BLENDED LEARNING FOR SOCIAL AND BEHAVIOR CHANGE COMMUNICATION:

A LITERATURE REVIEW

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ACRONYMS

HC3	Health Communication Capacity Collaborative
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
JHU·CCP	Johns Hopkins Bloomberg School of Public Health Center for Communication Programs
MSH	Management Sciences for Health
PSI	Population Services International
SBCC	Social and behavior change communication
SC	Student – content
SS	Student – student
ST	Student – teacher
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

Blended learning, or the use of a variety of media and learning environments to achieve mastery and application of knowledge and skills, is increasingly being used to build capacity in middle- and low-income countries. However, few studies have examined the use of blended learning to build the capacity of social and behavior change communication (SBCC) professionals. The aim of this literature review is to determine promising practices for utilizing blended learning in SBCC capacity building activities, identify considerations for designing the correct "blend" of learning components and examine the implications of using blended learning in low-resource settings. While few studies were found that look specifically at blended learning related to SBCC, the paper discusses findings more broadly associated with capacity building that can be applied to the SBCC context. Interaction with the instructor and relevance to actual responsibilities emerged as important factors in successful blended learning design, but findings varied on determining the appropriate blend between these and other program components. Evaluating the local context and looking for innovative solutions is important when designing blended learning programs for middle- and low-income countries.

INTRODUCTION

The Health Communication Capacity Collaborative (HC3) is a five-year, global project funded by the United States Agency for International Development (USAID) and designed to strengthen the capacity of institutions and governments in middle- and low-income countries to develop and implement state-of-the-art health communication programs.

HC3 is led by the Johns Hopkins Bloomberg School of Public Health Center for Communication Programs (JHU·CCP) in partnership with Management Sciences for Health (MSH), NetHope, Population Services International (PSI), Ogilvy Public Relations and Internews, and addresses important health issues such as child survival, family planning, maternal and newborn health, HIV/AIDS and malaria.

An essential component of the project's efforts is to build capacity in developing and implementing health communication programs in middle- and low-income countries by determining the most effective and efficient methods for facilitating and sustaining the learning process for SBCC professionals. Developing and implementing effective learning processes in these countries can be particularly challenging as low access to health and education programs, lack of available resources and weak infrastructure can present significant challenges to the traditional classroom approach. HC3 aims to examine the use of blended learning as an approach to build capacity in individuals, non-governmental organizations, government and others, particularly to design, develop, implement and evaluate SBCC programs.

Blended learning is one approach that is increasingly being used in middle- and low-income countries. The term, "blended learning," is used to describe this combination of a variety of learning media (such as face-to-face, online, radio, print, social media) and learning environments (such as instructor-led, teamwork, self-study and peer-to-peer interaction) that reinforce and accelerate mastery and application of the job. Blended learning approaches are seen as an effective way to strengthen programs through combining existing materials and various modalities (radio programs, eLearning, print materials, etc.), and to lower the costs associated with face-to-face instruction in low resource locations.

The use of technology as part of a blended learning approach has been widely recognized as an approach that can bridge many of the educational barriers that exist in low- and middle-income countries (Dodani, Songer, Ahmend, & Laporte 2012; Thukral et al., 2012). Increasingly, combining the Internet and other technological approaches with more traditional education methods is proving to provide the flexibility and affordability required in low- and middle-income countries while still successfully improving knowledge, attitudes and skills (Boitshwarelo, 2009; Chio, 2012; Duhaney, 2009).

Research has shown that the results of blended learning approaches are similar to, and in some cases better than, traditional classroom approaches (Aggarwal et al., 2011; Arroyo-Morales, Cantarero-Villanueva, Fernandez-Lao, Guirao-Pineyro, Castro-Marin, & Diaz-Rodriguez, 2012; Means, Toyama, Murphy, Bakia, & Jones, 2010; Valk, Rashid, & Elder, 2010). Most of this research, however, tends to focus on the use of blended learning in academic settings or in programs that focus on the acquisition and application of "hard skills" such as research and topical knowledge. Less research has focused on the use of blended learning approaches in programs focusing on "soft skills" such as communication skills, creativity and critical thinking. The effectiveness of blended learning approaches in courses focusing on "soft skills" is particularly important when looking at designing and implementing SBCC programs, as SBCC programs seek to use communication to positively influence social dimensions and well-being.

