Scan .pdfs of community contracts, marketing efforts, and so on that were scanned while in village communities were secured in the database. My MacBook Pro computer is protected with both a password and touch ID to secure the information gathered. After 10 years from the dissertation defense, all data will be deleted from the Google Drive folder. Names and identifiable information of individuals will not be included in any information used in potential presentations, final reports, or any writings for publication.

Kibo Group Documents. These Kibo Group files were viewed by me and my dissertation chair and were used for historical or procedural understanding. These files will not be distributed to anyone. These files are kept secure on my password-protected and touch-ID secured MacBook Pro computer. After 10 years from the dissertation defense, all data will be deleted from the Google Drive folder. Names and identifiable information of individuals will not be included in any information used in potential presentations, final reports, or any writings for publication.

Conflict of Interest

Kibo Group International was chosen because of my long history with the organization, passion for the work, and accessibility to research participants. I lived in Jinja, Uganda, the current hub of the Kibo Group administrative activity for two years. The foundational rapport I have built with Kibo Group facilitators and my cross-cultural knowledge supported data collection. I am one of the founding members of the 501c3 nonprofit NGO established in 2002. I remain active on the board of directors. I had no control over and no interaction with operations or the daily activities of the onsite employees in Uganda. I do remain an active decision maker on the board of directors where we discuss vision, fundraising goals, and United States personnel matters only. In terms of objectivity, the work in Uganda has shifted dramatically since 2001 and 2002, the years of my stay, from church planting work to community development work. This shift in direction and my distance from all operational decision making provided the opportunity to remain reasonably objective throughout data collection, analysis, and reporting.

An additional potential bias includes me as the single coder and analyzer of data. Honest and open conversations with professional colleagues, such as nonparticipant leaders of the Kibo

Group organization and overseeing educational colleagues (dissertation chairperson) helped to ensure there was no deception or overlooked considerations (Herr & Anderson, 2015).

Personal Ethical Commitment

Herr and Anderson (2015) offer insight into the idea of living our ethics (p. 145). I greatly appreciate the notion that “it’s all ethics” and that our posture should be one of learning and respect (Herr & Anderson, 2015, p. 143). With this being said, I care deeply for the human participants in my study. It is not my intent to displace the Ugandan population as the experts but to sit at their feet and learn from them. The result of the research has the potential to impact the lives of Ugandans. While I may be unable to anticipate every ethical concern, I commit to addressing all that may arise as I care for the Ugandan people and seek learning.

In summary, I made every effort to protect all human participants from harm. First to protect the privacy and confidentiality of participants, no identifiable names, titles, or distinguishing characteristics were used in any communication, report, writing, or presentation that may result from this work. In addition, names, titles, and distinguishing characteristics were not used in the analysis of data. To prevent coercion or undue pressure, it was made clear that no financial or nonfinancial benefit or harm would result for those who chose to or chose not to participate in this study. This assurance was gained through clear and thorough communication of the interview protocol. Informed consent was gained before any interview or focus group discussion was held. Lastly, to discourage any conflicts of interest, honesty with professional colleagues and transparent debriefings guided the analysis of and reporting of results.

Assumptions

While undertaking this research, I assumed that both community and CLTS team members provided honest and detailed responses to the questions posed. To encourage honesty,

participants were assured of the confidentiality of their responses and the destruction of data. Additionally, it was assumed that the questions would capture the thoughts and emotions of the community members and the CLTS practitioners sampled. To ensure the depth of insight, I asked secondary questions to dig deeper and further clarify the responses provided. Finally, it was assumed that those who attend the focus group discussions were representative of the community that participated in the CLTS processes. To eliminate the possibility of interference with the data, community respondents were asked a screening question early in the interview regarding their experiences with Kibo Group and WASH projects in their particular community.

Limitations

There were a few limitations that I acknowledged, planned for, and mitigated. The key limitations logistical limitations, design limitations, memory and recall limitations, and researcher bias are discussed below.

Logistical Limitations

I operated under significant logistical limitations, including international travel cost and timing limitations, potential weather inhibiting transportation to the village location, and language barriers. Additional possible barriers included the harvest seasons and Uganda holiday calendars. I purchased airline tickets in advance and accounted for the harvest seasons, rainy seasons, and holiday calendar. The logistical limitations primarily relate to the distance and location of the community focus group discussions. The greatest logistical limitation was the language barrier. To mitigate, I hired a Ugandan interpreter who speaks fluent English.

Design Limitations

This study was based in Uganda and in just one village within Uganda. Additionally, the interviews were conducted with individuals from just one organization, Kibo Group

International. The methodology employing focus group discussions and individual interviews, which are reliant on self-reports, are susceptible to bias and limits this work. Finally, the fieldwork was limited to a one-week timeframe given Covid-19 travel restrictions and considerations of Kibo Group personnel and resources needed for travel to village and translation work. The sample size was determined in part by this time constraint. While the sample represents a limited proportion of households, the in-depth discussions and analysis of conversations found consistent themes that are robust and reached saturation, and are descriptive of the wider study population.

Memory and Recall Limitations

I assumed that the community and Kibo Group stakeholders would easily recall memories and be able to share their experiences. It is possible that some community members were unable to recall the influences on their feelings, thoughts, and process from the actual events of the CLTS intervention. To aid the recall and memory of the CLTS intervention events, I organized the interview protocol to start with a review of the process. Group members had the opportunity to share openly with the group which helped spur on memory and recall to then speak in greater detail about the facilitators and barriers and subsequent brainstorming that followed.

Willingness and Sensitivity Limitation

I assumed that those who were invited to participate were also willing to share; however, it is possible that the sensitive subject matter created hesitancy and may have impeded full, open, and honest responses within a group setting. To help combat this limitation, I worded questions to allow the respondents to speak about their “neighbor” who may engage in open defecation behaviors during the maintenance phase of CLTS programming. Additionally, the focus group

discussions were gender-specific allowing for gender-related norms or social rituals to come to the surface while lessening the fear of embarrassment.

Delimitations

The purpose of this study was to capture an in-depth understanding of the perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors by focusing on systemic influencers throughout the CLTS intervention that could contribute to sustained use of pit latrines and handwashing facilities at the maintenance phase. Additionally, this work directly sought solutions to combat slippage by analyzing the data to expose common themes. This study was not intended to be an exhaustive account of ways to improve sanitation, nor was it intended to be an exhaustive account of behavioral and theoretical approaches. While interesting, those approaches are too broad for this CLTS-focused work. Practical implications support the choices behind this work, while personal concern and passion for the people of Uganda drive the work. I hope to see those in Uganda experience healthier home lives to flourish within their context. As a result, I made purposeful decisions regarding the study population, conceptual framework choices, and methodology for this work. Each is described briefly below.

Study Population

The nongovernmental organization, Kibo Group, and the study population was chosen for several reasons. First, I am familiar with the organization, the Ugandan culture, and the logistical matters that impact the work. I sought opinions from two different groups to represent the population of those found in Uganda, a low- to middle-income, developing nation suffering from disease and death related to the practice of open defecation. The sample selected were included because they have direct knowledge of the practice and can speak directly to the CLTS process

within this chosen context. As a system's approach would suggest that directly engaged individuals must be consulted if a problem is to be solved.

Conceptual Choices

I purposefully limited this study to the maintenance phase of the transtheoretical model but did include a systems approach to understanding the linkages and interrelated elements of the phases of the CLTS process. This study features questions related to barriers and facilitators of the maintenance phase but again does not preclude the understanding of interrelated pieces of each step. I also intentionally focused on CLTS practitioner and village community member opinions about how to combat slippage, currently not found in academic literature.

Methodology

I selected qualitative approaches to capture thoughts, feelings, and opinions. This helped me explore the research questions in a manner that allowed for a more in-depth, nuanced understanding of behavior in the maintenance phase of the CLTS process within this context. Quantitative measures and statistical relationships cannot capture the nuances of the context and this case in question (Yin, 2009). The selection of embedded units within this case study allowed for the perspectives of two different stakeholder groups, including CLTS practitioners and village community CLTS participants, centered upon the pivotal questions that impact the lives of those in village communities but also the fidelity of the Kibo Group effort.

Summary

In this exploratory, single-case study with embedded units of study, I gathered data using community focus group discussions, individual interviews with Kibo Group CLTS practitioners, document analysis, and observation to capture an in-depth understanding of the perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors by focusing on

systemic influencers throughout the CLTS intervention that may contribute to sustained use of pit latrines and handwashing facilities at the maintenance phase. Additionally, through this work, I sought solutions to combat slippage by analyzing the data gathered using several coding passes to expose common themes. The work was rigorous, reflexive, and ethically shielded with IRB approval, REC approval, UNCST approval, informed consent, and procedural document protection safeguards. Last, I gave careful consideration to the limitations to ensure data collection, data analysis, and information gathering procedures were managed to result in practical learning.

Chapter 4: Results

The present study examined facilitators and barriers to the maintenance of sanitation behaviors after the completion of the CLTS process and after an ODF status had been established. Additionally, this work focused on listening to stakeholder suggestions or advice for other villages that struggle with the maintenance of behaviors. Specifically, the research questions for this study were:

RQ1. What are the stakeholder's perceived barriers and facilitators to remaining ODF and combatting slippage in the maintenance stage in this community?

RQ2. What are the stakeholder's perceived barriers and facilitators to becoming ODF?

RQ3. What are proposed solutions or advice these stakeholders would give to others who struggle to become or remain ODF?

This chapter details the findings from the five, semistructured conversations. First, findings for each of the three research questions are discussed. The second section discusses themes, codes, and an evaluation of each question. The final section of this chapter summarizes the outcomes and key points.

Research Findings

A case study was chosen to better understand and explore in-depth perceptions and experiences directly related to the process of becoming an ODF-certified village and maintaining ODF sanitation behaviors. The collected data from the individual interviews and focus group discussions, including interview notes, audio recordings, transcribed audio transcripts, and postinterview reflective notes, were thoroughly examined to understand stakeholder perceptions.

Participant Information

I purposefully did not gather specific demographic information to ensure that participants were not identifiable and trust between the interviewer and respondents was established. To be included in the study, all participants must have participated in the CLTS intervention and must have been a minimum of 18 years of age.

Kibo Group Personnel. Both Ugandan practitioners interviewed have 10 years of experience with Kibo and each a minimum of eight years of experience directly related to sanitation efforts. Both practitioners have been instrumental in the development and growth of the Kibo Group CLTS intervention efforts in the Busoga region.

Village Community Participants. This community is a smaller to mid-sized village with roughly 60 home units (T. Ngobi, personal communication, December 16, 2021). Each family unit is estimated to include approximately eight to 16 family members (T. Ngobi, personal communication, December 16, 2021). The village houses approximately 480 to 960 individuals (T. Ngobi, personal communication, December 16, 2021). A total of 31 individuals participated in the discussion groups representing up to 50% of the family units. The focus group discussion participants included men and women from the village in the Namutumba district.

Male Nonleader Community Members. Ten men designated as *nonleaders* participated in the discussion on day one. The ages of these 10 men ranged from 18 to approximately 75 (I. Bazonoona, personal communication, December 13, 2021).

Community Leadership. On day two, seven female and three male *leaders* joined a discussion. Community leadership representatives included these roles: mobilizer, committee treasurer, village health team (VHT) member, water-user committee chairperson, water-user committee vice chairperson, pastor, borehole caretaker, and local council representative. The

ages of these 10 participants ranged from 18 to approximately 75 (I. Bazonoona, personal communication, December 15, 2021).

Female Nonleader Community Members. The third focus group included 12 female CLTS participants. The ages of these 12 women ranged from 18 to approximately 60 (I. Bazonoona, personal communication, December 17, 2021).

Participant Interview Data

The semistructured individual interviews were conducted to explore practitioner perceptions of the barriers and facilitators to becoming ODF and maintaining ODF sanitation behaviors. Both individual interviews produced themes that were later confirmed by the three focus group conversations. These two participants are the most involved practitioners of the Kibo Group CLTS intervention team. Both have been instrumental in the creation and ongoing continuous improvement related to the intervention efforts. As a result, no further interviews were pursued.

Within the community, three focus group discussions were held. Data collection seemed to reach saturation by the second focus group discussion. The third conversation did not produce new themes but did affirm previously noted ideas to further support the recorded data.

Audio Recording Data

I collected audio recordings for all five conversations. These recordings were carefully translated from Lusoga, the local language, to English. Then, I transcribed the recordings into Microsoft Word and imported them into a protected Google Drive case study folder. I carefully reviewed the audio files and compared the transcriptions with written reflective notes to verify accuracy. No follow-up clarification was needed as there were no unclear notes or discrepancies

detected. The handwritten interview notes and audio transcriptions were consistent with regards to key In Vivo phrases, emotions, and actions.

Researcher Reflective Data

The interview guides (see Appendix A and C) included blank spaces for reflective data that recorded subjective and objective notes, immediate impressions, participant responses, interpretations of emotions expressed, and social interactions among participants. These notes helped to contribute to an emerging theme focused on the “unexpected” results of the new sanitation behaviors that have aided maintenance in this community.

Document Analysis

I did not gather documents from the focus group discussions that directly related to the CLTS intervention. This community did, however, produce a document for the Kibo Group Mvule economic development project demonstrating their efforts to organize and create a community charter or constitution to guide their efforts. The document was formally produced and was officially filed with the subcounty to demonstrate their community development efforts. While not directly applicable to their CLTS work, the charter demonstrated the community’s ability to organize for collective growth efforts. The Mvule intervention was initiated well after the CLTS intervention demonstrating the community’s ability to create and sustain working relationships that resulted from their initial interactions with Kibo personnel.

