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Innovative digital HIV and AIDS education and prevention for marginalised communities: Philadelphia's Frontline TEACH

Val Sowell, Juliet Fink, and Jane Shull

Abstract

In the last decade many HIV and AIDS education and prevention resources have been adapted for use on the Internet in the form of fact sheets, news feeds and educational videos. Despite these online resources, the educational needs of marginalised communities at risk of HIV are still not being met in Philadelphia, Pennsylvania, USA. Many individuals from marginalised communities often lack the digital literacy skills required to engage effectively with the overwhelming and diverse online resources available about HIV education and prevention. To address this problem this paper describes Frontline TEACH—an adaptation of Project TEACH—which combines face-to-face and online education for a population of HIV-negative people who have a need for targeted HIV education. Drawing on our experiences and evaluation results, we argue the Frontline TEACH course design and delivery improved upon existing online HIV education and prevention approaches by integrating Moodle and YouTube to widen community access and participation. We outline recommendations for Open Distance Flexible Learning (ODFL) formats to design innovative digital HIV and AIDS education and prevention for marginalised communities.

Keywords: access, community development, education, HIV and AIDS, Moodle, ODFL, prevention, YouTube

Introduction

Three decades into the HIV epidemic, American mass media struggles to convey effective messages about HIV and AIDS regarding the complexity of prevention, care and support. Herek, Capitanio and Widaman (2002) conducted national telephone surveys examining the prevalence of AIDS stigma and misinformation in 1997 and 1999. When they compared their results to a similar survey from 1991, they found that while overt expressions of stigma around HIV and AIDS had declined by 1999, “inaccurate beliefs about the risks posed by casual social contact increased, as did the belief that people with AIDS (PWAs) deserve their illness” (p. 371). Similar findings were uncovered in a later study (Herek, Widaman and Capitanio, 2005) that observed areas of significant HIV misinformation among 1,283 American heterosexuals. For example, “nearly one fourth of male respondents and more than one third of female respondents believed that a single act of unprotected intercourse between an uninfected man and woman can cause one of the partners to develop AIDS” (p. 30). Their study also noted that “accurate beliefs [about HIV transmission] were more common among respondents with higher socioeconomic status” (p. 31).

We have found that for adults from low socioeconomic backgrounds, whether they are living with HIV or at risk of infection, accessing reliable information about the virus online is often difficult, even impossible. Searching for health information effectively online requires high levels of computer and digital literacy. Many individuals from

marginalised communities may not have regular access the Internet at home and may face restrictions accessing the Internet in public spaces. Additionally, the Internet may be too expensive to access from their mobile phones.

Decreased attention to HIV in American mass media since combination therapy became widely available is simultaneous with the growth of the Internet as a source of health information. One recent survey found that of the 74% of 3,001 respondents who reported using the Internet at least occasionally, 80% have looked online for health topics (Fox, 2011). However, the remaining 26% of those who did not use the Internet may represent the populations most at risk for HIV infection. When Benotsch, Kalichman, and Weinhardt (2004) surveyed 324 adults living with HIV in America concerning their Internet use for health information, they observed that “[w]omen, ethnic minorities, and persons living in poverty represent the populations most likely to be cut-off from information technology, and the same demographic characteristics represent the fastest growing populations of people living with HIV and AIDS” (p. 1004).

Kalichman et al.'s (2006) research presented similar results showing that “assigning higher credibility to unfounded Internet information was predicted by lower incomes, less education and avoidant coping styles” (p. 205). In their discussion, the investigators made the following recommendation:

People living with HIV infection, as well as other life-threatening illnesses, who use the Internet for health information should be informed about the potential for misinformation and unfounded claims online ... AIDS service organizations, residential centers, and clinics that have Internet access for people living with HIV/AIDS can offer skills-based educational programs for people living with HIV infection to improve their critical thinking skills and train individuals in systems and strategies for evaluation of health-related Web sites (p. 210).

The challenges of digital health information & education

The Internet has become a primary medium for individuals to get information about their health. According to a May 2011 Pew Internet and American Life survey of Internet users, 80% of 3,001 respondents researched 15 health topics (such as a specific disease or treatment), and 25% of them watched an online video about a health or medical issue (Fox, 2011, p. 2). Disconcertingly, a similar survey from 2006 revealed that only 15% of online health information seekers said they “always” check the source and date of the health information they found online. 75 % indicated they checked the source and date “only sometimes,” “hardly ever,” or “never” (Fox, 2006, p. 18). The same report examines the positive and negative emotional reactions of online information health seekers, comparing the reactions of those with high school diplomas or less against those with college degrees. While 74% of all online information health seekers reported feeling “reassured” they could make appropriate health care decisions with the information they found after an online search, individuals with high school diplomas or less reported higher levels of negative emotions related to the information they found. Strikingly, 33% of those individuals reported feeling “overwhelmed by the amount of information they found online,” (p.17) compared to 20% of individuals with a college degree. Fundamentally, individuals from low socio-economic backgrounds with less education have the least access to resources and skills for researching health issues online, in the flourishing but chaotic realm of digital health information.