While research has shown blended learning approaches to be effective as a whole, less is understood about the effectiveness of variations within blended learning. Many factors can influence the effectiveness of a blended learning program, and it can be challenging to identify the best "blend" of approaches to complement the learning objectives, meet the needs of participants, and match the program's context.

HC3 conducted a literature review in order to better understand the implications of implementing a blended learning approach for strengthening capacity in designing, implementing, and evaluating SBCC programs. The aim of the literature review was to 1) determine promising practices for utilizing blended learning in SBCC capacity building activities; 2) identify considerations for designing the correct "blend" of learning components; and 3) examine the implications of using blended learning in low-resource settings. Because of the lack

of literature directly related to the use of blended learning in SBCC capacity building, this paper discusses findings on blended learning for capacity building in general, which can then be applied more specifically to SBCC.

METHODOLOGY

The literature search included both peer-reviewed journals and grey literature and focused on the topics of capacity-building, instructional design, non-formal education and blended learning. Searches used keyword-based terms such as “blended learning,” “informal learning” or “distance learning,” as well as relevant terms from the controlled vocabularies of the databases consulted (PubMed, SocINDEX, MEDLINE, ERIC, the Cochrane Database of Systematic Reviews and Google Scholar). The search was limited to publications discussing education for adults which were published in English in the last five years. The bibliographies of relevant materials were mined for applicable references. In reviewing the results, literature that examined blended learning courses in academic settings has been excluded in order to make findings more relevant to SBCC programs.

KEY FINDINGS

EFFECTIVENESS OF COMPONENTS IN BLENDED LEARNING

As blended learning programs have become more widely implemented and as technology surrounding these programs has improved, a greater variety of options for learning approaches has become available. Several studies have attempted to look more closely at the effectiveness of the various components within blended learning courses by asking participants to evaluate the different elements of the course in which they participated.

One of the most consistently reported findings of these studies is the importance of communication with the instructor, ideally in person, to the perceived effectiveness and satisfaction with a course. These findings encompass both formal instruction, such as seminars, as well as informal communication, such as emails from the instructor. An evaluation of a blended learning in-service leadership training program in Norway found that participants rated face-to-face seminars as the most useful approach, followed by print and e-learning (Moe & Rye, 2011). Similar studies found that participants ranked communications from instructor and instructional presentations as among the most important elements of the blended learning courses (Pang, 2009; Rhode, 2009). Lectures delivered through dialogue with the instructor as part of a blended learning program have been shown to facilitate knowledge transfer (Lee, 2010). Some studies looked beyond the instructor as a source of information and examined the impact of involving additional experts in blended learning courses. Another study found that asking the advice of an expert as part of a blended learning curriculum can increase work-related knowledge and that panel discussions increased employees' learning (Chandavimol, Natakuatoon, & Tantrarungroj, 2013).

The perceived effectiveness of blended learning components also corresponds to how closely different components relate to the participants' actual responsibilities. Participants rated assignments and activities that directly applied to their own work as very important to the effectiveness of the course. In South Korea, an evaluation of a management leadership development program that focused on coaching found that participants rated the use of case scenarios, writing their own case scenarios and role-playing as among the most beneficial parts

of the program (Lee, 2010). A study of knowledge management in a blended training in Thailand found practical workshops, action learning, and training and practice were particularly helpful in knowledge retention (Chandavimol et al., 2013). A similar study found that participants regarded assignments that focused on the application of knowledge as particularly useful (Rhode, 2009) and that programs using different types of online simulations showed positive outcomes (Means et al., 2010).