The CLTS Kibo Group team presented a flipchart book with images and activities used during the triggering phase of the intervention. The flipchart book discussed the methods, processes, discussions, and images to highlight the importance of ending open defecation as well as maintaining kitchens, shower stations, and rubbish pits. The flipchart book provided a visual illustration of the holistic hygiene and sanitation efforts of the Kibo Group team. This holistic

and broader-based teaching demonstrates one of the distinctive themes that emerged from the interviews.

Research Question Themes and Evaluation

After I collected and transcribed the data, I coded participant data to secure key barriers and facilitators of the CLTS intervention. These In Vivo codes represent words and phrases directly from the participant's terminology. Second, I coded the conversations to highlight the actions and processes of both the Kibo practitioners and village stakeholders. Last, I reviewed themes that represent emotion and values. For each of these coding frames, I reviewed the transcripts a minimum of five times each for these standout phrases, actions, and emotions. Initially, I considered six themes and four subthemes for RQ1 regarding maintenance barriers and facilitators. I considered five themes and three subthemes for RQ2 centered on the process of becoming ODF. Similarly, RQ3, featuring stakeholder advice for others, produced two themes and one subtheme for my consideration. Upon further analysis and two additional reviews, three underlying themes supported all three questions and could not be easily categorized into the three question constructs. After months of review and a minimum of 25 passes, not including the time spent in hand transcription and listening to the recordings, key themes and subthemes prevailed as most supported by evidence concerning the three established research objectives. These are summarized before each is discussed in greater detail (see Table 4).

Table 4*Summary of all Themes and Subthemes*

Themes	Subthemes
<ul style="list-style-type: none"> • OD is no longer a problem. • Community participants are proud of their efforts. • Community participants are oriented toward growth and generativity. • Unity supports maintenance. • Seeing and experiencing benefits supports maintenance. • Durable construction materials support maintenance. • Access to clean water supports maintenance. • Being supportive, not punitive facilitates becoming ODF. • Understanding they were “eating shit” mobilized efforts to become ODF. • Access to construction materials and tools facilitates becoming ODF. • Holistic teachings facilitate becoming ODF. • Let us show our success. • Refer them to Kibo. • Mobilization for triggering matters. 	<ul style="list-style-type: none"> • There is no “quick and easy fix.” • Village community offers to go and help.

As noted, three overarching thematic concepts superseded all others. These themes did not fit neatly under a research question but became evident as these stakeholders discussed their experiences. First, participants described open defecation as no longer a problem. The result of this recognition of their healthier lifestyle and hard work made them proud of their “happy life” and the success they have had. Last, they are now oriented toward continual growth and generativity. As an introduction, these first themes are discussed before the question-based themes are emphasized. These are listed before each is described (see Table 5).

Table 5*Overarching Themes*

Themes
<ul style="list-style-type: none"> • OD is no longer a problem. • Community participants are proud of their efforts. • Community participants are oriented toward growth and generativity.

Overarching Thematic Concepts

Theme 1: OD Is No Longer a Problem. There was “zero” slippage once they participated in the triggering and considered the relative advantages of becoming ODF. When specifically asked, “Do you see many choosing to go back to open defecation?”, one leadership focus group discussion respondent said, “In this village for sure, we don’t have any.” One male nonleader respondent said, “Before Kibo came we were practicing open defecation and we didn’t have toilets. But up to now, after Kibo came, we know—we grasp the importance of a latrine. We no longer do open defecation because we know the importance of having a pit latrine and using it.” The female nonleadership group confirmed that there was no slippage, with one group member stating, “We have not had people respond negatively.” Still, another woman from that focus group said the main reason this village has been so successful is that “Kibo came in and taught us and we never let that go. We got it fully. It is in our blood. So, we don’t need to be reminded to use our latrines.”

Practitioners also spoke of this community as being successful in ending OD. Their discussion encompassed measures of slippage and the best ways to note the end of OD. They first suggested that there is no objective way to measure success and that a simple quantitative method of counting standing latrines was insufficient to account for a behavioral change. Both suggested that it is not as much a matter of *if* a latrine collapses but *when* it collapses. Both

suggested that a better measure of a behavior change is the rate at which the latrine is reconstructed and the community support as the fallen latrine is reconstructed. One practitioner said the following:

The majority will come up with mud pit latrines. So, mostly, they are affected by rains. Cause when it rains so hard and it stops and it rains most of the week, chances are, depending on the soil type, if it's sandy soil, those pit latrines are going to collapse or just sink in even when someone has just dug it two days ago. They will collapse and sink down. And you are like "this guy was from far, from zero but after two weeks, this thing has sunk in and now he is back to zero" . . . but if you have talked from the beginning and this guy understands the value of a pit latrine, he will decide to dig a new one. 'I am trying to construct this back.' You are like "Man, this is success now." It has collapsed but he is already putting back a new one. . . Okay, if it collapses because of the weather [and they rebuild] that's a big success.

Additionally, it was noted that a secondary measure of success is the community support or unity provided during the rebuilding process. One practitioner stated,

So, for us, that data of near 100% coverage is not the only representation of the end of open defecation. Before the neighbor would chase the kids away: "Don't come to my latrine and mess up my latrine." But he learns later that if he lets the other family go back to open defecation, when the other family's latrine has collapsed, that means he also faces the danger of it. So, they tend to be flexible to say "Hey, start using my latrine for now as you reconstruct."

Both practitioners mentioned that they consider this community effort successful. They observed neighboring homes offer their latrines while rebuilding was in process. One stated the

success this way, “Over time, people never go back to open defecation because when one’s latrine collapses the neighbors are willing to accept that home to use their latrine as they reconstruct. They’d rather sacrifice their latrine to be used than let their neighbor go back to open defecation.”

In short, the rebuilding effort and community support are visible behavioral and community actions that demonstrate a deep-level change and the community commitment to remaining ODF. All stakeholders interviewed showed pride in the fact that OD is no longer a problem in this village community as evidenced by both word and behavior.

Theme 2: Community Participants Are Proud of Their Efforts. The most notable and consistent emotion demonstrated both in word and physical expression was pride. Given all the effort and new understanding, participants continually expressed how proud they were of their work. This is especially true when discussing maintenance activity and advice for other villages that may struggle to become or remain ODF. They were proud to show their homes, latrines, and community to visitors.

One male nonleader said with a wide smile on his face, “We are now living a happy life.” Another in this male nonleader group said that “health workers from district or subcounties go around to villages and inspect. They no longer come here. We know it is good.” Still another in the male nonleadership group advised other villages by stating, “Please do whatever Kibo tells you. When you abide, you will be like us in our village.”

One leadership respondent stated, “Now we are harvesting fruits. Since Kibo came, we are now clean, not only toilets, but our homes, and our neighbor’s homes. Even visitors, when they come, they buy a plot in this village because of the way we have changed.” Another leadership group respondent added the following:

These days when a vehicle comes, we are all eager. They come and see. We say, “Yes.” But before when a vehicle came, we thought, “Maybe they are coming to take me to prison.” So now, we are no longer running. Now we are comfortable. They are welcome to come and see.

A woman respondent in the women’s nonleadership group stated, “So if they come and see they will admire.” Another woman nonleader, full of pride, added, “We feel safe with one another”; and “There is harmony in this village.”

In overlap with RQ3, the village stakeholders highlighted pride with one male nonleader suggesting that he would advise others to “come and see for themselves—that what they will see here will trigger them and they will have learned something.” A second similar comment came from the leadership group demonstrating pride in their efforts when this leader stated, “We show the example. They can come and see. We become exemplary. They can see from you.”

Theme 3: Community Participants Are Oriented Toward Growth and Generativity.

The pride in their success and understanding of the benefits of being ODF were notable. Also notable was the orientation toward more growth and development. Not only did they note a desire for more education, but they also noted a desire to help others with the knowledge that they have gained.

There was a clear eagerness to learn more when the village stakeholders asked for more teaching. One male nonleader asked if Kibo “could come back with other programs.” Still another male nonleader stated his interest in “more skills” and “education.” Later another female nonleader added that she also had a desire to “learn more so that we develop even more,” as she was requesting that Kibo return with more education. One female nonleader expressed that now

that “sicknesses have been reduced” they have been “pushed forward” and that as a community “we keep on improving.”

Secondly, there was a clear desire to help others grow and to share with their children and other village communities. The leadership group expressed their generative orientation by noting how they already use their knowledge to help others grow. One explained the following:

When neighbors, either neighboring villages or new neighbors, come and visit, I tell them “This is what we do. We have stoves that don’t take a lot of firewood. If you feel like you want, we can work together to build one for you.” We work together to help those who were not here when Kibo was here.

Another leadership group respondent added, “We are now teachers . . . when I go somewhere and I see a child with that belly (distended belly due to malnutrition), I will tell them ‘You know that child is missing A, B, C.’” Another leadership group participant provided an example of this orientation when she explained her desire to teach others as an extension of her exemplary growth. She said, “We call ourselves ‘Kibo Women’ and we went to build a wood-saving stove at a nearby primary school.” This notion was supported by the women’s nonleadership group when one stated, “I will take responsibility and go and do what Kibo did here.” Still another in this women’s nonleader group expanded, stating the following:

If there is a village that doesn’t know anything, I will take that responsibility. If they come here and observe. I can make plans to go there and do the same in that village whether it is building stoves, a pit latrine, or keeping chickens. I will go and make plans to teach that village.

Research Question 1: Perceived Barriers and Facilitators to Remaining ODF

RQ1 states the following: What are the stakeholder’s perceived barriers and facilitators to remaining ODF and combatting slippage in the maintenance phase in this community. Analysis of the two individual, practitioner interviews and three village focus group discussions, audio transcripts, documents, and researcher reflective notes were used to address this question. Four central themes emerged from the data (see Table 6).

Table 6

Themes for Perceived Barriers and Facilitators to Maintenance of ODF Behaviors

Themes
<ul style="list-style-type: none"> • Unity supports maintenance. • Seeing and experiencing benefits supports maintenance. • Durable construction materials support maintenance. • Access to clean water supports maintenance.

Unity Supports Maintenance. A consistently noted concept for maintenance was the importance respondents placed on being unified in their efforts to remain ODF. Helping one another and being interdependent supported maintenance in this community. The village stakeholders realized that if their neighbor was not using their latrine that they were in danger too.

One practitioner stated, “The community has to embrace the idea of good sanitation behaviors. That is the determination and decision of the community. The recommendation of every member is to end open defecation.” Later he added, “It is your responsibility to also get your neighbor to have a latrine. That is the only way you are going to feel safe. It starts from then. People feeling that I am only safe when my neighbor is safe.” The second practitioner interviewed said that

they have to keep the cycle. We tell them that “Kibo is not here forever. So, you have to realize now that you have to take on the mantle. You have to every time, every year, every month, every rainy season, you have to keep checking on each other.”

The other practitioner stated the following:

Over time, people never go back to open defecation because when one’s latrine collapses, neighbors would rather sacrifice their latrine to be used than let their neighbors [whose latrine collapsed] go back to open defecation.

One male nonleader respondent stated that if “you are united you won’t feel jealous . . . because when you are united you feel like you own that thing. So, I say ‘unite, unite, let’s come together.’” A leadership focus group member spoke of unity by stating the following:

So, unity. Before Kibo came everybody was on his or her own. But these days we are together. If you have a problem, we sit as a community and deal with it together. Not as it used to be—everyone on her own.

When asked if village community members have reverted to OD, one female nonleader added, “We are developing together. It’s because Kibo taught this village how to work together and how to be united. That’s why when one goes to another, they welcome the ideas and don’t respond negatively.”

In response to a question about the decision-making process to change and maintain behaviors, one practitioner said that “that is there because there are neighbors who will say, ‘Hey, we are going to help you. We are going to come, and we are going to help you. We are going to build this together...’” This practitioner continued to explain that if they realized that if a neighbor slipped back into OD that they were also in danger they would “do it collectively” creating a situation where the community would “never go back.” Later, the same practitioner

explained that it is important to impress upon community members that their actions may cause a neighbor's child to go to the hospital and vice versa.

When asked what was difficult about maintaining the ODF behavior, one male nonleader said, "We keep visiting one another. When Kibo is not here we keep on encouraging one another. That's why we have maintained." When probed a bit further about what he meant by "working together and encouraging one another," he followed by stating that "you have to go to your friend with love and when you have love you help bring a pole or nails or you push the hand in the pocket and help each other." One man from the leadership group also described the unity effort as "encouraging one another" as a source of holding one another accountable. A female from the nonleadership group spoke of the unity efforts in a similar fashion when she said, "Committees move around. They ask, 'What's the problem?' and then they encourage them. So, they go and encourage and if they need to be helped, they help each other so they remain on the standard."

Seeing and Experiencing Benefits Supports Maintenance. Another consistently noted idea connected to maintenance was the use of observation or being able to see and experience the benefits of the sanitation changes. Participant responses revealed that the single greatest facilitator to maintenance was a true awareness of the relative advantages of being ODF. Participants clearly articulated that they could see the community benefits of their efforts. These village stakeholders described the fact that the local pharmacy and clinic have gone out of business because they are no longer visiting regularly for medicines to address the hygiene-related illnesses they were previously dealing with; the notion that visitors to the village openly express a desire to move there because of the clean environment; and the observable improved quality of life related to personal hygiene, to name a few. One male nonleader said it this way:

Since Kibo came and taught us about hygiene and sanitation, we used to spend money. But after Kibo came, the spending of monies in hospitals and poor hygiene related diseases is not spent on hygiene-related health problems. These days our suffering is not related to poor hygiene and sanitation. And also, that drug shop that was within, we don't know where they have gone. It is no longer in business.