Digital HIV and AIDS education and prevention

In contrast to static information-disseminating approaches to online HIV education and prevention resources, there have also been public health Internet-based HIV prevention education attempts to change behaviour. Bowen et al. (2008) found that “the Internet appears to be an effective method of delivering HIV prevention” (p. 463) for rural men that have sex with men (MSM) in America. Another brief online video intervention to promote HIV prevention among MSM in New York City resulted in significant, self-reported increases in HIV disclosure and decreases in risk behaviour three months after MSM viewed the video (Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, 2009).

The increasing usage of social networking technologies such as Facebook, mobile phones and MP3 players offer innovative possibilities for further enhancing the prospects for digital HIV prevention and education (Walsh, 2011; Schenk & Singh, this issue). Social media for peer-led HIV prevention through Facebook and MSN messenger have proven effective among marginalised communities such as transgenders in Thailand (Chaiyakit and Walsh, this issue) and African American and Latino Men in California (Jaganath et. al. 2011; Henry et al., this issue). The success of these peer-based approaches indicates the importance of locating HIV prevention and education in digitally mediated social-sexual practices of marginalised communities (Walsh & Singh 2012).

Another recent development is the rapid acceptance of Open Distance Learning (ODL) as an effective educational approach in health care (US DOE, 2010; Bradley and Yates, 2000; Lewis 1999). ODL is an umbrella term for teaching and learning that mobilises different course design and technological facilities to deliver targeted educational programmes and support mechanisms for a variety of populations facing barriers to learning (Rocha Trindade, et.al., 2000). Among students from low socio-economic backgrounds and those with no or little prior experience with computers, effective ODL approaches in health care combine targeted support for individuals to access health information and resources with flexible learning opportunities (UNESCO, 2012).

Overcoming capability constraints (Birochi and Pozzebon, 2011) with an understanding of the wider social contexts that influence the decisions and designs of digitally mediated education for adults from low socio-economic backgrounds is critical (Aderinoye and Ojokheta, 2004; Rocha Trindade, et. al., 2000). In the context of HIV education and prevention, Pridmore and Yates (2005) argue that ODFL (open distance and *flexible* learning) design frameworks are more effective because they “overcome the various forms of distance and separation...” (p.5) and “social inequality, social exclusion, sexism, racism, and homophobia.” (p.23). ODFL approaches work to provide learning opportunities where attempts are made to intentionally reduce the barriers that can inhibit learning with the goal of enhancing access. Hodgson (1993) identifies these barriers as the possible physical separation of learners from teachers, or even the inability of learners and teachers to meet at mutually convenient times.

ODFL interventions in Mozambique and South Africa have been shown to “mitigate the impact of HIV and AIDS on affected young people by providing materials that give practical advice and emotional support for their everyday lives” (Pridmore and Yates 2005, p. 22). A core recommendation from this work is that educators working with highly disadvantaged populations at risk of HIV should “meet their needs for basic education and livelihood programmes so that they can tackle

structural barriers and have real choices in their lives. ODFL could do much to overcome these barriers, and offer many wider, life-giving choices” (p. 23). They make a strong argument that ODFL “must build empowerment and motivation, strengthen supportive social networks, and increase access to services and links to outside agencies” (p. 22).

There is a growing availability and use of online HIV and AIDS resources (Table 1). But, these remain inaccessible to people from lower socioeconomic backgrounds and those who lack of high levels of literacy, including computer and digital literacy. Additionally, marginalised communities disproportionately at risk of HIV infection lack opportunities to engage in structured and easily accessible ODFL approaches, particularly in an enabling context that builds learning capacity and provides access to resources. Addressing these challenges in our context of inner-city Philadelphia, we have adapted a successful face-to-face HIV education intervention for people living with HIV and AIDS—Project TEACH—to serve HIV-negative people through an ODFL format. In what follows we describe these innovative programmes within the context of Philadelphia.