Blended learning programs commonly include components that encourage interaction with other learners. Yet, studies revealed mixed results in the satisfaction and effectiveness of these program elements (Means et al., 2010). Interaction with other learners was perceived as beneficial when it occurred in person, such as small group meetings, knowledge-sharing activities and in-person seminars (Chandavimol et al., 2013; Rhode, 2009). A work-based capacity building course in under-served communities in Canada found that there were significantly more drop-outs in self-directed than in peer-led learning and participants preferred face-to-face learning with peers because it improved cohesiveness and morale (Ravitz et al., 2013). However, participant ratings of these learner-learner interactions were less positive when the interaction was facilitated online (Loureiro-Koechlin & Allan, 2010). An evaluation of a blended learning professional development certification program in the United States found that participants rated synchronous chat with fellow learners, learners' comments to discussion boards and comments from learners to blog postings as the least useful elements of the program (Rhode, 2009). Similar studies found that the web blog, chat and discussion board were the least utilized technological elements of blended learning programs, as opposed to emails and web portals, which were more utilized (Chandavimol et al., 2013; Lawton et al., 2010).

The literature review also revealed discrepancies in the benefit of online readings and external resources. Some studies found that external resources and self-directed learning from readings were perceived as beneficial (Rhodes, 2009; Chandavimol et al., 2013). However, a different study found that participants generally favored print materials over the same materials online (Moe & Rye, 2011). This study also noted a significant difference in scoring between age groups in stating a preference for print or online materials, with younger participants more likely to prefer online resources. A meta-analysis of blended learning programs conducted by the US Department of Education found that there was no significant difference between print-based

and web-based materials, which is consistent with the theoretical position that the medium is simply a carrier of content and unlikely to affect learning (Means et al., 2012).

DETERMINING AN APPROPRIATE BLEND

In addition to differing results on the most effective components of blended learning programs, researchers also have differing conclusions on how to determine an appropriate blend between these various learning components. In a meta-analysis of blended learning programs, Bernard et al. (2009) compared different types of interaction in order to determine which interaction or combination of interactions led to the highest achievement effects. The study focused on three types of interactions: student – student (SS), such as interaction between individual students and small group work; student – teacher (ST), including both face-to-face interaction but also online interaction such as video-conferencing, emails and online chat; and student – content (SC), in which the student constructs meaning from the content, relating it to personal knowledge and applying it to problem solving. The study found that the effects of student – student interaction and student – content interaction were significantly higher than student – teacher interaction. Regarding the combination of categories, Bernard et al. found that there is an increasing relationship between strength and effect size for SS+SC and ST+SC, but not for SS+ST. The study also found that high and medium interactions promoted better achievement than low interaction in all three categories.

In a different approach to examining blended learning programs, a Canadian study randomly assigned participants of a management development course to one of four groups, with each group receiving the course through a different blended learning design (Table 1) (Adams 2010). The study expected to find that participants in Level 4 would demonstrate the highest level of achievement; however, findings showed that individuals excelled in each of the blended learning groups, not just Level 4.

Blended Learning Model	Details for Integrating Work and Online Learning
Level 1: e-Learning as a Background Resource (i.e., self-directed e-learning)	Online learning resources are made available as voluntary background material for supporting job performance and personal development where learning objectives are very general in nature (e.g. understand the basics of coaching) and used as: • a supplementary resource (e.g., e-libraries, e-books, e-catalogues), • a stand-alone feature (e.g., self-directed courses), • an add-on combined with other primary modes of instruction (e.g., face to face classroom/workshop sessions/ online classrooms/virtual teams).
Level 2: e-Learning as Part of a Balanced (Blended) Mode of Instruction (i.e., a blend of class and e-learning)	Online materials are integrated with classroom instruction where learning objectives tend to be general (e.g., learn how to be a coach) rather than very specific as in level 3 and used as: • required pre-work assignments, • referenced/featured in classroom discussions (e.g. using screen shots to make concrete links and motivate and guide learner use), • required post-work assignments.
Level 3: e-Learning Tightly Coupled with Personal Learning Objectives (i.e. a blend of coaching and e-learning)	Online materials are tightly coupled with highly specific personal learning objectives (e.g., coaching Martha to improve sales this month) and used as: • core content support for competency development plans, • focus for job coaching, advisory or remedial performance support, • collaborative focus for team mentoring programs.
Level 4: e-Learning Tightly Coupled with Action Projects (i.e., a blend of action-learning projects and e-learning)	Online materials support action projects (e.g., projects where employees learn as they go) that have been mandated or acknowledged as important by the organization or a specific manager to deliver demonstrable value through individual or team project applications, and that provide the key focus for learning. Online materials are used to: • drive a practical "ROL" (return on learning) approach into practice as a key strategic imperative, • provide just-in-time support for action projects where learning is directly geared to creating positive outcomes - through demonstrable project results and improved personal/team development and work performance as the primary objective, rather than as an ancillary or supplementary spin off.