Another from this same male nonleadership group followed: "Health workers from the district or subcounty go around to villages and inspect. They no longer come here. We know it is good." Similarly, one from the leadership group stated, "We decided to do what we learned, and we no longer spend money on feces [these diseases that are related to filthiness—to poor sanitation].

Another female leader added the following:

Good fruits are coming out. Before Kibo came, we had domestic violence. When a child is sick the mother asks the husband for medicine. The husband would become rude:

"Where do you expect me to get the money?" But now, there are no more sicknesses. We are safe.

Still another male from the leadership group said "People are healthy. There are no sicknesses."

One from the female nonleadership group shared, "Sicknesses have been reduced and it pushes us forward." Still, another female nonleader added, "We may become sick, but now it is not diarrhea. Even if there is sickness, it is not related to poor sanitation."

Unexpected and indirect benefits were observed by the village participants as well. For example, several mentioned that a marriage was restored and that the community now has better conflict resolution strategies because of the tools and support provided throughout the holistic programming discussed further below. One female nonleader said the following:

When Kibo came they taught us that we are created differently, and everyone has their personalities; we are different. But when Kibo came they taught us how to deal with these different personalities, mostly between husbands and wives. If you are married to a husband that doesn't want to bathe or who doesn't want to brush, it is your responsibility as a wife to think of a way to help your husband out of that.

Last, the female nonleadership group added, "Kibo taught this village how to work together and how to be united." Still another unexpected observed benefit is confidence. One female leader stated, "Before Kibo came I used to think 'I can't do this, I am just a woman. Ah, I never went to school. I can't do this'! But when Kibo came we have that esteem. Kibo brought in confidence."

Durable Construction Materials Support Maintenance. Kibo Group practitioners shared that they offer construction support by providing dimensions and guidelines for latrine construction, but that they do not mandate that any certain material be used. With that, the durability and cost of construction materials varied greatly. The more expensive and durable materials, such as bricks for the structure and iron sheets for roofing, were cost-prohibitive to some. The Kibo practitioners noted that they stressed the variety of local options available and emphasized that roofing is a vital element of a latrine.

The practitioner and focus group respondents all mentioned construction materials and methods as a maintenance challenge. One practitioner stated it this way:

There are so many factors that affect them. A big storm is going to come, and these are not constructed out of concrete and modern brick or cement. No. They are constructed of local materials with a mud floor that's rough thatched, sometimes it's a mud wall. And sometimes a big storm comes, and it collapses, and it caves in...

The other practitioner stated it this way:

It becomes really hard . . . because people don't construct permanent pit latrines.

Permanent is like you have to get bricks, you have to get cement, you have to get iron bars and iron mesh. You have to dig like 30 feet or 20 feet or something like that. But because people can't afford it. It's expensive.

The focus group discussions affirmed the practitioner perspective. One male nonleader said, "If it is not roofed and when it rains it becomes mud, gets soft, and falls in. But if it's roofed, whether it's grass or what, it remains strong." Without a roof "it would go for one year. With a roof, it will now go for five or 10." The female nonleaders also noted construction concepts when one stated the following:

The challenge of maintaining a pit latrine, is that most people have the walls that are mud. So, if the roof is not there the rains come and it rains on the base that is dirt. So, it softens and collapses. So, that is also a challenge.

Access to Clean Water Supports Maintenance. Sanitation behavior maintenance is also dependent on proximity to clean water. In this case, following the ODF certification, Kibo Group practitioners worked with the community to dig a new well—borehole. While the practitioners did not note the significance of the borehole to maintenance, it was consistently and often noted by the village stakeholders as supporting their efforts to continue with their holistic sanitation practices, including but not limited to using pit latrines, bathing, dishwashing, teeth brushing, and washing hands. One from the male nonleadership group offered, "Another thing, Kibo brought clean water and we stopped sharing with frogs and cows so that the water we have is now clean." A respondent from the leadership group said it this way when asked about an unexpected benefit of the CLTS program:

First of all, we didn't expect to get a borehole. Before the borehole, we were getting water from far. And we were sharing with frogs and animals. Children would go and urinate in that water, but when we got that borehole, we are no longer passing diseases, water-borne diseases.

Another female leader added that

before Kibo came, we were having the problem of looking for water from distances. If we had dirty clothes, we would pile them because we would not feel well enough to walk and we'd put the work off till tomorrow—if it rains. If it doesn't rain, the clothes pile and pile but now even a child can go with a small jerry can and draw water from the borehole and everything is simple for us.

A church leader immediately followed with the following:

People are healthy now because before they'd go to the borehole, the church was empty. You have like five people and the pastor would say, "Why don't you come for prayers? You have forgotten God." But for sure they were sick, but now the church is good.

The female nonleaders, the last to be interviewed, only confirmed the importance of access to clean water. One of these female nonleaders stated the following:

The borehole has helped hygienically; things are getting along well. After using the pit latrine, you need some water, which is now available. Thank you, because before it was hard to go in the bush; you couldn't waste your water again that you use to cook and wash. But now Kibo has made it easy for us.

Another female nonleader added, "After the borehole and after all of the home improvement campaign the sicknesses reduced." Still another female nonleader said,

The borehole has changed us so much . . . we used to be dirty women. We were not washing because we didn't want to but because the water was very far. And even if it was very far you could go to the swamp and wait for the water and if it dries up you come back without. What little water we had, we had to use to wash and cook with.

Research Question 2: Perceived Barriers and Facilitators to Becoming ODF

Research question 2 was the following: What are the stakeholder's perceived barriers and facilitators to becoming ODF? In essence, this question addressed the process of becoming an ODF-certified village. Analysis of the two individual, practitioner interviews and three village focus group discussions, audio transcripts, documents, and researcher reflective notes were used to address this question. Four themes and one subtheme emerged from the data. These are summarized (see Table 7) and then described below.

Table 7

Themes and Subthemes for Perceived Barriers and Facilitators to Becoming ODF

Themes	Subthemes
<ul style="list-style-type: none"> • Being supportive, not punitive, facilitates becoming ODF. • Understanding they were “eating shit” mobilized efforts to become ODF. • Access to construction materials and tools facilitate becoming ODF. • Holistic teachings facilitate becoming ODF. 	<ul style="list-style-type: none"> • There is no quick and easy fix

Being Supportive, Not Punitive, Facilitates Becoming ODF. All respondents noted that Kibo Group's supportive, not punitive, way was a facilitator to this community's success. Most specifically, they appreciated the affirming way that Kibo approaches sanitation efforts within communities, which is a stark contrast to traditional governmental approaches, which are fear-based and firm. Widely-used traditional, local methods to end open defecation engage governmental force by calling on local police to enforce the use of latrines. Additionally,

traditional governmental efforts include the use of village health team (VHT) workers as cheerleaders for hygiene. Police enforcement, fines, and even jail time have also been used to encourage change.

The methods have not demonstrated notable success. One practitioner put it this way: “You don’t want people to think, ‘Ugh, sanitation has been around for a long time, the government has done everything. They have tried. They have forced.’” The other practitioner said the following:

Our role when we go back every week is to just check on them to see what they are doing and to encourage them and to appreciate them because appreciation is very key . . . It’s more than just saying “Do it this way.” Rather, we appreciate them for what they are doing . . . how they are progressing—just to say “Hey, man, thank you for what you are doing for your family, thank you for what you are doing for your community. Thank you for what you are doing for yourself. It’s just wonderful.” That just pushes the button for motivation.

The other practitioner added, “We tell them that ‘Kibo is not here to arrest. We are here to discuss, to have a dialogue, to see how we can change, to see how we can come out of this problem that we’ve all realized we are in.’”

Focus group participants also appreciated the contrasting strategies and each one noted it again and again. Two comments from the male nonleader group included: “Kibo came in a friendly way,” and “Kibo walked in all homes, teaching people.” The leadership focus group shared the same sentiments when one respondent offered that “Kibo came to help. Kibo helped as a friend, too.”

A part of this supportive effort includes an emphasis on trust-building and encouragement. Both practitioners spoke of a concerted and persistent effort to build trust with the community as they go home to home. When asked, “What’s the conversation like when someone is feeling embarrassed by their behaviors? How do you handle those moments?”, one practitioner responded with the following:

Yeah, actually, it’s a very big challenge in the beginning. The first one month is really a challenge . . . like people are running off . . . or they’ll be very defensive. We just have to keep talking to them . . . and after some time and if not on the first one or two times, the fourth time he will be around, and you talk to him.

This same practitioner used the word “encouragement” more than five times during the interview. The other practitioner stated, “We take a different approach of appreciating that person.” This practitioner used the words “appreciation,” “empower,” and “encourage” as he described the trust-building approach. He added the following:

We value making that person realize that ‘you know what? Kibo is not just abusing me.’ That alone in that person’s mind is something he has not heard in a long time. So, it changes the way they embrace the change and the work they are doing.

Understanding They Were “Eating Shit” Mobilized Efforts to Become ODF. While triggering is a pre-maintenance step of the CLTS process, it became clear that maintenance begins at triggering and is also instrumental in the continued decision to remain ODF. Most specifically, the use of fecal-to-oral demonstration served as a novel and relevant visual that incited the realization that they were “eating shit.” This understanding compelled actions to become ODF that continued to resonate in the maintenance phase.

One practitioner spoke of triggering by stating the following:

We have to show it practically so that people can see it is dangerous in their lives. We can get a specimen from any of these homes—fecal matter in the open. So, I pick it up and take it to the meeting point . . . to demonstrate how feces and how flies will be able to move germs from the feces to the food that people eat.

A male nonleadership respondent, referring to the transfer of feces to food, offered the following:

When Kibo brought triggering, it showed us that whenever we eat food, however much you love that food, if you have eaten, please cover it. You may not know that you are eating feces. Kibo told us that when you leave your food uncovered you are eating poison.

Another male nonleadership respondent said that

since triggering all of our eyes have been opened and we realized that we have been eating feces. But since then, we wash our hands. For sure even when we are walking in the bush, taking the goats, it is even hard to find a pile of feces out there.

A leadership group respondent said it this way:

Kibo came with cooked rice on a plate, and he would get feces from within. They put feces near the table and a bottle of open mineral water. When teaching, we could watch those flies go back and forth on the food and on the bottle. So, I saw how I am eating feces unknowingly. Since then, I was forced (compelled) to dig a pit latrine.

Finally, one female nonleader added that it was watching the flies go from feces to food that “turned her mind” to building and using a pit latrine.

While not noted as often, the second most-mentioned triggering influence is worth a brief discussion. Respondents felt the weight of the financial danger once the medical cost calculation illustration was introduced. Recognizing the financial burden of the medical bills and the

potential opportunity for spending funds in better ways also motivated their posttriggering activities. One practitioner spoke of the realization of communities as they calculate medical costs: “People realize that, man, we are all dead. We are. This is the reason why our children are sick; this is the reason that we cannot save anything to look after our children, to pay school fees.” One from the male nonleader group said it this way: “Since Kibo came and taught us about hygiene and sanitation, we used to spend monies in hospitals and poor hygiene-related diseases. These days our suffering is not related to poor hygiene and sanitation.” A female in the leadership group said, “Before Kibo came, we were spending money going to the hospitals.”

Access to Construction Materials and Tools Facilitate Becoming ODF. Many technical challenges, including soil, weather, construction materials, construction methods, and cost associated with digging and constructing a latrine were noted as a challenge to becoming ODF. However, these barriers did not inhibit the posttriggering action. The respondents reported being highly motivated to end open defecation and address the other hygiene-related deficiencies they had become aware of during triggering.

Still, the challenge of construction design and materials was commonly noted. These were discussed above. Considering the immediate posttriggering activity, though, the respondents added a more specific discussion of local materials, tools, and design support. Practitioners spoke of the pickaxe program and the provision of some tools as helpful support. Kibo Group practitioners described efforts to remove barriers where possible. One practitioner explained that they lack the budgeted funds to provide each home with digging tools, but that they do provide a few tools to the committee. The committee then creates a check-out system of sorts. The benefit of providing some tools, as described by one practitioner, is that the post

triggering effort can begin while village members are “ignited” or “catching the wave” of motivation. One practitioner stated the following:

At Kibo, we feel it is necessary to provide help with pickaxes and shovels. In some instances, they are like incentives and in some, they are not. As you go into a community, you’ve done the triggering, and you finally understood that you want to move. I call it “catching the wave on the ocean.” If you’re surfing and you miss that wave, that big wave, it’s gonna be hard for you. So, for me, I look at that moment as a time to empower people with tools they need to execute this.

Later the same practitioner said, “We guide that person in how they design it and how to construct it.” The second practitioner stated, “We give spades and the pickaxes which are now in charge of the committee. We realize the village may only have one pickaxe to dig graves for someone who passes on in a village. So, they can reserve a pickaxe.”

Village focus group respondents added the use of local materials and the appreciation that Kibo suggested ways to use items they have readily available in the bush around their homes. “Kibo helped us use the materials that are local and available to do a better thing, because many of us had a latrine, but many were not roofed,” stated one male nonleader. Another added, “So, it would go for one year, it will now go for five or 10.” The leadership group added a discussion of using local materials to replace those that they typically have to buy. “There were some who thought that it was only soap that would help, but Kibo told them that ash does exactly as soap.”

Holistic Teachings Facilitate Becoming ODF. As previously mentioned, open defecation is no longer a problem. When asked their opinion about why and how this phenomenon has come to be, many noted the holistic program of CLTS (inclusive of handwashing, dishrack construction, and rubbish pit digging, to name a few), but also the

additional teaching and demonstrations by other Kibo Group program teachers that included tips on gardening, building chicken coops and raising chickens, constructing safer stoves from local materials that use less firewood, planting trees to support reforestation and their construction and reconstruction needs, and communicating with one another aiding conflict resolution.