Organization	Type of Online Resource	Drawbacks
Project Inform	Fact sheets and articles regarding living with HIV	Non-interactive web resource
AIDS Info Net	Low-literacy fact sheets on many aspects of HIV disease	Non-interactive web resource
The Body	News, fact sheets, question and answer forums, and articles regarding living with HIV	Various reading levels available; static question and answer forums
The Body Pro	News, fact sheets, question and answer forums, and articles regarding living with HIV	Sophisticated information for medical providers and AIDS service professionals; static question and answer forums
PubMed	Journal articles from multiple disciplines and reference materials	Highly sophisticated medical vocabulary; non-interactive web resource; corporate ownership/authors
MedLine Plus	Fact sheets and articles on many health conditions, including HIV and AIDS	Non-interactive web resource with the exception of one interactive tutorial
HealthHIV	Educational webinars and technical assistance	Intended for AIDS service professionals
HELP	HIV education videos for people living with HIV	Provides widget to make embedding their videos on your website easy; however, only two videos are available

Table 1. Organisations providing online HIV educational resource and their drawbacks.

HIV and AIDS in Philadelphia

Cumulatively in Philadelphia, 28, 274 people have tested positive for HIV from 1980-June 2010, (Shpaner, Brady and Eberhart, 2009) with 19, 237 people known to be living with HIV at the end of 2009. In 2006, Centers for Disease Control (CDC) data indicated that “Philadelphians are being infected at a rate more than 50 percent higher than residents of New York City and five times the national average” (Sapatkin, 2008). Fortunately, Philadelphia also has a vibrant community of people who are active in the fight against HIV, including one of the largest remaining chapters of ACT UP, the AIDS Coalition to Unleash Power, which has been meeting weekly since 1988. [ACT UP Philadelphia](#) has been a central force in the fight against AIDS in Philadelphia. Over the years it has been formative in creating, and in resisting the closure of, many community prevention and treatment interventions in the city. One prominent and sustainable intervention, Project TEACH, is administered by Philadelphia FIGHT.

Philadelphia FIGHT(ing) back



Figure 1. Philadelphia FIGHT's website, featuring the staff profile of one of the authors.

[Philadelphia FIGHT](#) is an HIV and AIDS service organisation (ASO) that originated as a clinical research organisation in 1990. It has expanded to include:

- An HIV specialist clinic ([Lax Center](#));
- Mental health and recovery treatment ([Diana Baldwin Clinic](#));
- The [AIDS Library](#), Internet and computer access and digital literacy courses ([Critical Path Project](#));
- A youth prevention and drop-in programmes ([Youth Health Empowerment Project](#));
- Drop-in services for people recently released from jail or prison ([Institute for Community Justice](#));
- Ongoing support groups for people living with HIV and AIDS (PLWHA); and
- An innovative treatment education course for PLWHA, [Project TEACH](#).

Project TEACH is open to anyone with HIV. Class students represent an unusually vulnerable and disenfranchised population: 72% are formerly incarcerated; around 80% have a history of substance abuse of which 25% are intravenous drug users; and about 10% are sex workers. Furthermore, 24% are gay men and other men who have sex with men (MSM) and 73% are African-American. 71% percent of our students live at or below US federal poverty levels. Many struggle with HIV-related dysfunctional beliefs and suffer a history of repeated sexual and physical trauma (Philadelphia FIGHT, 2011).

Additionally, Philadelphia is a poor city with a 27% poverty rate (Lubrano, 2011). 11% of adults reported skipping or reducing the size of a meal because they could not afford enough food (Public Health Management Corporation's Community Health Data Base, 2010).

Project TEACH is a flexible, non-judgmental, theoretically informed educational approach that enhances students' skills and confidence in changing health behaviours (Prochaska and DiClemente, 1982). Project TEACH draws on evidence of the effectiveness of this approach in HIV prevention programmes for high risk individuals who engage in high risk behaviours, including gay men and other men who have sex with men (MSM), (Parsons, et al., 2005) sex workers (Rekart, 2005), and heterosexuals (Zambrana, Cornelius, Boykin, & Salas Lopez, 2004).

Project TEACH Ch-cb-ch-changes

While the course structure has remained relatively stable since 1996, the content covered in Project TEACH has changed to keep up to date with the latest evidence-based HIV treatment and prevention information. Staff has remained engaged in reviewing and updating the curriculum to reflect current understandings of HIV treatment and prevention research. This is the same adaptive spirit that has allowed staff to bring the benefits of Project TEACH to the broader community in Philadelphia. Currently, Project TEACH is offered four times a year, alongside three ongoing “spin off” or sibling classes: TEACH Outside, Latino TEACH, and Frontline TEACH. TEACH Outside is for PLWHA who have a history of incarceration and emphasises connecting to resources and surviving life ‘on the outside’ of prison or jail. Latino TEACH is a class for Spanish-speaking PLWHA, collaboratively adapted by Philadelphia FIGHT and [Prevention Point Philadelphia](#), the city’s only syringe exchange programme. Having set the context for our intervention, in what follows we present our ODFL approach, Frontline TEACH.