FIGURE 1: ADAMS (2010) P.6

Interestingly, when participants were asked the extent to which perceived benefits outweighed the costs at each level, participants identified Level 2 (69%), Level 4 (36%), Level 3 (33%) and Level 1 (8%). No common individual characteristics for participants who did well were evident, even when controlling for learning style, learning preferences and major motivators and barriers. The major conclusion of the study was the inability to find a predictable, repeatable, no-fail, best approach to workplace learning for soft-skills development. The authors suggest that this might be an argument for a highly individualized approach that acknowledges the complexity of providing effective soft-skills development programs where personal learning profiles are unique for each learner.

The content and objectives of the course should be taken into account when designing a blended learning program, but studies are contradictory in how content affects the ideal blend of program components. One such study examines the difference in blended learning approaches for “hard” and “soft” skills (Morgan & Adams, 2009). They argue that while a more structured approach is appropriate for learning hard skills, a course teaching soft skills should be “learner-in-control” where the learner is able to mix and match content and learning resources to meet different learning needs, both at a program and individual level. The format should focus less on the assessment of knowledge gained, but rather should be evaluated on self-assessment, reflective practice and successful application. Courses should encourage learning in real-time, be pedagogy driven and integrate learning, knowledge creation and knowledge sharing. This finding is supported by a meta-analysis of blended learning programs conducted by the U.S. Department of Education (Means et al., 2010), which found online learning modules or platforms that individualized instruction through responding dynamically to the participant’s questions, needs or performance, had a positive effect.

Moe and Rye (2011) conducted a study among professionals participating in a management training course, in which learners were asked to reflect on the effectiveness of various components of the course. Contrary to findings of Adams and Morgan at al. (2009), Moe and Rye (2011) concluded that the inflexibility of a course’s content provides participants with a common topic for discussion. The main importance of the e-learning tool and textbook was that they did not supply abstract knowledge about leadership, but facilitated a common frame of reference that enabled meaningful dialogue when participants met at seminars. They concluded that the blend itself does not add value and that course designers instead need to understand how delivery formats and technologies in use need to interact and support each other with regards to a given purpose.

FACILITATORS AND HINDRANCES IN BLENDED LEARNING DESIGN

Research has shown there are various factors that can either facilitate or hinder learning during blended learning programs. Appropriate and timely feedback from the instructor was consistently found to motivate learning and critical to the success of blended learning programs (Lee, 2010; Adams 2013; Aggarwal et al., 2011; Dzakiria, 2012; Osei, 2010). This often can be a challenge for programs in which instruction is being given remotely. For example, a study in India comparing online to on-site training in research ethics found that students participating in the online version of the class had similar levels of satisfaction as those participating in the on-site version, except in the areas of feedback from the professor and accessibility of the instructor (Aggarwal et al., 2011). Blended learning programs that utilize remote instruction or facilitation could face similar challenges as online courses in promoting participant-instructor interaction.

The appropriateness of the content and its relation to stated objectives can also motivate learning through blended learning programs. In looking at the design of various blended learning programs, Lee (2010) found that the appropriate amount of information, the teaching of underlying principles and a consistency between content and stated learning objectives all enhanced participant learning, whereas an inappropriately large amount of information hindered learning. The relevance of the content to participants also has been found to improve the motivation of learners (Adams, 2010). Additional factors that can facilitate learning during blended learning programs include flexibility in the location, time and pacing of the course (Adams, 2010; Macdonald & Chui, 2011) and the ease of use of the materials (Donkor, 2011; Valk et al., 2010). Factors found to hinder learning during blended learning courses include logistical barriers such as vague instructions, lack of internet skills and other problems with technology (Adams, 2010), and difficulties with self-motivation including lack of self-discipline (Adams, 2010) and the passive learning format of some blended learning programs (Lee, 2010).