One male nonleader stated “When Kibo came it brought many programs, many lessons. That we use many things around us, like trees, keeping chickens, goats, and other things that help us in our daily lives.” Another from this group said it this way: “Let me add to the toilet. We have dishracks, smearing of houses, kitchens with modern stoves that don’t require a lot of firewood. Kibo has changed our ways from the level one to reach level four or five.” The leadership group focused on health teachings by stating that

Kibo brought in health teachers. We had children who had big bellies. But before Kibo came, we thought those children were good and healthy that they were becoming fat because of good food not knowing they were germs, but when Kibo came, they taught us what to feed those children.

Another added, “Now we are teachers. If we go somewhere and we see a child with that belly, we will tell them, ‘You know, that child is missing A, B, C. Do this and take the child to the VHT.’” The female nonleadership respondents appreciated the additional teachings as well. One added “Alex Balumbye came, and that guy taught us a lot. That all the village has no trees. He taught us how to plant trees. We were walking with him in the bush, and he brought trees.”

Another stated, “Kibo has taught us many things—how to rear goats, keep chickens. We have chicken coops and others are getting small monies from building these coops for others.”

Another in this group noted that “Kibo brought this new thing of building a stove that uses less

firewood and she taught us the process until we learned how to build one. These days we no longer have fire accidents.”

Respondents also emphasized Kibo’s inclusion of conflict and communication skills: “Kibo has taught this village how to work together and how to be united. That’s why when one goes to another, we welcome the ideas, and we don’t respond negatively,” said one of the respondents. To support this statement another female nonleader added that

Kibo brought teachers who have been teaching us many things like if you are going to speak a word, first think of that word through three sieves. After you’ve sieved that word and that word will not hurt the other, you can go talk to the neighbor. That has helped us to be good friends and good neighbors.

These communication and conflict resolution skills were commonly noted as respondents shared many stories of familial conflict and community conflict over latrine construction and participation in the program at large. These were all settled successfully, but conflict was discussed as a hindrance to quick progress. In response to a question about those who are “unhappy to change,” one male nonleader stated, “We could see that they had their friends who can communicate better so they will not feel bad. We would look for somebody who could say it better, say the right thing in the right way, and in the end that person changed.” A leadership focus group respondent spoke to a community conflict of a man who had left the digging responsibility to his wife by saying the following: “You continue. Maybe you change the approach. You go in a loving way. And you be a friend. You also bring his friend and the friend talks.” The women nonleadership group also spoke to conflict communication teachings during the process of becoming ODF when one explained, “We have learned that there is a better way to talk to our husbands, not with quarrelling or telling him ‘what-what.’”

There is no Quick and Easy Fix. During the discussion about becoming ODF, a subtheme emerged featuring the necessity of one-on-one conversations and individualized solutions to address the micro-matters that arise. In short, there is no one-size-fits-all approach as each family unit's needs are unique. Stated differently, all stakeholders recognized that there is no quick and easy fix. One practitioner stated, "Behavior change is a gradual process in a village." The other acknowledged that "It takes time to dig. It takes time to construct. It takes time to replace." Given the village's extensive effort to become ODF certified and to complete all of Kibo's available programming, one member of the male nonleadership respondents said, "I don't want to waste that time, so it makes me think of how not to go back to where I was." Another male nonleader suggested that "it is now in our blood after this period of time" and they will not lose out on all the effort spent in terms of time, money, and energy.

One practitioner suggested that this time and energy included individualized, hands-on efforts. He stated that

when you spend more time with a person, one-on-one, when you leave, the rate of implementation of what you shared with them is higher than the person you just meet and just pass through their home . . . We felt like sometimes, it is a little bit slower, but we are into the one-on-one much more relationship building, much more time invested in people.

The second practitioner stated it this way:

We move household-to-household, like home-to-home. These meetings are face-to-face with the household owner, like the household family. So, when you reach a family, you have to meet the father and mother, now this is an opportunity to have a talk together.

The practitioners described the importance of providing support by offering specific guidance:

So, we give them the measurements of and tell them how a pit is dug. So, when you go and you just check on them and they say “Hey, come to my house and come see what I have done and guide me a little bit,” you have an opportunity to help.

Focus group respondents also discussed how they valued the one-on-one communication approach. One male nonleader stated, “Kibo walked in all homes.” They valued this approach so much a respondent from the village leadership focus group added that they mimic the individualized communication that had been modeled when she said, “As Kibo left, we stayed behind, and we would visit each other. When we saw that one was lagging behind, we encouraged him, even helped him, if it’s maybe a toilet or a dish rack.”

Research Question 3: Advice for Those Who Struggle to Become or Remain ODF

RQ3 is the following: What are proposed solutions or advice these stakeholders would give to others who struggle to become or remain ODF? As qualitative research is iterative, it should be noted that the original hope was to focus specifically on maintenance efforts in this village community. Because the respondents indicated early on that slippage was not an issue, this question shifted slightly to consider what advice they would give to villages that were struggling to maintain ODF and sanitation behaviors. Analysis of the two individual, practitioner interviews and three village focus group discussions, audio transcripts, documents, and researcher reflective notes were used to address this question. Three key themes and one subtheme emerged. These are summarized (see Table 8) and then discussed below.

Table 8*Themes and Subtheme for Advice to Those Who Struggle to Become or Remain ODF*

Themes	Subtheme
<ul style="list-style-type: none"> • Let us show our success • Refer them to Kibo • Mobilization for triggering matters 	<ul style="list-style-type: none"> • Village community offers to go and help

Let Us Show Our Success. One of the most discussed concepts is the idea of observation and seeing the benefits of a sanitary lifestyle. Related to this and the superseding pride motivator mentioned earlier, one male nonleader suggested that he would advise others to “come and see for themselves—that what they will see here will trigger them and they will have learned something.” A second comment came from the leadership group. This leader stated “We show the example. They can come and see. We become exemplary. They can see from you.” Another from the leadership group added, “I am a VHT [member]. I will make plans with the VHTs to teach that community. And then bring them here to see.” Additionally, a female nonleadership group member said, “So, if they come and see they will admire and from that admiration, ask questions.”

Village Community Offers to Go and Help. A subtheme closely related to wanting others to come and see their success emerged. This subtheme, offering to go and help, has commonality with the preciously noted desire for growth and generativity. One male nonleader suggested that he would be willing to “go to those villages and help them physically even if we have to show them do it like this or do like this.” This ambassador concept was also mentioned in the leadership focus group. This particular leader stated, “I will go and invite them to come to see. So, after seeing they will go back and if things are not going well, we can then go and help them. But after they have observed first.” Sharing the Kibo way and becoming ambassadors to other

villages was also highlighted in the female nonleadership group as one mentioned that “I will take responsibility and go and do what Kibo did here.” Still another in this women’s nonleader group expanded on this and stated that

If there is a village that doesn’t know anything, I will take that responsibility. If they come here and observe. I can make plans to go there and do the same in that village whether it is building stoves, a pit latrine, or keeping chickens. I will go and make plans to teach that village.

Refer Them to Kibo. Participants suggested that future challenges will be faced directly using the social and community development tools they had learned throughout the holistic and sequenced supportive demonstrations and teachings used by the Kibo Group. While not worthy of a theme or subtheme designation, it was striking that throughout all interviews the participants could not isolate their experience to Kibo Group’s CLTS intervention. Rather, the participants cited each of Kibo Group’s efforts in their village that spanned over a year’s time and effort. They noted women’s empowerment and the stove project, nutrition and health education, economic development, and school-aged life-skills knowledge as supportive of their inclusive sanitation and maintenance effort. It is this that they wanted to share with other village communities. Suggestions were made for a referral program or application process so that others could experience the same holistic growth that they have. One in the leadership group said, “This is the thing that worked for me and . . . I will advise them to write an application and send it to Kibo.” A female nonleader said, “Another thing, they can do is advise them to write an application and take it to Kibo.”

Mobilization for Triggering Matters. While it was not a suggestion that would have crossed the mind of the village stakeholders, both practitioners mentioned the importance of

triggering and mobilizing village members to attend. Given the importance of the “eating shit” facilitator to becoming ODF, it begs mention as key advice for other practitioners. Triggering is the first opportunity to build rapport and trust with the broader village community. As such, mobilization or encouraging the community to attend the triggering event surfaced from the practitioner perspective. The practitioners explained that at the initial onset of a triggering, village community members must be mobilized to attend. These practitioners have a goal of 100% attendance, and the practitioners addressed how best to mobilize communities for attendance and how best to market the Kibo Way as a contrast to the established models that “have been around for a long time.” One practitioner said, “Mobilization is very important—it is very key. It’s like the icebreaker . . . You have to engage the leaders to mobilize everyone, mobilize everyone, mobilize everyone,” The other practitioner said, “You have to have a very good mobilization strategy, then you are able to achieve all that [triggering] in one day. If the mobilization strategy fails, then you’ve pretty much failed.” In line with this mobilization effort, one practitioner highlighted that “leaders need to know that for any change to take place in a village, change starts with them before all the people can embrace it. The leaders also need to remain pro-active and own the CLTS approach at all times,” and this starts at mobilizing their fellow community members to attend the triggering. Once mobilized to attend triggering, the community effort begins after triggering.

The previously noted theme of community and unity starts that day at triggering. One practitioner stated it this way:

Village members should have a unified understanding of the benefits of improved sanitation and hygiene in their village. All changes start with the village members realizing their shared problems in poor sanitation. And together, commit to putting an end

to such problems like diseases related to poor sanitation and hygiene, etc. . . Village members should act as a unified unit and should be supportive of each other during the process in order for all to experience the change and the new life.

Summary of Key Points

In this chapter, I provided the findings from the qualitative, exploratory case study that sought stakeholder perceptions on the barriers and facilitators to becoming and remaining ODF with a focused effort to learn more about maintenance of behaviors. Three themes superseded and overlapped with others that include the perception that OD is no longer a problem in this community, that there is pride in and a recognition of the value of the “happy life,” and they are now oriented for more education and growth.

Unity, seeing and experiencing the benefits of being ODF, durable construction materials, and access to clean water support the maintenance of ODF sanitation behaviors and addressed the stakeholder perceptions regarding barriers and facilitators to combatting slippage in the maintenance phase. Intervention methods that are supportive rather than punitive, understanding that they were “eating shit,” access to latrine construction tools and materials, and one-on-one, holistic teaching facilitated becoming ODF were the resulting themes from RQ2 focused on stakeholder perceptions of barriers and facilitators to becoming ODF. While slippage is not a current concern for this village two years post-ODF certification, respondents provided advice for supporting maintenance at other locations that may be struggling to become and remain ODF. Community stakeholders emphasized others coming to the success of this village and a willingness to go help as well. Practitioner-related advice featured mobilization for the triggering event at which the effort to build a unified front needed to support the end of open defecation begins.

In the following chapter research limitations, key findings in relation to existing literature, implications, recommendations for CLTS practitioners, and suggestions for further study are discussed.

Chapter 5: Discussion, Implications, and Recommendations

The practice of open defecation and leaving the feces exposed predisposes people to diarrheal disease (Njuguna, 2016). Diarrhea is credited with 600,000 deaths in children under five each year (Wolf et al., 2018). Open defecation has also been linked to adverse consequences including infectious diseases (Wolf et al., 2018), poor nutrition (Jacob Arriola et al., 2020), and reduced mental well-being (Delea et al., 2019). CLTS has been utilized to increase latrine ownership and latrine usage to decrease the practice of open defecation (Gebremariam et al., 2018; Pickering et al., 2015; Tessema, 2017; Venkataramanan et al., 2018). Change leaders have shown interest in the differing phases of CLTS; few, however, have considered maintenance as a collective impact of all three phases within the larger complex system (Valcourt et al., 2020).

The purpose of this exploratory case study research was to better understand village community members, village leadership, and CLTS practitioner's perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors of CLTS programming in Uganda, East Africa. I utilized two individual interviews with CLTS practitioners and three focus group discussions with village community stakeholders to gather the perceptions of processes and solutions to support the maintenance of sanitation behaviors. All sample participants had direct knowledge of and experiences with this particular CLTS intervention.

Chapter 5 includes a discussion of findings as they relate to past research. Then, I discuss research findings through the lenses of the established conceptual frameworks. Next, the limitations of the study and how they were addressed are highlighted. Finally, recommendations for practice and research and implications of the findings are presented.

Discussion of Findings and Existing Literature

In this section, the themes and subthemes are discussed in relation to current literature. The discussion is organized underneath each theme to discuss how each finding supports, refutes, and/or extends current CLTS knowledge and practice.

Overarching Themes Evaluation

Three overarching or superseding themes that did not directly address a single research question were found: (1) OD was no longer a problem, (2) community participants were proud of their efforts, and (3) community participants were oriented toward growth and generativity.

Theme 1: OD Was No Longer a Problem. Researchers do not agree on the best ways to improve and maintain sanitation behaviors. Most do, however, agree that context-specific research is necessary for understanding of slippage behavior (Garn et al., 2017; Hulland et al., 2015; Venkataramanan et al., 2018). This finding demonstrates that positive and long-lasting results are possible. The notion that this community no longer struggles with open defecation is a context-specific designation. It is well understood that CLTS results vary based on the intervention methodologies, skills of the practitioners, and context-specific considerations (Kar & Chambers, 2008; Venkataramanan et al., 2018). As a result, this finding cannot be directly compared to other locations or current literature.