Frontline TEACH

Frontline TEACH was originally developed by Philadelphia FIGHT in 1999 as a face-to-face course for HIV-negative individuals from HIV-affected communities. Although Project TEACH had addressed the needs of PLWHA, many graduates had sexual partners, family members, loved ones or other HIV-affected community members who expressed a need for education and support in the same topics. These individuals, affected by and potentially at risk for HIV, include injecting drug users, gay men or other men who have sex with men, sex workers, and heterosexuals who engage in unsafe sex. From 1999 to 2007, Frontline TEACH was delivered at least once a year as a 5-week face-to-face course. Frontline TEACH had no financial backing or grants during this period. The objectives of Frontline TEACH are:

- To provide accurate information about HIV and AIDS, including:
 - Relative risks of HIV transmission through sexual behaviors, shared needles, and perinatal transmission, and the accompanying prevention techniques
 - Debunking myths regarding HIV transmission through casual contact
 - Knowledge about HIV treatment options, goals, and guidelines
- To support individuals in recognising and combating HIV stigma in community settings
- To connect participants to resources, including health care, harm reduction, and AIDS activist organizations.

Frontline TEACH recruited course students through the approaches shown in Table 2 below:

Target Population	Recruitment Strategies
Sexual partners and families of PLWHA	Referrals from Project TEACH graduates; word of mouth; Frontline TEACH applications at health fairs
People at risk from HIV infection (gay/MSM, IDU, sex workers)	Identified by FIGHT staff, Project TEACH or Frontline TEACH graduates, staff of ASOs or allied organisations
Staff of ASOs or allied organisations, or aspiring job seekers	Referrals from Philadelphia FIGHT community members; self-directed web research

Table 2. Target populations and recruitment strategies for Frontline TEACH.

The different constituencies of Frontline TEACH have distinctive education needs, but share a need for comprehensive knowledge of HIV and AIDS prevention education. Frontline TEACH provides individuals with accurate and supportive information about preventing HIV transmission. The course also provides opportunities for understanding personal risk to HIV alongside a framework for making changes in sexual behaviours and addressing stigma.

Frontline TEACH goes digital

In an increasingly digitally mediated society, those who lack access to the Internet risk missing key information about HIV prevention, care and support as well as breaking developments in the field. An expressed need for community-based ODFL for service providers in housing, recovery or mental health fields seeking flexible and accessible community-based HIV education became evident. To meet the needs of these HIV-negative populations, Philadelphia FIGHT decided to adapt the face-to-face course into an ODFL course. We received a grant to design, deliver and evaluate an ODFL approach using [Moodle](#), an open source learning management system. The Frontline TEACH population was a good fit for piloting an ODFL platform, because three-quarters of the applicants had already demonstrated a measure of digital literacy by providing an email address on their Frontline TEACH application. For the remaining quarter of Frontline TEACH students, we provided additional computer and digital literacy support. This included additional computer and Internet access, help gaining necessary basic computer skills, including an overview of hardware and software, keyboard and mouse use, Internet browsing, and email tutorials.

Components of Frontline TEACH

Since 2009, Frontline TEACH has been offered as an ODFL course. Many steps were involved in adapting the face-to-face Frontline TEACH course. A lead instructor was identified within Philadelphia FIGHT, and classroom space was booked for the face-to-face sessions. Staff learned how to operate and adapt Moodle and developed a course outline arranged through Moodle's "topics" format. This allowed multiple activities and resources to fit within each topic. Twenty-nine topics were developed for the ODFL course (see Appendix 1 for the course outline). There were already slideshows for all course content, which the instructor developed into videos and narrated with screen capture software. The videos were posted on YouTube, featured on the [AIDS Library's YouTube channel](#) (Figure 2) and then embedded in web pages created within Moodle.