BLENDED LEARNING WITHIN THE SOCIAL AND BEHAVIOR CHANGE COMMUNICATION COMPETENCIES

While few studies examined the role of blended learning in building capacity of SBCC skills, findings from existing studies can still be valuable in understanding how to maximize the impact of blended learning in the context of SBCC. These findings and recommendations have been organized according to the following SBCC competencies: knowledge, attitudes, skills and application.

KNOWLEDGE

Participants in blended learning courses that include a distance learning component demonstrate similar acquisition of knowledge as those participating in a traditional classroom setting and experience similar satisfaction with online training and classroom training (Pang, 2009; Valk et al., 2010). These courses can lead to increased knowledge in key health areas (Chang at al., 2012). Many of the characteristics of blended learning programs that successfully improve knowledge coincide with findings presented earlier in the paper, including meaningful interaction with the program facilitator, interaction with peers in order to support learning (Dzakaria, 2012; Ravitz et al., 2013) and instilling an understanding of the usefulness of the content (Donkor, 2011). The ease of use of the materials and components of the course was found to impact knowledge gain (Donkor, 2011; Valk et al., 2010).

Recommendations

- Curriculum designers can develop a strategic blend of components focusing on modalities that participants perceive as helpful and avoiding modalities that participants perceive as burdensome or not useful.
- Facilitate meaningful, two-way communication between participants and instructors. Instructors that are knowledgeable, approachable, passionate and engaging can lead to enhanced learning.
- Provide space and opportunities for dialogue between learners and develop components that guide and encourage meaningful and purposeful inter-learner communication.
- An assessment and consideration of learners' access to resources, workload educational and professional background, and institutional support can be a valuable tool in program design.

ATTITUDES

Few studies of blended learning programs examined their impact on participants' attitudes; however, some trends emerged among the existing research. Research shows a tool or feature that prompts students to reflect on their learning was effective in improving outcomes, including changing the attitudes of participants (Means et al., 2010). For example, a training in the United States to promote occupational health nursing practices combined online pre-recorded lectures with individualized feedback from facilitators on self-assessment questions (Ward et al., 2011). In post-viewing self-reflections, participants frequently described experiencing a perspective shift from a task-completion orientation to a "big picture view" of their role in occupational health. Many expressed intent to change their clinical practices as a result of what they had learned. A program to improve skills, knowledge and attitudes for achieving improved employment outcomes for individuals with disabilities included self-assessments and organizational assessments. The program led to improved attitudes towards employees with disabilities, including increased advocacy and usage of leading practices and activities to promote employment for people with disabilities (Golden & Karpur, 2012). Role playing as part of blended learning programs also has been shown to lead to increased appreciation for differing points of view, contemplation of personal attitudes and increased appreciation for the subjectivity, complexity and scale of an issue (Cornelius & Gordon, 2011).

Recommendations

- Provide opportunities for guided self-reflection and discussions in trusting environments.
- Role-playing can provide opportunities to understand various sides of an issue and understand other viewpoints.

SKILLS

Blended learning programs can provide the necessary balance between the flexibility and cost-effectiveness of a distance learning program with the hands-on training required for mastering skills. One characteristic identified in several successful programs was a curriculum centered on