While there is minimal evidence on sustainability and the maintenance of behavior change, outcome data has been presented in four main areas including sanitation and hygiene knowledge (Lawrence et al., 2016; Okolimong et al., 2020), diarrheal disease (Cumming et al., 2019; Njuguna, 2016; Pickering et al., 2015; Soboksa et al., 2019), latrine construction/coverage (Crocker et al., 2016a; Harter & Mosler, 2018b; Tessema, 2017; Yeboah-Antwi et al., 2019) and latrine usage (Gebremariam et al., 2018; Gebremariam & Tshehaye, 2019).

Regarding success measures, however, this study supports the narrative related to the difficulty of slippage measurement and the inconsistency in measures. A USAID (2018) report on the impact of CLTS stated that it is challenging in part because it is not clear what should be measured. Some accept the argument that CLTS is about the elimination of open defecation and choose to count toilets as an indicator or outcome that the community no longer openly defecates, while others assert the existence of a toilet does not capture the use or the end of open defecation (USAID, 2018). Still, other governing bodies, such as the Joint Monitoring Project, measure success by categories along the sanitation ladder (see Figure 2).

This work extends beyond current literature regarding measurement categories to assert that the rate of rebuild or reconstruction after a latrine collapse and the social or community behaviors supporting the rebuild may be more appropriate measures of a deep-rooted behavioral change.

Theme 2: Community Participants Were Proud of Their Efforts. Pride was an ever-present emotion as residents shared their experiences of becoming ODF. Participants also discussed pride as a motivator of maintenance of ODF behaviors.

This finding supports current CLTS knowledge. Two studies in Nepal (McMichael & Robinson, 2016; McMichael, 2018) indicate that appropriately used social pressures, including civic pride, affiliation with new norms, and collective action, are all drivers of sustained hygiene behavior. A third more recent finding from a Malawi community-based water, sanitation, and hygiene intervention notes the importance of social outcomes, such as self-esteem and civic pride, as they have a significant positive impact on both the individual and the wider community (Malolo et al., 2021). Venkataramanan et al. (2018) also found in the systematic review of CLTS

evidence and its quality that pride, improved health, and dignity are more often noted as universal triggering motivators.

Theme 3: Community Participants Were Oriented Toward Growth and Generativity. The third overarching theme highlights growth orientation and a desire to help others. This desire for growth and continuous improvement and the desire to give to others by helping them improve was remarkable. Perhaps this was context-specific and because the village was a tight-knit community. Perhaps it was directly related to CLTS and Kibo processes. Erikson and Erikson (1981) speak of generativity as striving to create, nurturing things that will outlast, and seeking to contribute to future generations. Developing generativity has several important benefits, including better health, positive relationships, greater productivity, greater fulfillment, increased community involvement (Erikson & Erikson, 1981). Notably, the things that create generativity, including a feeling of inclusion, pride in work, taking responsibility, making contributions, and feeling productive (Erikson & Erikson, 1981), were all present in this location. Interestingly, this generativity was present in a village in Uganda, a developing nation, where most would assume there is little hope. From the outside, one might also argue that basic needs were barely being met. However, the CLTS processes have helped with basic needs, the lowest level of Maslow's (1962) hierarchy of needs. Yet, generativity and desire for continued growth, akin to self-actualization, are high on Maslow's (1962) hierarchy. It may be that their basic needs were already met, or that the path to self-actualization was different depending on the cultural context, but there was a notable desire for growth in this community that may well be connected to development processes.

While the concepts of growth and generativity are not directly noted in CLTS literature, a discussion within the macro-level concept of transformational and sustainable community

development championed by Robert Chambers, the co-creator of CLTS, speaks a similar view in his discussion of development as an element of well-being. This perspective asserts that development work should seek to grow or increase a person's capabilities through education and practice as they look toward a better life (Chambers, 1997 as cited in Myers, 2011). Chambers' idea includes a concern for what people are capable of being as well as what they are capable of doing and adds values formation to the expanded development conversation (Myers, 2011). It could be argued that this theme demonstrates that the community had formed new values of growth and generativity through their community development effort. The effort to overcome traps of poverty, Chambers asserts, is the path to well-being and sustainability (Myers, 2011). Myers (2011) further asserts in his book *Walking with the Poor* that

we need to ask whether the idea of sustainability is enough. If sustainable simply means things are being maintained or that the project activities and impacts continue after we leave, is this enough? Don't we really seek sustainable growth, learning, and continuous transformation? (p. 193).

Chambers (as cited in Myers, 2011) and Myers (2011) both seem to share similar beliefs as Maslow (1962) and suggest that once lower-level needs are met, higher-order values, such as esteem, self-actualization, growth, and generativity, are likely to emerge.

Evaluation of Research Question 1: Perceived Barriers and Facilitators to Remaining ODF

RQ1 compiled stakeholder perceptions of barriers and facilitators to remaining ODF and combatting slippage in the maintenance phase. Four themes emerged: (1) Unity supports maintenance, (2) seeing and experiencing benefits supports maintenance, (3) durable construction materials support maintenance, and (4) access to clean water supports maintenance.

Unity Supports Maintenance. Village stakeholders realized that helping one another and being interdependent supported maintenance in their community. This work highlights unity or social cohesion as a facilitator of maintenance. Kar and Chambers (2008) assert the importance of collective community action and participative decision making as components of a successful CLTS intervention. As a result, social capital, social identification, community cohesion, and community efficacy have gained the attention of researchers.

This finding aligns with current literature. Numerous researchers suggest that a community's social capital and psychosocial environment are linked to CLTS intervention success and the probability of individuals constructing and using a latrine (Cameron et al., 2015; Dickin et al., 2017; Harter et al., 2018a; Kelly et al., 2017; Susilo et al., 2020). Harter et al. (2018a) even asserted that “positive social context factors seem to be a prerequisite for a successful CLTS process” (p. 394).

Given the emphasis of CLTS as a community-driven, collective effort (Kar & Chambers, 2008), it was not a great surprise that this study supported the current literature. It did, however, further strengthen the need for practitioners to emphasize community members understanding that their actions may impact a neighbor's health and vice versa. Similarly, in their quantitative study in Mozambique, Mosler et al. (2018) found that a positive feeling of cohesion and inclusion was closely associated with the probability of rebuilding once a latrine collapses, and when participants considered their responsibility to the community, they demonstrated higher levels of rebuilding behavior (Mosler et al., 2018).

Seeing and Experiencing Benefits of ODF Support Maintenance. The community's expressed appreciation of their “happy life” overlaps with the overarching theme of pride and collective appreciation for the sanitation transformation. This theme, the observation of benefits,

is similar to one theme found in a study in Nepal (McMichael, 2018). In that case, one focus group participant stated, “It’s so good because we have the toilet, we use the toilet, when guests arrive, they use the toilet, and we are happy now. It is so good compared to before” (McMichael, 2018, p. 30). Another villager in that study stated that they were no longer “attacked” by diseases (McMichael, 2018, p. 302). McMichael (2018) stated, “There was civic pride and a sense of collective efficacy associated with transformation of sanitation practices. Communities were described as cleaner, more educated and modern, and having higher living standards” (p. 301).

The observable and felt experiences resulting from the new sanitation behaviors also align well with Rogers’s (2003) diffusion of innovation theory. Rogers (2003) suggests that the proper communication of relative advantages of a proposed change, observation of the relative advantages of a proposed change, and compatibility to the values of the stakeholders produce a stronger likelihood of adoption. There is not a clear connection to this change theory in CLTS literature, but this theme does illustrate the principles Rogers (2003) lays out as pertinent to the adoption of change. In this community, the relative advantages and observation of benefits were directly connected to change and the maintenance of sanitation behaviors.

Durable Construction Materials Support Maintenance. Practitioners and community residents discussed durable construction materials as a facilitator to maintenance. This finding supports the findings of Hickling (2019) and Jerneck et al. (2016) noting that technological issues, including durable construction materials, act as key concerns for maintenance and causes of slippage. Durable construction materials coupled with latrine construction guidance and support were also found important to the effort of becoming ODF, as noted in a theme categorized under RQ2. In a recent cross-sectional study in rural Ghana, Delaire et al. (2022) found that “because most toilets were not structurally stable (lacking pit lining or a reinforced

slab) and made of nondurable materials vulnerable to rains, toilet collapse was widespread. . . . The primary threat to sustainability of ODF status was toilet collapse” (p. 16). Their findings suggest that interventions that address latrine collapse and rebuilding improve the longevity of CLTS efforts (Delaire et al., 2022). Delaire et al.’s (2022) finding and the finding from this study support both the importance of the use of durable construction materials and methods as well as providing instruction in the process of becoming ODF. The process of becoming ODF, including construction, has a direct impact on the results and ease of maintenance.

Access to Clean Water Supports Maintenance. This theme highlights the importance community stakeholders placed on access to clean water as a facilitator of sanitation behavior change. This finding is compatible with current literature. In a study discussing CLTS practitioner impressions of CLTS methodologies, one Ugandan practitioner for Plan International noted that they realized that demand for water increases after inducing sanitation change (Ficek & Novotný, 2019). As a result, Uganda Plan International tries to focus on access to water as part of its follow-up activities (Ficek & Novotný, 2019). Additionally, Venkataramanan et al. (2018), in their comprehensive literature review of CLTS evidence and its quality, suggest that many programs either simultaneously address the water supply issue or quickly follow the CLTS intervention with a water supply project in efforts to ensure that gains from sanitation behavior change are not lost because of limited water supply.

Evaluation of RQ 2: Perceived Barriers and Facilitators to Becoming ODF

RQ2 focused on key influences in the process of becoming ODF. Four themes emerged: (1) Being supportive, not punitive, facilitates becoming ODF, (2) understanding they were “eating shit” mobilized the effort to become ODF, (3) access to latrine construction materials and

tools facilitates becoming ODF, and (4) holistic teachings facilitate becoming ODF. These are discussed below.

Being Supportive, Not Punitive Facilitates Becoming ODF. This theme points to the value of using supportive, not punitive, approaches. All stakeholder respondents described Kibo's different methods as being more supportive, encouraging, and friendly in comparison to top-down, fear-based approaches in which local police use force, fines, or jail time to require village members to build and use latrines. Kibo Group facilitated growth by supporting the community and intentionally using positive affirmations to build community esteem and motivate action.

This supportive effort versus using punitive measures is not commonly studied. There is some outcomes research, however, to demonstrate that supportive facilitation methods can contribute to the consistent use of latrines. One comparative study of CLTS methods used in Cambodia and Ghana found that some Cambodian leaders “applied a lot of pressure to households, conducted frequent/repeated visits, made threats to withhold marriage certificates or loans until latrine construction, dug dry latrine pits without household consent or involvement, and/or made threats to revoke subsidized latrine materials if latrines were not constructed within a period of time” (Tribbe et al., 2021, p. 10). In such cases, some leaders even dug a pit latrine while the family was away (Tribbe et al., 2021). This contrasted to the lower pressure leadership employed by some leaders that included “casual chitchat” during regular interactions (Tribbe et al., 2021, p. 10). Ultimately, the Cambodian efforts resulted in inconsistent use of latrines (Tribbe et al., 2021). Tribbe et al. (2021) stated that “leaders in Cambodia were more successful when they took a more casual approach to persuading households to construct latrines, rather than using aggressive tactics” (p. 17). In contrast, the Ghanaian CLTS effort was marked with

high CLTS facilitator follow-up with one report noting that the facilitators even slept in the community for four days following triggering to educate the households on the construction and use of latrines (Tribbe et al., 2021). The Ghanaian case resulted in the consistent use of latrines and highlighted positive facilitator involvement as pivotal in the continued and consistent use of latrines (Tribbe et al., 2021). At the conclusion of their report, Tribbe et al. (2021) stated, “In Cambodia, the focus should shift away from imposing top-down sanitation targets that encourage community leaders and NGOs to employ aggressive strategies, and instead equip community leaders with strategies to maintain latrine use” (p. 19). Additionally, researchers discuss the importance of facilitators not falling prey to pressure-based or punitive triggering techniques (Venkataramanan et al., 2018), which are discussed further in the next theme commentary.

Understanding They Were “Eating Shit” Mobilized Efforts to Become ODF. In this study, triggering facilitators included emphasizing danger and inducing disgust through the “eating shit” visual activity and the lost lives and opportunity cost due to monies spent on avoidable diarrhea-related illnesses. Respondents cited danger and disgust as the two primary motivating emotions for the decision to become ODF. In the Uganda Plan International intervention in the Tororo District, the practitioners noted that feces are not considered dangerous at all (Ficek & Novotný, 2019). This parallels with the words spoken by the Kibo Group practitioner when he said, “We have to show it practically so that people can see it is dangerous in their lives.”

While no study evaluates the relative effectiveness of different triggering techniques (Venkataramanan et al., 2018), this particular theme is similar to a finding in literature from a study in Mali, West Africa (Alzúa et al., 2020). Alzúa et al. (2020), in their quantitative study, found that 87% of respondents recalled the vivid demonstration of flies moving from a feces

sample to food and water. The research stated that 92% of triggered households decided to build a latrine during the triggering event (Alzúa et al., 2020).

This departs slightly from the emotions of pride, improved health, and dignity as more “universal motivators that triggered communities” (Venkataramanan et al., 2018, p. 13). In this context, disgust motivated becoming ODF and pride was just one outcome of the effort. It is also important to note that there is a great debate over triggering and posttriggering techniques, with many expressing concerns over the human-rights implications related to the shaming or disgust-inducing triggering activities (Engel & Susilo, 2014; Galvin, 2015). In this context, disgust did seem to have a positive outcome. The Uganda Plan International practitioner also reported sensitivity to the matter of shaming and use of disgust but simultaneously noted the effectiveness of these emotions in the Ugandan context (Ficek & Novotný, 2019). Again, it is important to note that the effective use of disgust as an emotional motivator within the context of this study was most likely tied to the supportive, not punitive, actions of the Kibo practitioners.