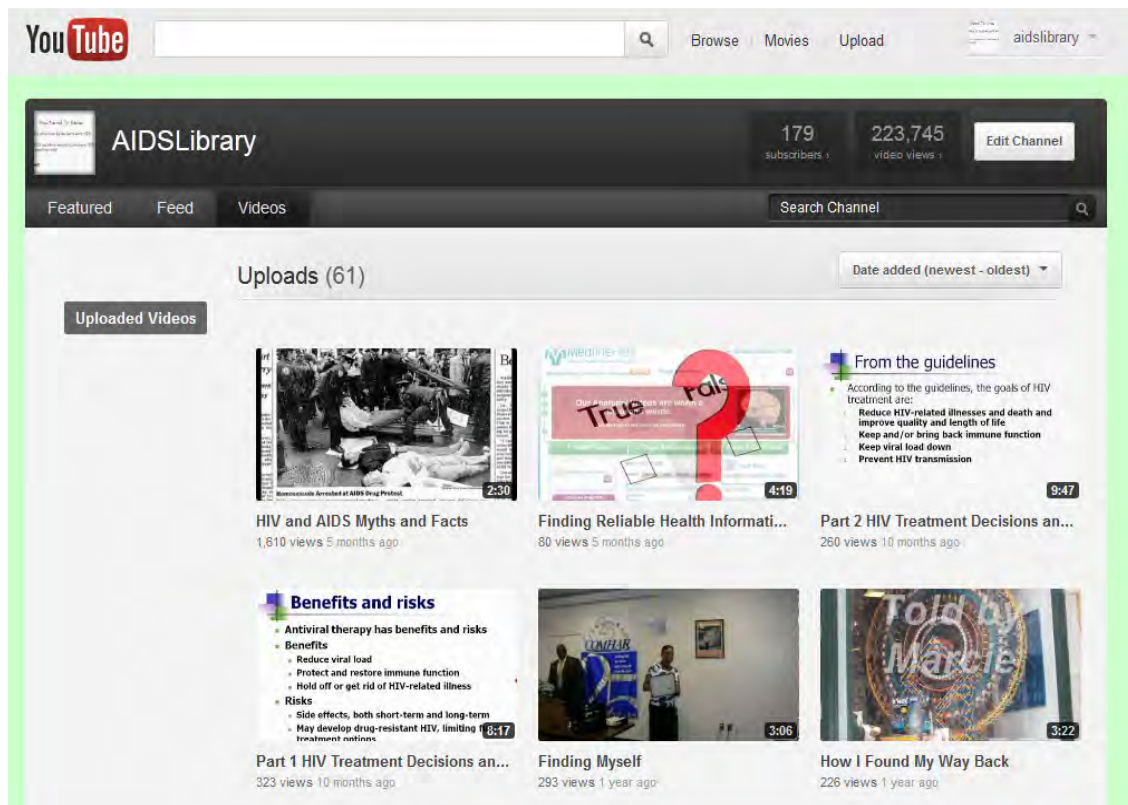


Figure 2. [The AIDS Library of Philadelphia YouTube user channel.](#)

Pre-existing activity guides were used to inform the creation of new questions for Moodle's activities, including "Choice," "Journals," "Forums" and "Quizzes." Each topic was developed to include at least one video, one activity and background readings (see Figure 3). The background readings were carefully chosen to demonstrate reputable sources of online information. Pre-existing pre-post test questionnaires were turned into anonymous pre-post online questionnaires. Other face-to-face components of Frontline TEACH include:

- The application process and enrollment interviews;
- Four class sessions including Orientation and Graduation;
- Accompanying meals (and cake at Graduation);
- Retention calls;
- Supportive lab time;
- Individualized tutorials; and
- Assistance with email set-up for those learners enrolling without email addresses.

8 "Disclosure"

Disclosure is what it's called when someone "discloses" their HIV status. Watch the following video and complete the journal exercise.

- [Video Blog on Disclosure](#)
- [Journal Activity: Disclosure](#)
- [External Link: AIDS Info Net Reading on Disclosure](#)
- [Extra Video: Disclosure to Family](#)

9 "Finding and Assessing Health Information Online" There is a lot of good information about health available online, but there is also a lot of bad information out there too. Watch this video we made with Ben from the AIDS Library. Then, complete the activity.

- [Video on Finding and Assessing Health Information Online](#)
- [Activity: Trust-worthy Health Information Websites](#)

10 End of Week 1

11 "Opportunistic Infections"

Opportunistic Infections, or OI's, are diseases that can occur when someone's immune system has suffered a lot of damage from HIV. This lesson includes an optional research activity, and I will provide an extra incentive to anyone who completes it.

- [Video Overview on Opportunistic Infections](#)
- [Activity: Opportunistic Infections and What Causes Them](#)
- [Good Website on Opportunistic Infections](#)
- [Background Documentation on AIDS-Defining OI's](#)
- [Optional Research Activity: OI Chart](#)
- [Opportunistic Infection Slides](#)

12 "Stages of Change"

This lesson is about the stages that people go through whenever they change behaviors. Watch the presentation, and then do

Figure 3. An illustration of the topic format in Moodle.