a balance of theory and practical information (Thukral et al., 2012; Kwarteng & Boateng, 2012; Weaver et al., 2012; Wahabi & Al-Ansary, 2011), which helps participants to not just learn the skills, but also to understand the importance and value of the skills being learned. An in-service course conducted in India to improve the skills of nurses in essential newborn care balanced theoretical knowledge disseminated through online lessons, moderated discussion groups and case studies, with two weeks of skills learning through a partnering organization. Participants of the course demonstrated a significant improvement in clinical examination scores as a result of their participation, and reported that both the theoretical knowledge and practical training contributed to improved skills (Thukral et al., 2012). Many successful skills-building programs included similar practice components, with significant portions of the course dedicated to hands-on skills training (Kwarteng & Boateng, 2012; Wahabi & Al-Ansary, 2011). A blended learning program to improve clinical competence among medical practitioners in Uganda paired distance learning with occasional classroom sessions and twelve half-day clinical rotations. The program also utilized periodic on-site support including seminars, breakout sessions, mentoring and quality improvement activities, resulting in a significant increase in clinical competency immediately following the course and at 24 weeks (Weaver et al., 2012). In many cases partnerships with outside institutions provided opportunities for on-site training and skills-building (Thukral et al., 2012; Kwarteng & Boateng, 2012; Weaver et al., 2012). Some studies noted the importance of developing inclusion criteria for participants to ensure that they have the necessary foundation of knowledge and skills for the course to build on (Thukral et al., 2012; Weaver et al., 2012).

Recommendations

- Promote opportunities for hands-on skills learning in order to develop competencies, to provide face-to-face guidance and supervision and to reinforce content learned remotely.
- Ensure that participants have an appropriate foundation of skills and knowledge for the course.
- Develop partnerships with appropriate institutions, which can serve as valuable resources in providing necessary hands-on training.

APPLICATION

Blended learning courses have been shown to have a measured impact on health outcomes that extend beyond the acquisition of knowledge and skills. If thoughtfully designed, blended learning courses can lead to continued application of skills and knowledge, even if these are learned at a distance (Chio, 2012; Namagembe et al., 2012; Bekkers et al., 2010; Butler et al., 2013). The characteristics of blended learning programs that successfully result in ongoing application of the course's learning objectives include interactivity and applied learning that are integrated throughout the program. Programs that include hands-on instruction and skills learning have been shown to be useful in promoting ongoing application of skills in the workplace. For example, a training to improve patient management among medical professionals in Uganda included clinical and lab placement sessions to apply skills learned in the classroom. The program resulted in statistically significant improvement in clinical and laboratory skills during assessments at six weeks, twelve weeks and one year following the training (Namagembe et al., 2012). Similarly, a training for nurses on behavior change counseling used practice-based seminars with face-to-face training and review by a facilitator, along with simulated consultation in practice settings. At three months, patients who were treated by nurses who participated in the training were more likely to have reported making an attempt to change behavior and more likely to report having made a sustained change in risky behavior (Butler et al., 2013).

Clear relevance to real roles and responsibilities appears to impact application of skills. In particular, programs that promoted skills learning through long-term projects incorporated into the program demonstrated success in post-program application of knowledge and skills. In these programs, the blended learning course supported participants in applying learning to real work-based projects from start to finish (Garrote et al., 2011; Chio, 2012). In Eastern Europe, a virtual leadership development program guided teams of representatives from national tuberculosis and HIV/AIDS programs in identifying a challenge that they were facing and developing an action plan to address it. Through implementing the action plans developed during the course, organizations reported a 70% increase in the number of patients receiving antiretroviral treatment, and successfully bolstered support for a resolution to address tuberculosis in Ukraine (Chio, 2012). Programs that facilitate team participation appear to encourage long-term

application of skills, as team members can provide encouragement and accountability for long-term improvements (Chio, 2012; Namagembe et al., 2012). Institutional support at all levels also was an important factor in the successful application of knowledge and skills (Garrote, Pettersson & Christie, 2011; Chio, 2012).

Recommendations

- Focus on and incorporate application of skills to real challenges and situations faced by participants.
- Training at the team level can provide encouragement and accountability for long-term improvements.
- Incorporate plans for long-term follow-up and evaluation to appraise application.
- Ensure institutional support for blended learning programs.