Access to Construction Materials and Tools Facilitates Becoming ODF. As noted above, there is a connecting line between access to durable construction materials and tools during the process of becoming ODF and the maintenance of these ODF sanitation behaviors. Discussions within this context regarding posttriggering activities aligned with current knowledge regarding difficulties becoming and remaining ODF. The posttriggering challenges and maintenance challenges both centered around the construction materials and methods for latrine construction (Venkataramanan et al., 2018). While literature reports that practitioners vary greatly on the level of support regarding latrine construction techniques and guidance, most lean toward offering guidance and training (Venkataramanan et al., 2018). This work supports the notion that construction guidance, support, barrier removal, and affirmation facilitate both the

change process and the maintenance of behaviors.

Holistic Teachings Facilitate Becoming ODF. The fourth theme and subtheme noted emphasize stakeholder appreciation for a holistic, sequencing of programs that act as additional phases to the original intervention. This effort demonstrates an emphasis on an intentional, longer-term effort that illustrates that there is no quick and easy fix for sanitation behavior change. Robinson (2016), in his eight-country evaluation of CLTS in Africa, discussed the importance of sanitation marketing programs and a “second-phase” of interventions designed to provide advice on how to upgrade and improve sanitation as key suggestions for follow-up support during the post-ODF phases of the effort.

Addressing the subtheme that there is “no quick and easy fix,” data also support the strong relationship between behavior change and frequent interactions through extensive teachings that can move beyond sanitation teaching. Kibo Group’s holistic programming effort lengthened the community intervention beyond sanitation and this supported maintenance. As a result, this study confirms that follow-up and frequent personal contact between communities and WASH facilitators for accountability over an extended period is a widely accepted solution to sustaining ODF behavior (Harter et al., 2019; Hulland et al., 2015; Kafle & Pradhan, 2018; Odagiri et al., 2017; Tribbe et al., 2021; USAID, 2018; Venkataramanan et al., 2018). Kibo Group’s holistic effort provides longer-term contact, however, as Venkataramanan et al. (2018) suggest, further research should seek to determine the most effective combination of stacking or sequencing of programs to benefit the collective WASH understanding.

The understanding of conflict as an influencer on the CLTS community effort is considered here as a concept key to the Kibo Way and is encompassed under the holistic teaching theme. It should be noted that there is little work dedicated to the understanding of

conflict as an influencer on the CLTS process. This study did expose community and familial conflict as a challenge to the posttriggering CLTS processes. Examples of “husbands leaving the work to the wife,” “men who were lagging behind” and needed a “trusted friend to go and talk to them,” or “when one wife agrees with what the leaders are saying and the other does not even want to hear about that” were commonly cited as respondents shared insight regarding the interpersonal and/or community conflict that slowed the processes and latrine construction. To combat the conflict, respondents shared story upon story to demonstrate conflict resolution strategies presented by Kibo Group facilitators that helped them to work through differences and find common ground. Again, this additional teaching wrapped into the holistic model supported the effort to become ODF and continues to support the efforts to maintain sanitation behaviors. This extends research and has implications for further study.

Evaluation of RQ3: Advice for Those who Struggle to Become or Remain ODF

RQ3 gathered stakeholder advice for others who struggle to become and remain ODF. The findings revealed three themes in the support of maintenance behaviors and posttriggering decision making. All of these extend the body of knowledge of CLTS maintenance. However, these suggestions are recognized as context-specific and may or may not be helpful in other CLTS contexts.

Let Us Show Our Success. As previously noted, village stakeholders were full of pride and eager to show others their healthy lifestyle and living conditions. They suggested that if any other community was struggling to see the value of living an ODF lifestyle they would welcome them to their homes, and then added that they would be willing to go and help. It was clear that they were hopeful that others could experience the “happy life” and suggested a referral program

that would allow others to experience the developmental intervention from Kibo Group or a Kibo Group village ambassador program.

There is no clear, researched, ambassador-like programming in current literature. However, Rosenthal et al. (2020) discussed the importance of engaging systems science approaches along with implementation science to engage underperforming water, sanitation, and hygiene and household air pollution interventions. One emerging suggestion was to use social network analysis to determine ways the social structure and networks can influence the adoption and use of innovations (Rosenthal et al., 2020). The group referenced Rogers's (2003) diffusion of innovations theory and potential gains from the use of observation and word of mouth (Rosenthal et al., 2020), a definite nod to an ambassador-like program suggested by the village community. Further, they suggested that systems science can be useful for sustainability as well as other implementation problems (Rosenthal et al., 2020).

The village community also demonstrated a desire to go and teach others, which I found to be a subtheme. It is not clear, but it appears that the holistic, stacked programming may also have built the community's collective self-efficacy. Self-efficacy is demonstrated in the ability to exert control over one's motivation, actions, and social context (Bandura, 1982). In combination with growth, generativity, pride, and desire to impact the lives of others, these new desires—a motivation to go, teach, and help others—provide evidence of confidence in their abilities to perform again. Given the success they have had with their village cleanup, they believed they could produce the same results again in service to other communities. While not confirmed in this study, the notion that CLTS makes people feel more confident in constructing and maintaining a latrine is in line with previous research (Harter et al., 2020; Sonogo & Mosler,

2014). It stands to reason that the combined, sequenced programs have promoted self-efficacy here and would be worthy of further study to benefit practitioner and academic communities.

Refer Them to Kibo. As an extension of pride and the benefits received from the effort to become and maintain sanitation behaviors, the residents suggested that a referral system be created. This desire to see others grow and experience the benefits of the CLTS and holistic teachings extended well beyond their unified maintenance effort. Again, this suggestion is evidence of their effort to see that others experience health and well-being and the responsibility that they now feel to generate other safe and sanitary communities.

Mobilization for Triggering Matters. Participants noted the value of the “eating shit” trigger and the importance of attendance at the triggering event. The advice related to mobilization and marketing for triggering is compelling and meaningful as an area that needs further attention. There is little information in the CLTS literature on mobilization and marketing efforts on how best to bring village members to the triggering event. Abebe and Tucho (2020) noted that marketing efforts or the lack thereof as a possible reason for slippage, but it still receives little attention at any stage of the process.

Discussion of Findings and Conceptual Frameworks

This study was conceptually influenced by two prevailing ideas: systems thinking and Prochaska’s transtheoretical model. Each of these concepts will be discussed below in relation to the findings of this study.

Systems Thinking

First, as previously noted, few researchers have considered the maintenance phase as a collective impact of all three CLTS phases (Valcourt et al., 2020). The systems thinking viewpoint suggests that long-term maintenance is strengthened only by considering the interplay

of the phases (Valcourt et al., 2020). As a result, this study sought to learn more about the favorable and unfavorable factors influencing CLTS to gain an understanding of the most influential elements that lead to more effective change leadership intervention strategies and sanitation behavior maintenance.

Systems thinking posits that the foundation for change should be centered on an effort to engage key community stakeholders, establishing unity by creating images of what people hope to see, and discussing capacities to collaborate (Stroh, 2015). In this particular case study, there was a concerted effort to seek the opinions of stakeholders. The results demonstrated the importance of positive community engagement for the success of CLTS. Respondents noted their pride in their community and their desire to continue to grow and even share their new knowledge with others.

As systems thinking experts assert, system structures are interdependent and this extraordinary interrelatedness results in extreme complexity (Casarejos, 2020). This study demonstrated the interconnected phases. For example, three resulting themes combined—mobilization mattered at the pretriggering phase, understanding that they were “eating shit” at the triggering phase, and the use of durable construction materials at the posttriggering phase—were all discussed by respondents as important to the effort to become ODF and maintain ODF sanitation behaviors.

Transtheoretical Model

The transtheoretical model is often discussed as the “stages of change” and is prominently used in health behavior research (Clark & Janevic, 2014). These stages of change include precontemplation, contemplation, preparation, action, maintenance, and termination (Clark & Janevic, 2014). A key tenet of the transtheoretical model is that an intervention is more

successful when the strategies are matched to the stages of change (Clark & Janevic, 2014). This study shed light on the decision-making efforts of the middle four stages of change (contemplation, preparation, action, and maintenance), which corresponded to the activities of the CLTS triggering and posttriggering phases.

Limitations

The previously mentioned limitations include language and logistical limitations, design limitations, memory and recall limitations, embarrassment or sensitivity limitations, and researcher bias. The following section discusses each of these briefly and includes notations of mitigation efforts as well as any impact on the research effort.

Logistical Limitations and Mitigation Efforts

This study operated under significant logistical challenges, including international travel with Covid-19 travel restrictions, cost and timing restraints, and language barriers. The travel and cost limitations, while difficult, were easily mitigated with proper planning and the aid of a travel agent. The primary limitation here was the language barrier. To mitigate the language barrier, I secured the help of Ida Bazoonona, a native to the region who is fluent in English and Lusoga. This Kibo Group employee was selected because she is not directly involved in the CLTS programming but has an outstanding rapport with people. She was selected because of her ability to translate the intent of each question and response as well as aid me in digging deeper. Still, the language barrier did impact my ability to establish which participant was associated with each question response. In other words, I was unable to identify each participant with a participant 1, participant 2, participant 3, etc. designation. It was, however, clear to me and the interpreter that there was no single person in any focus group discussion who dominated the conversation.

Design Limitations and Mitigation Efforts

This study was based in Uganda and in one village within Uganda. Additionally, the interviews were conducted with individuals from just one organization, Kibo Group International. The methodology employing focus group discussions and individual interviews reliant on self-reports are susceptible to bias and limits this work. Finally, the fieldwork was limited to a one-week timeframe given Covid-19 travel restrictions and considerations of Kibo Group personnel and resources needed for travel to the village and translation work. The sample size was determined in part by this time constraint. While the sample represents a limited proportion of households, the in-depth discussions and analysis of conversations found consistent themes that are robust and reached saturation, and are descriptive of the wider study population.

This exploratory case study research was purposefully broad and iterative. While this case study research did not include quantitative measures, which do limit the statistical generalization, there is a level of generalization that is possible (Yin, 2009, 2012). In other CLTS contexts in low- to middle-income nations, this research may allow other practitioners to find clues about their sanitation behavior maintenance quandaries. In this effort, the broad and iterative approach was an asset and was not a concern to be addressed. The iterative approach allowed me to ask appropriate follow-up questions in the moment and shift the questioning to allow for the conversation to flow, rather than become rigid and uncomfortable for participants. One clear and consistent notation made in literature and by the practitioners is that each context is different and must be carefully considered. This qualitative work did just that.

Memory and Recall Limitations and Mitigation Efforts

Given that the community had completed their sanitation efforts approximately two years prior to this study, memory and recall were assumed limitations. To aid the recall and memory of

the CLTS intervention events, the interview protocol was organized to start with a review of the CLTS process. The focus group respondents did not demonstrate hesitation in answering questions. They gave detailed responses and had a clear recollection of the CLTS process. There were no times when participants indicated they could not recall information. Based on participant responses, it is clear that the CLTS process had a profoundly positive impact on their lives and it is likely that their engagement in the meaningful CLTS experience made the information salient and easy to recall.

Willingness and Sensitivity Limitation and Mitigation Efforts

Given the sensitive subject matter of open defecation, there was an assumed limitation that the information may be embarrassing or difficult to discuss. The assumption led to the mitigation efforts to encourage open and honest responses. Questions were worded to allow the respondents to speak about their “neighbor,” instead of themselves, who may have engaged in open defecation behaviors during the maintenance phase of CLTS programming. Additionally, the focus group discussions were gender-specific allowing for gender-related norms or social rituals to come to the surface. It is not clear if these efforts mitigated all original concerns, or if participants were just comfortable discussing open defecation. There were instances where they did speak of their “neighbor” though, and participants did not hesitate to share information.

Researcher Bias and Mitigation Efforts

Last, considerations for potential biases were present given that I was the single coder and analyzer of data in addition to my familiarity with Kibo Group International as an acting member of the board of directors. To combat the bias in the interpretation of results, open conversations with the nonparticipant leaders of the Kibo Group organization, including but not

limited to the interpreter Ida Bazoonona and my dissertation committee chairperson, helped to ensure bias was eliminated.

Recommendations for Practice

This context-specific case study revealed several implications for CLTS practice to support the maintenance of sanitation behaviors post-ODF certification. These are described below.

Practitioners Should Bring the Community Together

Practitioners should bring the community together for every step of the process to build unity. Practitioners must understand that the process of becoming ODF and the unity created is an indirect result of the CLTS process. The unity built along the way and practiced throughout the early and middle phases continue into the maintenance phase and facilitate the sustainability of ODF behaviors.

Practitioners Should Facilitate in a Supportive, not Punitive way

As noted, triggering is a key step of the CLTS process that must be handled delicately and supportively. Disgust-inducing approaches should be handled with support rather than shame. Supporting through frequent and individualized home visits aligns with this supportive strategy. Practitioners must build intervention strategies with sustainability in mind. In this case, practitioners modeled and encouraged being supportive, not punitive, during the process of becoming ODF, and this has resulted in unity and support in the maintenance phase demonstrating the connection between process, modeling behaviors, and the result of unity.