Moodle contains a suite of activities to support learning in different ways and with varying levels of sophistication. As indicated in Table 3, the most common Moodle activity in Frontline TEACH is the "Choice" activity, which is a single-question, anonymous poll of the class. The Journal activities allow for private writing, while the Forums encourage group discussion. Finally, Quizzes and Questionnaires allow for a variety of assessment tools.

Moodle activities	Reason for use	Number of topics using this activity
Choice	Single-question polls are very easy for learners with very basic computer skills; conducted anonymously, making them useful for opinion polling of contentious issues	10 topics
Journals	Poses questions allowing private responses; encourages critical engagement with complicated or contentious issues	7 topics
Forums	Poses public questions for critical engagement and skills building topics, like communication style, stress relief, and debunking HIV myths	6 topics
Quizzes: True/False, Multiple Choice, Short Answer, Matching Questions	True/False and Multiple Choice questions assess very basic information, similar to the Pre and Post Questionnaire; Short Answer and Matching questions are more complicated and assess retention of information and understanding of chronological or causative processes	6 topics
Questionnaire	Highly customizable document allowing different types of questions within the same assignment: Likert Scale, Multiple Choice, and True False	2 topics (used for pre and post Test)

Table 3. Moodle activities, reasons for use, and distribution of use.

For our students who have strong computer skills, the online components take about 3 to 4 hours per week. For students with intermediate computer skills, it takes 5 to 7 hours, and for beginners 8 to 10 hours. As students' computer skills and digital literacy improve over the course, each course component takes less time to complete. In order to graduate, students must attend all of the face-to-face components or attend make-up sessions. Additionally they are required to watch all of the videos and attempt all of the course activities in Moodle.

Evaluating the outcomes of Frontline TEACH

Quantitative results

Frontline TEACH is an ongoing programme that seeks to increase HIV, health and digital literacy that students can use to improve their lives and their communities. The scope of the class is broad, but there are a few concrete measures through which we could assess the effectiveness of Frontline TEACH from 2009 to 2011. In order to get a broad perspective on the impact of Frontline TEACH using the ODFL approach, four types of data were collected using a variety of methods as shown in Table 4 below:

Source	Method	Data Collected
Attendance Charts	Enrolment, attendance, and graduation numbers	Retention and graduation rates; email uptake; use of supportive computer lab access
Participants	Pre and Post Questionnaire with Scale and Multiple Choice questions	HIV transmission and treatment info; self-assessment of risky behaviours including unprotected sex and needle sharing
Graduates	Final Class Evaluation	General course satisfaction, most and least useful topics, ideas for course improvements, attitudes towards PLWHA
YouTube Channel	Total views	Most viewed videos

Table 4. Data and methods for evaluating Frontline TEACH.

Indicators	2009	2010	2011
No. of courses	1	1	4
Number of students enrolled	16	24	98
Number of students graduated	7	11	52
Number of students who did not have email on enrolment who graduated	1 out of 8	3 out of 9	8 out of 25
Number of students who had email on enrolment who graduated	7 out of 16	11 out of 24	52 out of 98
Number of YouTube channel visits (including people not on the course)	26,000	65,940	105,636
Number of students who took the pre-course questionnaire over 3 years	10 out of 16	14 out of 24	77 out of 98
Number of students who took the post-course questionnaire over 3 years	7 out of 7	11 out of 11	51 out of 52
% of respondents to pre-test and post-test question "what body fluids transmit HIV"	100%	100%	100%
% of pre-test respondents correctly indicating that blood, semen, vaginal fluids and breast milk can	40% (4 out of 10)	71.43% (10 out of 14)	66.23% (51 out of 77)

transmit HIV			
% of post-test respondents correctly indicating that blood, semen, vaginal fluids and breast milk can transmit HIV	85.71% (6 out of 7)	90.9% (10 out of 11)	94.12% (48 out of 51)
% of pre-test respondents incorrectly indicating that snot, saliva, urine, ear wax, or belly button lint can transmit HIV	30% (3 out of 10)	78.57% (11 out of 14)	23.38% (18 out of 77)
% of post-test respondents incorrectly indicating that snot, saliva, urine, ear wax, or belly button lint can transmit HIV	0% (0 out of 7)	0% (0 out of 11)	1.96% (1 out of 51)

Table 5. Frontline TEACH Indicators and Outcomes from 2009 to 2011.