CONSIDERATIONS FOR USING BLENDED LEARNING FOR SOCIAL AND BEHAVIOR CHANGE IN MIDDLE- AND LOW-RESOURCE SETTINGS

The use of blended learning presents valuable opportunities for learning in areas where distance and cost of traditional classroom learning can be an impediment, (Osei, 2010; Duhaney, 2009). Blended learning courses have been shown to be more cost-effective and therefore a viable option in low-resource settings (Dodani et al., 2012). While oftentimes participants in low- and middle-income countries have less technological experience than in developed countries, several studies show lack of experience with computers or other e-learning mediums does not necessarily affect a participant's experience in a blended learning course, nor the participant's success in the course (Thukral et al., 2012; Dzakiria, 2012). However, findings consistently show that there are factors that should be considered when designing and implementing blended learning courses for low-resource settings (Duhaney, 2009). While experience with technology is not necessarily a barrier, lack of access to technology such as computers and reliable Internet is commonly a problem with blended learning formats. A case study of a blended learning teacher professional development course in Botswana found that participants had limited or no access to the Internet in the schools in which they taught (Boitshwarelo, 2009). As a result, despite being pedagogically appropriate and well-conceived, there was very limited use of the online course. The study in Botswana also found that teachers cited time constraints due to other

duties in their jobs as a significant barrier to their participation. This finding coincides with the evaluation results of the roll-out of a large-scale distance in-service certification program for nurses in Kenya, which found that fear of losing their jobs was commonly identified as a deterrent to enrolment in the course (Lakati, Ngatia, Mbindyo, Mukami, & Oywer, 2012), thus highlighting the importance of institutional support for participation in blended learning programs. However, the most frequently cited barrier to enrolment in the nursing program in Kenya was the fees associated with the course. Some programs have successfully charged tuition in order to maintain the course's perceived quality and value (Heller et al., 2007); however programs in low- and middle-income countries should keep in mind the financial limitations of participants or seek out alternative sources of funding to partially subsidize participation.

Studies also showed that language can be a significant hindrance to the success of blended learning programs in low- and middle-income countries. A blended learning program in Thailand attempted to incorporate mobile phones into a blended learning program, but the mobile phones would only operate using English-language characters. Many of the participants did not speak English, and therefore could not participate in the SMS aspects of the course (Valk et al., 2010). However, other studies found the use of mobile phones as a promising component of blended learning programs (Thukral et al., 2012; Macdonald & Chiu, 2011). A promising program in Senegal is using an interactive voice response mLearning platform that delivers training to health workers on their mobile phones (Chawla, 2013). A language program in Bangladesh used short audio lessons that participants accessed through a voice call on their mobile phones (Rhaman & Panda, 2012). Learners accessed over 1.5 million lessons within five weeks of the program being launched.

Mobile phones are only one of several opportunities to use technology in blended learning programs. Other programs successfully used USBs (Garrote et al., 2011) and CD-ROMs (Pearce et al., 2012) to provide information to students in areas where the Internet was unreliable. A teacher in-service training in Kenya used solar-powered tablets to provide learning opportunities in communities where there was limited internet and computer access (Onguko, Jepchumba, & Gaceri, 2013). While participants did experience some technical difficulties with the tablets, they helped one another by sharing solutions on how to resolve these issues.

Recommendations

- Evaluate existing technological infrastructure to ensure that approaches are appropriate for the context.
- Consider the financial limitations of participants when designing the cost structure for the course.
- Language can be pretested to determine its appropriateness for intended participants.
- Look for opportunities for innovative use of alternative technologies, such as mobile phones, tablets and USBs.

CONCLUSION

Blended learning approaches offer efficient and effective options for providing learning opportunities in low-resource settings for a variety of subjects, including capacity building for SBCC. However, while blended learning programs have been used in a variety of contexts and curricula, more focused research on its implementation in relation to capacity building for social and behavior change communication is needed in order to come to a better understanding of how to maximize its impact in this area. In particular, research should move beyond initial knowledge gain and look towards long-term application of knowledge and skills. This shift would require that ongoing follow-up be incorporated into the course design and that resources are dedicated to this purpose. There is also a need for more experimental design to illuminate the impact and effectiveness of individual components within a blended learning design. While the use of experimental design can be complicated and resource intensive, it would provide valuable insight into the contribution of individual elements of blended learning programs to the overall learning objectives.

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