Practitioners Should Use Visuals to Show the Dangers of OD and Benefits of Being ODF

Practitioners should demonstrate the dangers of open defecation as well as the many positive benefits of being ODF. Practitioners can support becoming and maintaining ODF with

vivid and observable triggering and posttriggering activities. Being able to observe the feces-to-oral process through the “eating shit” visual dramatically impacts the effort to become ODF.

Additional benefits could include information on costs associated with medical expenses as well as the opportunities for the “happy life” by noting the relative advantages of being ODF to better understand what life can be like.

Practitioners Should Carefully Consider Their Mobilization Strategies for Triggering

As noted previously, triggering is of great importance for the ability to provide visual demonstrations and discuss the benefits. It is important to ensure the greatest majority, if not all of a community is present for the event. As a result, it is imperative to consider ways to motivate attendance and encourage active participation.

Practitioners Should Consider Stacking Programs and Creating Holistic Programming

After focusing on latrine construction methods and guiding the use of local, durable building materials, practitioners should offer programming in other areas of health and well-being, including but not limited to nutrition, constructing fuel-efficient and smoke-reducing stoves, conflict resolution, and reforestation. Additionally, a second wave of programming could include non-health-related education to support economic and community development, including but not limited to animal husbandry, life skills for youth, and brickmaking. Finally, practitioners should also either follow the CLTS intervention efforts with a water supply project or consider the coupling of a water supply project with the CLTS intervention.

Practitioners Should Promote Successful Community Stakeholders as Ambassadors

Successful community stakeholders and leaders could act as ambassadors to others who may be struggling to become or remain ODF. These successful community members can pass along their ideas for overcoming barriers and provide the village stakeholder perspective that

would resonate best with other village community members. An indirect benefit is that this may continue to nurture and develop more civic pride as one village community teaches others. It may also induce an even stronger commitment to the maintenance of ODF behaviors at the ambassadors' home villages.

Recommendations for Further Study

Practitioners and scholars could benefit from primary research focused on understudied social outcomes, context-specific stakeholder advice, what makes Kibo's methods successful, and further qualitative work to learn more about the "why" behind CLTS decision making and maintenance behaviors. Each is described briefly below.

Understudied Social Outcomes

Health-related outcomes are vital in the CLTS story. However, social outcomes, including the desire for growth, generativity, self-efficacy, "happy life," and well-being, discussed in this study point to a host of additional research questions to further explore the impact of CLTS participatory processes and positive social results. The learning may benefit practitioners as they design more effective interventions and behavioral strategies to promote greater maintenance of behaviors.

Context-Specific Stakeholder Advice

The importance of asking those that experience the CLTS intervention and seek to maintain a healthy lifestyle cannot be understated. It is well understood within CLTS literature that context does matter. Going to the source and to the village stakeholders specifically promotes an understanding of the values and points of emphasis that should form interventions and maintenance strategies from pretriggering to maintenance.

Kibo's Success

Greater analysis of Kibo processes may well benefit other contexts. Further research could address more details about the “who, what, when, where, why, and how” that has worked for Kibo. Additional questions could be the following: “Would Kibo’s methods work in another context?”, “What conditions are necessary for Kibo’s methods to work?”, or “What does a less successful Kibo intervention teach us?”.

Qualitative Work

While quantitative research answers important questions, there is much work to be done still, to determine more of the “why” behind the decision making in communities. This includes both the effort to become and the effort to maintain. A longitudinal look for a sustained “why” would be interesting as well. It begs the question: What will the maintenance or growth and generativity efforts look like in this village community five, 10, or 15 years from now?

Implications

Few have considered the maintenance phase as a collective impact of all three CLTS intervention phases (Valcourt et al., 2020). This view asserts that long-term maintenance is strengthened only by considering the interplay of the CLTS phases (Valcourt et al., 2020). This research is significant as it affirms the importance of the relationship between the CLTS phases. The process or the way practitioners guide a community from pretriggering to posttriggering directly influences the results and the likelihood of sanitation behavior maintenance. With this collective impact in mind, this learning also provides considerable insight for supportive, community-building and visually rich intervention strategies as essential design elements to address barriers to behavior maintenance and strengthen community resolve to rebuild collapsed latrines and combat slippage. Finally, the findings are also significant for success measures

beyond the health benefits typically considered. While the potential health impacts are present, this research suggests that self-efficacy, growth, and generativity or social outcomes may well move communities beyond maintenance to generate further positive community advancement.

Conclusion

The lack of access to water, sanitation, and hygiene leads to 1.6 million deaths each year with 1.2 million caused by gastrointestinal illnesses, like diarrhea (Chirgwin et al., 2021).

Diarrhea is credited with 600,000 deaths in children under five each year (Wolf et al., 2018).

CLTS is a solution to ending open defecation, however, more than half of the investment in producing ODF communities is lost during the maintenance phase following the posttriggering activity (Wijsekera & Thomas, 2015). The purpose of this qualitative, exploratory, case study research was to better understand village community members', village leadership's, and CLTS practitioners' perceptions of the facilitators and hindrances to the maintenance of sanitation behaviors in the maintenance stage of CLTS programming in Uganda, East Africa. Individual interviews and focus group discussions were used to gather perspectives of stakeholders involved in the CLTS intervention within one village community in Uganda, East Africa.

The findings supported current CLTS knowledge by underscoring unity, collective action, and understanding that actions impact a neighbor's health and vice versa, the need for latrine construction guidance emphasizing durable materials, and the relative, observable benefits connected to a healthy lifestyle. The resulting implications suggest that practitioners should build intervention strategies with sustainability in mind including the modeling of supportive, not punitive, leadership, highlight the relative advantages and observable benefits of the ODF lifestyle, and harness vivid triggering illustrations to aid maintenance behaviors, couple or follow CLTS interventions with water access projects, and consider a second wave of holistic

programming that engages non-health-related learning and growth. Last, the findings suggest further study is needed to gather a longitudinal maintenance perspective, to consider alternative behavioral measurement strategies, to gain insight regarding understudied tools for becoming and maintaining ODF, to highlight social outcomes such as generativity and well-being, and to continue efforts to seek stakeholder solutions as they consider ways to not only to maintain a healthy lifestyle but to thrive and flourish as a community.

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Appendix A: Focus Group Interview and Protocol Instrument

Research Foundation(s):

Research Purpose:

The aim of this study is to better understand the facilitators and barriers to the maintenance of sanitation-related behaviors, the interconnected phases of the CLTS process that may impact maintenance of sanitation-related behaviors, and stakeholder suggestions for the maintenance of sanitation-related behaviors.

Research Questions:

RQ1. What are the stakeholder's perceived barriers and facilitators to remaining ODF and combatting slippage in the maintenance stage in this community?

RQ1a. What are the stakeholder's perceived barriers and facilitators of becoming ODF at each stage prior to the maintenance stage?

RQ2. What are proposed solutions by stakeholders to remaining ODF and avoiding slippage?

Research Supplies:

Audio recording device, fully charged batteries, secondary (backup) audio recording device, mobile device for photocopies, copies of interview protocol, informed consent copies, additional paper for notetaking (if more space for observation notes needed), post it notes, clipboard to provide hard surface for writing, writing utensils, ink pad (for those who want to use a thumbprint method rather than sign the consent form) and personal computing device.

Research Support:

Two key personnel needs exist including a driver and interpreter.

Research Timing Considerations:

These FGDs will need to take place after the early morning harvest time but before the late afternoon mid-day meal. Likely, these community conversations will occur between 10:00 and 2:00. Ideally, the rainy seasons (September to November and March to May) will be avoided. National holiday schedules will also be consulted.

Interview Protocol and Introduction:

Muli Mutya. Nze Babyire Danny. Thank you for taking the time to be here today. Webale inho! I am a university student at Abilene Christian University in Dallas, Texas but I live in Rochester Hills, Michigan. I bring greetings from both places. I am working under the direction of Dr. Kristin O'Byrne at the Abilene Christian University Graduate School of Education. This project has been reviewed according to the Abilene Christian University review board procedures to ensure protection from harm and protection for your personal information. I have also registered this research properly with the Uganda National Council of Science and Technology.

To be clear this interview will only be used for this research project in addition to possible publications and presentations to contribute to learning regarding the water and sanitation project you have completed with the Kibo Group. The goal is to help other communities, like yours, to

maintain their ODF certification and ODF behaviors. This research is based on community conversations with those who have worked with Kibo Group to gain ODF status.

Do you have any questions about the project before we begin?

Research data will be collected during _____ to _____. Your participation is voluntary and if you decide to participate, there are no direct benefits to you. If at any time during the interview, you choose to go away for any reason there is no penalty. Additionally, no Kibo Group service will be withheld from you if you choose not to participate or withdraw at any time. All records of participation will be confidential. Names and identifiable information will not be included in any files, articles, presentations, or reports that result from this research.

Do you have any questions about the voluntary participation? Please raise your hand if you are willing to proceed. Before we begin, please confirm by reading and signing the informed consent form verifying that you understand the purpose today and that you are willing to participate in this conversation. If you are not able or willing to proceed please take a moment to leave the community meeting. Webale.

To be sure I have an accurate record of our conversation, I am going to record our conversation. My teacher and chairperson, Dr. Kristin O’Byrne, and I will be the only people who can hear the recording today. All data and recordings will be kept in a secure location for no more than ten years following the successful defense of the dissertation. Again, to be clear, no names will be used in any of the case study notes, documents, narratives, or database.

Is this okay? If you are not able or willing to proceed please take a moment to leave the community meeting. Webale.

Turn on recording devices.

Today is (Date/Time) and I am speaking with (Village X, Namutumba District, Uganda). I am going to be asking you some questions. Again, if there is anything you do not feel comfortable answering or that you do not know the answer to just let me know and we can move to the other questions. Before we begin, please confirm again by raising your hand that you understand the purpose today and that you are willing to participate in this community conversation. Webale.

As stated earlier the purpose here is to gather your thoughts on how to maintain ODF certification and maintain ODF behaviors. I am not looking for any particular answers just your honest and complete opinions to these questions.

Interview Guide:

Demographics:

Gender of Group: Male or Female

Age Range: _____ to _____

Years of village’s relationship with Kibo?

Special Capacity/Role/Activity? (Water or Sanitation Committee, VHT, Local Leader etc.?)

CLTS Process:

1. Describe the methods Kibo Group used to encourage the change in sanitation behaviors (stopping open defecation, building latrine, using handwashing stations, safe dish racks etc.)? [RQ1a: Warm-up question to establish process and system, aid recall]
 - a. (Specifically) Describe the triggering methods Kibo Group used to encourage change in sanitation behaviors (transect walks, mapping, eat/drink shit etc.?)
 - b. (Specifically) Describe the post-triggering methods Kibo Group used to encourage change in sanitation behaviors (follow up checks).
2. Describe what the community did to encourage sanitation change (community pacts, etc.). [RQ1a: Secondary warm-up to acknowledge community effort and name systems of influence, aid recall and RQ1: Barriers and Facilitators]
 - a. Probe further with discussions of influencers within the community structure that may have discouraged change without leading and then probe further if necessary (conflict, politics, power context, etc.). [RQ 1: Barriers and Facilitators]
 - b. Was there conflict within the village that acted as a barrier? Explain [RQ1a: In process to becoming ODF]
3. How many of you maintain ODF behavior? Does anyone choose OD in this group? [RQ 1: Establish situation here, lead into key questions]. (Note: May be a unanimous response of no OD as shame/embarrassed etc. to admit that they do. If not, ask deeper questions about why.) [RQ1/1a].
4. If no one admits to OD behavior in question three, ask the following question [RQ 1/1a]. Those neighbors that do choose OD, why do they choose OD especially when they have been taught about the negative consequences?

Facilitators and Barriers:

5. During the triggering phase, what facilitated or convinced you to stop OD [RQ1a]?
6. During the triggering phase, what were the barriers that kept some from stopping OD? Or what difficulties existed? [RQ1a]
7. What has helped during the post-triggering phase to convince you to continue ODF behaviors? [RQ1]
8. What has been (difficult or hard) during the post-triggering phase that convinced others to return to OD? [RQ1]

Community Idea Generation for Sanitation Behavior Maintenance:

9. What do you suggest for keeping community members from slipping back to OD? [RQ3]
10. What do you suggest Kibo Group do to help community members from slipping back to

OD? [RQ3]

Before I leave today, I was hoping to see any records of your work with the Kibo Group. Perhaps you have a community constitution, communication posters, sanitation or water committee reports or meeting notes. If these are confidential, I do not need to see them but to be clear, no names will be used in any of the case study notes, documents, narratives, or database.

May I see any of these documents? May I photograph these documents for my study records?

Allow time for gathering files and photograph the documents once presented. These will later be converted to .pdf copies and added to the case study database.

Webale inho! Thank you for taking the time to meet with me today. I appreciate your help so much. If you have any questions about how to find out more about the research, please feel free to reach out to a Kibo Group representative and they will be able to reach me. My dissertation chair, Dr. O'Byrne, may also be reached through this channel. Thank you for welcoming me.