Data from Table 5 indicates that the ODFL approach provided an advantage over non-interactive web resources in helping its course students from marginalised communities to understand HIV prevention and HIV treatment information. Over the three years, graduation rates increased from 44% in 2009 to 46% 2010 and to 53% in 2011. In 2011 we ran the course 4 times, where as in the past we had only run the course once a year. One core observation of the class evaluation was that those students enrolling without an email address had a much lower graduation rate than students who had an email at enrolment across the three years. Efforts were made to increase the amount of individual support and computer access to these students, with varying results.

These 36 Frontline TEACH students over the three years who were provided with email addresses at the time of enrolment struggled to complete the classes. Only one-third of the class members enrolled who were provided with email addresses and individual tutorials on using email went on to graduate the class (17%). However, the 12 individuals represented who did graduate Frontline TEACH without having had an email address before the class gained more than just an email address. By the end of the course, they demonstrated proficiency in many basic computer skills. This included use of the mouse and keyboard, Internet browsing for health information, exposure to online resources, participation in online discussion forums and other activities. This suggests that in order to scale up ODFL approaches like Frontline TEACH sustainably, it is important to provide students—particularly those from marginalised communities—with computer digital literacy skills before and during the programme.

As an indicator of the programme's potential to affect participants' behaviours, the most viewed Frontline TEACH video on the YouTube video channel hosted by the AIDS Library was the "[Stages of Behavior Change](#)" viewed over 50,000 times. These YouTube videos have a life beyond the confines of the Frontline TEACH course on Moodle, but a closer examination of their use and impact is beyond the scope of this paper. However, it is exciting and worthy of note that this core online component of Frontline TEACH can reach an audience beyond those in our local context of Philadelphia, and the significant potential of YouTube prompts reflection on broadening and deepening the reach of ODFL approaches like Frontline TEACH.

Rethinking Frontline TEACH based on lessons learned

Our goals were to provide accurate information about HIV and AIDS, including transmission information, myths, and the impact of stigma on PLWHA for HIV negative students who needed this knowledge for a variety of reasons. Importantly, our goal of providing information and battling misinformation about HIV transmission was fulfilled through a flexible ODFL format. As the pre and post test data indicate, students reported significantly greater awareness of which body fluids transmit HIV and which ones do not.

Although the concept of behaviour change is central to the philosophy of Frontline TEACH, there was no discernible difference between the pre and post test questions about self-reported risky behaviours such as using condoms for vaginal, anal and oral sex as well as sharing needles. This unexpected result is prompting Frontline TEACH to rethink our course implementation into the daily lives of participants to better promote, encourage, and track behavioural changes. We are also analysing the qualitative data that we gather to consider how to investigate the social drivers of participants' behaviours. We will use these findings to redesign our course and revise the pre and post tests to ask questions about risk behaviours and change over time. We are now considering asking students to set a behaviour change goal for themselves over the course of the semester. We are also considering how to use ODFL to improve the choices and opportunities of participants from marginalised communities so that they can more effectively tackle structural barriers around HIV risks (Pridmore and Yates, 2005).

We believe that there is potential for collaborating with other CBOs to share and develop digital resources and learn from one another how to leverage them to design more effective ODFL formats for marginalised communities. Our experience shows that open source software such as [Moodle](#) provide flexible low-cost platforms for community groups and ASOs who lack the funding to purchase expensive off-the-self commercial software. Moodle is easy to learn and use. Its 'building block' approach is well suited for frontline workers who wish to experiment with ODL or ODFL that includes and possibly enhances face-to-face HIV education and prevention.

However, it is clear that Frontline TEACH has not yet maximized the use of Moodle. Many of the activity components offer potential benefits particularly for marginalised learners. For example, our experience shows that it is likely that students with fewer computer skills, but more spare time, could benefit from the intensive "lesson" activity in Moodle. Educators could develop didactic and responsive elements into the same activity where a lesson might contain a few facts, and a question related to the content delivered. A correct response moves the participant to the next point, while an incorrect response takes the participant to a new page with an alternate way of expressing the same content. Alternately, course students with strong computer skills who live far away could benefit from social collaborative learning activities using the "chat" activity in Moodle.

Overall, Frontline TEACH's ODFL approach has been recognised as having enormous potential. We are continuing to develop our understanding and approach to ODFL so as to reach many of our key constituencies outside Philadelphia, and those who are currently under-served by existing digital HIV education and prevention. It is our hope that Frontline TEACH—or something similar—could be offered to suburban or rural communities and promoted online via social networking. However, adapting Frontline TEACH to a larger audience requires careful examination of the course components and resources available for students from diverse communities and socioeconomic backgrounds.