Appendix B: Field Test Approval Letters



Spencer Bogle
 The Water Project
 xxxxxxxxxxxxxxx
 xxxxxxxxxxxxxxx xxxxxxxx
 February 12, 2021

Dr. Kristin O'Byrne
 Abilene Christian University
 College of Professional and Graduate Studies
 16633 Dallas Parkway, Suite 800
 Addison, TX 75001

Dr. O'Byrne,

My name is Spencer Bogle and I writing to express my approval for the focus group interview questions that Danny Cagnet is proposing for her dissertation research. I have over 13 years of experience in the WASH development sector, both in practice and in research. From 2007 until 2010 I developed a WASH program in the Busoga Region of Uganda that continues today under Ugandan leadership. This work consisted of Home Improvement Campaigns that integrated many of the CLTS concepts and practices. I hold a PHD in Religious Studies from SMU. My dissertation explored the intersections of Christian theology and international development through the lens of water scarcity. I currently work as the Director of Global Program at The Water Project, based in Concord, New Hampshire. Our organization is committed to increasing reliable access to water, sanitation, and hygiene resources, and Community Led Total Sanitation is an important and integral part of our community Sanitation and Hygiene Training. We work primarily in rural areas in Kenya, Uganda, and Sierra Leone and integrate CLTS wherever open defecation continues to be an issue. Our hygiene and sanitation teams within The Water Project are conversant in both advances through CLTS garnering state support and national ODF assessment in various contexts, and we are also aware of a number of critical assessments of CLTS methodology (one of which is the role that shame plays within the process) that have spurred innovation within training.

Upon thorough review of the focus group interview questions that Danny Cagnet is proposing for her dissertation, I find her survey questions to be a fitting contribution to research accentuating the voices and experience of agents of change regarding ongoing sustainability of CLTS at the community level.

Additionally, I find the risk of the participants becoming upset or inducing a negative response not greater than minimal.

I offer my best wishes to you and to Danny with this research. If any further assistance is needed by Danny's committee, please do not hesitate to contact me by phone at xxxxxxxxxx (cell) or by email at xxxxxxxxxxxxxxxxxxxx.

Sincerely,



Spencer Bogle, PhD
Director of Program
The Water Project

The Water Project | P.O. Box 3353 | Concord, NH 03302-3353 | 800-460-8974

The Water Project, Inc. is a 501(c)(3) non-profit organization. (EIN#: 26-1455510)



P.O. Box 145 • Searcy, AR 72145 • www.kibogroup.org

February 15, 2020

Dr. Kristin O'Byrne
Associate Professor of Organizational Leadership
Abilene Christian University
College of Professional and Graduate Studies
16633 Dallas Parkway, Suite 800
Addison, TX 75001

As the Kibo Group Country Director for now 6 years, I find myself in a good position to review the questions that Danny Cagnet is using for her dissertation. I have ample experience with both the Ugandan culture and the Kibo Group CLTS/WASH program initiatives. Upon conducting a field test of the interview questions, I find her survey questions to be of minimal to no risk and believe the responses will help us to further improve our work here in Namutumba. If any further assistance is needed by Danny's committee, please do not hesitate to contact me at xxxxxxxxxxxxxxxxxxxx.

Sincerely,



Henry Oyier, Kibo Group, Country Director

Appendix C: Kibo Group Individual Interview and Protocol Instrument

Research Foundation(s):

Research Purpose:

The aim of this study is to better understand the facilitators and barriers to the maintenance of sanitation-related behaviors, the interconnected phases of the CLTS process that may impact maintenance of sanitation-related behaviors, and stakeholder suggestions for the maintenance of sanitation-related behaviors.

Research Questions:

RQ1. What are the stakeholder's perceived barriers and facilitators to remaining ODF and combatting slippage in the maintenance stage in this community?

RQ1a. What are the stakeholder's perceived barriers and facilitators of becoming ODF at each stage prior to the maintenance stage?

RQ2. What are proposed solutions by stakeholders to remaining ODF and avoiding slippage?

Research Supplies:

Audio recording device, fully charged batteries, secondary (backup) audio recording device, mobile device for photocopies, copies of interview protocol, informed consent copies, additional paper for notetaking (if more space for observation notes needed), post it notes, clipboard to provide hard surface for writing, writing utensils and personal computing device

Research Support:

An interpreter may become necessary for the one Kibo CLTS team member who does not speak English fluently.

Research Timing Considerations:

These semi-structured individual interviews will need to take place after morning tea and after the regular scheduled team meetings on either Tuesday or Thursday when CLTS personnel are not in surrounding village communities. National holiday schedules will also need to be consulted.

Interview Protocol and Introduction:

Thank you for taking the time to be here today. I am working with Abilene Christian University in Dallas, Texas to complete a final degree in education. I am working under the direction of Dr. Kristin O'Byrne at the Abilene Christian University Graduate School of Education. This project has been reviewed according to the Abilene Christian University review board procedures to ensure protection from harm and protection for your personal information. I have also registered this research properly with the Uganda National Council of Science and Technology.

To be clear this interview will only be used for this research project in addition to possible publications and presentations to contribute to learning regarding the water and sanitation projects of Kibo Group. The goal is to help communities to maintain their ODF certification and maintain their ODF behaviors. In addition, I hope that other CLTS practitioners will be able to learn from your experiences. This research is based on community conversations with Village X,

a village in Namutumba who have worked with Kibo Group to gain ODF status and one-on-one interviews with the Kibo Group WASH team. This information gathered will not be tied to any compensation or to any employee review process. The details gathered are only for research and learning.

Do you have any questions about the project before we begin?

Research data will be collected during _____ to _____. Your participation is voluntary and if you decide to participate there are no direct benefits to you. The potential benefit is increased understanding of CLTS in Village X in Namutumba. If at any time during the interview, you choose to go away for any reason there is no penalty. All records of participation will be confidential. Names and identifiable information will not be included in the final report.

Do you have any questions about the voluntary participation? If you are not able or willing to proceed please let me know now. Before we begin, please confirm by reading and signing the informed consent form verifying that you understand the purpose today and that you are willing to participate in this conversation.

To be sure I have an accurate record of our conversation, I am going to record our conversation. My teacher and chairperson, Dr. Kristin O'Byrne and I will be the only people who can hear the recording data gathered today. All data and recordings will be kept in a secure location for no more than ten years following the successful defense of the dissertation. Again, to be clear, no names will be used in any of the case study notes, documents, narratives, or database.

Is this okay? If you are not able or willing to proceed please just let me know now.

Turn on recording devices.

Today is (Date/Time) and I am speaking with (WASH Team Member). I am going to be asking you some questions. Again, if there is anything you do not feel comfortable answering or that you do not know the answer to just let me know and we can move to the other questions.
Webale.

As stated earlier the purpose here is to gather your thoughts on helping villages to maintain their ODF certification and maintain their ODF behaviors. I am not looking for any particular answers just your honest and complete opinions to these questions.

Demographics:

Gender? (All male WASH team)

Age?

Years of work with Kibo?

Capacity/Role/Activity?

CLTS Process:

1. Describe the methods Kibo Group used to encourage the change in sanitation behaviors (stopping open defecation, building latrine, using handwashing stations, safe dish racks etc.)? [RQ1a: Warm-up questions]
 - a. (Specifically) Describe the triggering methods Kibo Group used to encourage change in sanitation behaviors (transect walks, mapping, eat/drink shit etc.?)
 - b. (Specifically) Describe the post-triggering methods Kibo Group used to encourage change in sanitation behaviors (follow up checks).
2. Describe what the community did to encourage sanitation change (community pacts, etc.). [RQ1a: Secondary warm-up to acknowledge community effort and name systems of influence and RQ1: Barriers and Facilitators]
 - a. Probe further with discussions of influencers within the community structure that may have discouraged change without leading and then probe further if necessary (conflict, politics, power context, etc.). [RQ 1a]
3. How many communities do you believe maintain ODF behaviors? [RQ 1: Establish situation here, lead into key questions]
4. Why do community members continue to engage in ODF behaviors especially when they have been taught about the negative consequences? [RQ1: Establish situation here, lead into key questions]

Facilitators and Barriers:

5. During the triggering phase, what facilitated the community to stop OD? How do you know this? [RQ1a]
6. What were the barriers to stopping OD in the triggering phase? [RQ1a]
7. During the post-triggering phase, what facilitates the continuation of ODF behaviors? How do you know this? [RQ1]
8. What are the barriers to stopping OD in the post-triggering phase? Why do community members return to OD? [RQ1]

Community Idea Generation for Sanitation Behavior Maintenance:

9. What do you suggest Kibo Group do to help communities continue ODF behaviors? To keep community members from slipping back to OD? [RQ3]
10. What do you suggest village leaders or community members do to keep ODF status and to keep community members from slipping back to OD? [RQ3]

Thank you for taking the time to meet with me today. I appreciate your help so much. If you have any questions about how to find out more about the research, please feel free to reach out to me directly at xxxxxx@acu.edu.

Appendix D: Kibo Group Board Approval Letters



P.O. Box 145 • Searcy, AR 72145 • www.kibogroup.org

January 13, 2021

To Whom It May Concern,

As president of Kibo Group International, I confirm that Kibo's board of trustees have enthusiastically approved the research initiatives that Danette Cagnet is conducting with regard to several of Kibo's community-based development initiatives in Uganda.

Feel free to contact me if you have any further questions.

Sincerely,

John Barton
President
Cell: xxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxx



P.O. Box 145 • Searcy, AR 72145 • www.kibogroup.org

March 1, 2021

Dr. Peter Ndemere
Executive Secretary, UNCST
XXXX XXXXXXXX XXXXX
PO Box XXXX
Kampala, Uganda

Re: Letter of introduction and Letter of clearance for -
Danette Cagnet, Abilene Christian University student researcher

Dear Dr. Ndemere,

It is our pleasure to support the work of Danette Cagnet, a doctoral student at Abilene Christian University. Mrs. Cagnet seeks to study the work of Kibo Group International relating to water, sanitation, and hygiene efforts in the Namutumba district.

Mrs. Cagnet, formerly Ms. Hardman, was a resident of Jinja, Uganda in 2001 and 2002 and has visited several times since the time of her stay in Jinja. She is familiar with Kibo Group International and has built long-lasting relationships with many in Uganda. She is committed to engaging community stakeholders in transparent and meaningful conversations that will be mutually beneficial. We are confident in her commitment to and dedication to research that will help us to grow in our understanding of the sustainable community development projects we are engaged in.

If approved by the UNCST, we commit to a collaborative, supportive working partnership with Mrs. Cagnet by providing cultural and language support while she pursues information. We commit to providing any additional support she needs relating to local values and perspectives. We commit to working with community leaders to communicate the intent of the work and properly mobilize the community for participation. Upon completion of the study, we will share the research findings with participants as requested.

Additionally, in support of this effort, we have reviewed her research plan and feel that it presents no harm to those we serve in Namutumba. It is our belief that this work will benefit us and those we serve. In short, we support this effort without reservation. As a result, we ask that you approve her project for UNCST registration and provide official clearance for research.

Sincerely,

Larry Norman,
Kibo Group International Executive Director

Henry Oyier,
Kibo Group Country Director

Appendix E: Abilene Christian University Internal Review Board Approval

ABILENE CHRISTIAN UNIVERSITY

Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885



April 7, 2021

Danette (Danny) Cagnet
Department of Organizational Leadership
Abilene Christian University

Dear Danny,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Community-led Total Sanitation Programming and the Maintenance of Sanitation Behaviors",

was approved by expedited review (Category 6 & 7) on 4/7/2021 (IRB # 21-040). Upon completion of this study, please submit the Inactivation Request Form within 30 days of study completion.

If you wish to make any changes to this study, including but not limited to changes in study personnel, number of participants recruited, changes to the consent form or process, and/or changes in overall methodology, please complete the Study Amendment Request Form.

If any problems develop with the study, including any unanticipated events that may change the risk profile of your study or if there were any unapproved changes in your protocol, please inform the Office of Research and Sponsored Programs and the IRB promptly using the Unanticipated Events/Noncompliance Form.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs

Appendix F: Uganda Christian University Research Ethics Committee Approval



**UGANDA CHRISTIAN
UNIVERSITY**
A Centre of Excellence in the Heart of Africa

03/05/2021

To: Danette Cagnet

Type: Initial Review

Re: UCUREC-2021-112: Community-led Total Sanitation Programming and the Maintenance of Sanitation Behaviors, .pdf, 2021-04-10

I am pleased to inform you that the Uganda Christian University REC, through expedited review held on **03/05/2021** approved the above referenced study.
Approval of the research is for the period of **03/05/2021** to **03/05/2022**.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **03/05/2022** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Uganda Christian University REC:

Appendix G: Uganda National Council for Science and Technology Approval



Uganda National Council for Science and Technology

(Established by Act of Parliament of the Republic of Uganda)

Our Ref: SS737ES

2 September 2021

Danette Cagnet
Kibo Group International
Jinja

Re: Research Approval: Community-led Total Sanitation Programming and the Maintenance of Sanitation Behaviors

I am pleased to inform you that on **02/09/2021**, the Uganda National Council for Science and Technology (UNCST) approved the above referenced research project. The Approval of the research project is for the period of **02/09/2021** to **02/09/2022**.

Your research registration number with the UNCST is **SS737ES**. Please, cite this number in all your future correspondences with UNCST in respect of the above research project. As the Principal Investigator of the research project, you are responsible for fulfilling the following requirements of approval:

1. Keeping all co-investigators informed of the status of the research.
2. Submitting all changes, amendments, and addenda to the research protocol or the consent form (where applicable) to the designated Research Ethics Committee (REC) or Lead Agency for re-review and approval **prior** to the activation of the changes. UNCST must be notified of the approved changes within five working days.
3. For clinical trials, all serious adverse events must be reported promptly to the designated local REC for review with copies to the National Drug Authority and a notification to the UNCST.
4. Unanticipated problems involving risks to research participants or other must be reported promptly to the UNCST. New information that becomes available which could change the risk/benefit ratio must be submitted promptly for UNCST notification after review by the REC.
5. Only approved study procedures are to be implemented. The UNCST may conduct impromptu audits of all study records.
6. An annual progress report and approval letter of continuation from the REC must be submitted electronically to UNCST. Failure to do so may result in termination of the research project.