Furthermore, Philadelphia FIGHT is committed to investing in material and capital resources in Frontline TEACH so that learners can overcome the economic constraints they face. The provision of food and subway tokens at every session is a crucial element in retaining learners who live in resource-poor Philadelphia. The \$20 gift card incentive upon graduation is a small but concrete way that Frontline TEACH hopes to encourage participants to meet the graduation requirements. Because Philadelphia FIGHT has computer labs across multiple AIDS service sites, Frontline TEACH been better able to overcome access constraints for students. Graduates are encouraged to leverage their completion of Frontline TEACH for their economic betterment by putting it on their

resumes. Programme staff alert students that they can provide letters of support, instructor and character references for job-seekers who successfully graduate the course. Since 2011, Frontline TEACH has begun to offer the class sessions at different times, including evening classes. The December 2011 course was the first evening class since Frontline TEACH was offered as an ODFL course.

Unfortunately, those who lack basic computer and digital literacy skills remain at a disadvantage in graduating from Frontline TEACH. Some members of this population may opt out of participating in classes before they even fill out the application, due to feeling intimidated or unsure about their ability to fulfil the course requirements. It remains a challenge to determine how to reach this segment of the population better. One opportunity that has arisen at Philadelphia FIGHT since Frontline TEACH was developed into an ODFL course is an increase in computer training through Philadelphia FIGHT's [Critical Path](#) department. Along with many community partners, the Critical Path team won a 2010 federal stimulus grant in the [Broadband Technology Opportunities Programmes](#). This grant affords the opportunity for many more learners to take computer classes and build their digital literacy skills. Before the next course, Frontline TEACH will invite Critical Path digital literacy trainers to conduct additional email and Internet workshops. Hopefully, these initiatives will improve the success of Frontline TEACH into the future.

Conclusion

Frontline TEACH's ODFL is an effective and adaptable approach for developing community-based and led innovative digital HIV and AIDS education and prevention for marginalised communities that have a modicum of computer literacy. Few models like Frontline TEACH exist for designing ODFL that suits the needs and builds the capacities of marginalised communities at risk of HIV and AIDS. Yet more and more health information, education and prevention is moving online in today's digital age, putting these groups at the additional risk of exclusion caused by the digital divide. While tackling these issues in Frontline TEACH, we learnt the following lessons which are relevant to HIV educators seeking to improve the use of networking and digital technologies for HIV prevention and education programmes with marginalised communities:

- Open distance flexible learning (ODFL) can be a useful community-based and led approach to design, deliver, and evaluate programmes to meet the needs of marginalised communities at risk of HIV and for those who lack the capacity to engage meaningfully with mainstream web-based programmes;
- Careful implementation of ODFL formats should happen in discussion and collaboration with stakeholders to ensure buy-in and ownership, and reflect on the course's relevance over time;
- Build a committed project team who are connected with the community, and speak its language;
- Implement the course as a continuous improvement and revise in phases, to learn and apply lessons and solve problems as they emerge;
- Take account of contextual factors and analyze the capacity of the target communities, attempting to bridge capability constraints where possible;
- Devise course activities that convey core content at the same time that they build computer and digital literacy skills;

- Tailor and adapt the content, processes and assessment to appropriately to serve a variety of communities with high HIV risk;
- Promote safe online non-judgmental spaces for negotiation and dialogue on sensitive issues with trusted peers and mentors; and
- Evaluate to measure learning outcomes. This can be extended to measure other outcomes that concern communities in the future as they become more comfortable with the technologies to contribute to social change.

We have presented a small-scale innovation in one community-based organisation. We are still learning from our experiences and do not presume to generalise what works. However, we have shown how the benefits of ODFL can be made to work when power is placed in the hands of a community-based organisation to collaborate with their service recipients and walk the digital journey together. We acknowledge the over-easy refrain that marginalised communities do not have computer and digital literacy skills or broadband access. But, we reject this deficit thinking as a false barrier that needs to be smashed to refresh our programmes. We work with the capacities we and our students have, and then bring technologies in to enable and improve our HIV education and prevention practices and goals. We believe policymakers and funders looking to invest in cost-effective approaches to online and digital HIV education and prevention need to strengthen the capacities of educators to participate and develop ODFL approaches for marginalised communities. This becomes crucial in today's financially challenging funding climate and the increasing saturation of the Internet into our daily lives. While Project TEACH affirms a participant's position in the pilot's seat of her own life, our digital Frontline TEACH produces knowledgeable and reliable, rather than marginal and excluded, navigators of HIV risk in a Web 2.0 world.

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