ACKNOWLEDGEMENTS

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The information and recommendations in this report are representative only of workshop leaders' and individual delegates' personal experience and opinions, and do not necessarily reflect policy or strategies within their respective organisations. mHealthEd 2013 was run on a non profit-making basis.

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# LIST OF ABBREVIATIONS USED

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>2D / 3D</td>
<td>Two-Dimensional / Three-Dimensional graphics</td>
</tr>
<tr>
<td>2G / 3G / 4G</td>
<td>Second / Third / Fourth Generation network infrastructure</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>Compact Disc Read Only Memory</td>
</tr>
<tr>
<td>CHW(s)</td>
<td>Community Health Worker(s)</td>
</tr>
<tr>
<td>DAM</td>
<td>Digital Asset Management</td>
</tr>
<tr>
<td>DVD</td>
<td>Digital Versatile Disc</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>IFRC</td>
<td>International Federation of Red Cross and Red Crescent Societies</td>
</tr>
<tr>
<td>LMIC(s)</td>
<td>Low- and Middle-Income Country (Countries)</td>
</tr>
<tr>
<td>LMS</td>
<td>Learning Management System</td>
</tr>
<tr>
<td>mHealth</td>
<td>Mobile Health</td>
</tr>
<tr>
<td>mHealthEd</td>
<td>Mobile Health Education</td>
</tr>
<tr>
<td>NGO(s)</td>
<td>Non-Governmental Organisation(s)</td>
</tr>
<tr>
<td>PSA(s)</td>
<td>Public Service Announcement(s)</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Message Service (text message)</td>
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<tr>
<td>STD(s)</td>
<td>Sexually-Transmitted Disease(s)</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>UNHCR</td>
<td>Office of the United Nations High Commissioner for Refugees</td>
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<td>WHO</td>
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FOREWORD

Welcome to the mHealthEd 2013 workshop report.

The mHealthEd 2013 Academic-Industrial Workshop was held on the 12th and 13th of September 2013 in Dublin, Ireland, and gathered more than 120 delegates from across the globe. Frontline Global Health implementers, academic researchers, technology industry representatives, digital designers, healthcare professionals and many others took part in a series of workshop sessions. These were designed to encourage greater inter-agency and cross-sector collaboration, to accelerate the creation and implementation of animated and other digital content for blended learning in health worker training and public health programming. mHealthEd 2013 was kindly supported by The Bill and Melinda Gates Foundation, Science Foundation Ireland, Norad, and Health Founders.

The workshop sessions were divided into two broad areas: On the first day, delegates discussed topics based around the theme: “Generation and integration of digital content”. Key aspects of the content creation process were discussed, with recommendations made on efficient use of resources, as well as creation of content which is targeted and culturally appropriate to its audience. The second day’s workshops were based around the theme: “Maximising impact by integrating new digital and animated content into health worker training programs”. Here, delegates discussed the ways in which digital and animated content for blended learning can be used to augment existing approaches to health worker training and public health education. Recommendations were made on exploiting the different channels which can be used to deliver content, as well as finding the right balance between implementing new technology aided approaches and traditional face-to-face instruction, to ensure the greatest outcomes of knowledge transfer and behaviour change.

This workshop report is not intended to be an in-depth ‘manual’ on digital content creation. Due to the informal nature of the workshop sessions, discussion around each topic took place in a fluid manner, and the results reported herein cannot comprehensively discuss every aspect of the blended learning and health worker training landscape. Instead, it is hoped that this report will serve as a companion reference for anyone wishing to build or implement digital content for blended learning for health. It collects the experiences of individuals and organisations who have successfully used these approaches in the field, and contains examples of core issues and potential hazards which may be encountered. This report also describes recommendations made by delegates, which it is hoped will provide a framework that helps others to avoid known pitfalls that can undermine the content creation and implementation process.

We hope that this report will be of value in accelerating the successful creation and use of animated and other digital content for health worker training and public health.

This report was prepared by members of the iheed Institute

Written by: Stephen Macdonald; mHealthEd 2013 Program Lead
Edited by: Kunal D. Patel; Medical Director
and Tom O’Callaghan; CEO
EXECUTIVE SUMMARY

mHealthEd 2013’s workshops covered a range of subjects designed to drive innovative use of digital content for blended learning within Global Health worker training and public health programming, broken down into two broad areas.

The first day’s workshops were based around the theme:

“Generation and integration of digital content”

Specific workshops were entitled:

Workshop 1A: mHealthEd for who? Who is the target audience? What health topics should be covered, and are we ignoring any?

Workshop 1B: The production process: Streamlining iteration to finalising digital content.

Workshop 1C: Visualisation: Character design and storyboarding for health education.

The second day’s workshops were based around the theme:

“Maximising impact by integrating new digital and animated content into health worker training programs”

Specific workshops here were titled:

Workshop 2A: The ‘blend’ in blended learning: Strategies to integrate digital content into health worker training programs.

Workshop 2B: Putting programs in place: Mobile network and technology infrastructure – What are the models and channels for content distribution?

Workshop 2C: Creating intelligent payloads: Avoiding end-user supersaturation with health education content.

This report is thus divided into six sections, each corresponding to an individual workshop, recording core issues and potential hazards reported as important by participants. Each section also includes recommendations made by the delegates, which could be implemented to overcome these challenges.

Workshop 1A was facilitated by Dr. Johnny Walker (Health Founders) and Nand Wadhwani (Mother and Child Health Education Trust). Participants were asked to give input on their experiences in ensuring that content created for health worker education and public health programming reached the correct audiences, and covered topics based on needs on-the-ground. Delegates cited systems inefficiencies as causing difficulty in ensuring program access, with the legacy 'doctor-centric' model of centralised healthcare delivery being in need of revision in order to widen access. There was a call for more community-centric practice, aided by adoption of mHealth technologies, and focused on delivering a continuum of care, even after visits to hospitals or other health facilities were completed. Participants indicated that in order to better access neglected patient groups, cultural awareness and mediation should become a high priority: for example, when addressing maternal health problems, it can be of value to also target programming
towards partners, parental figures, village elders, and other sometimes unexpected stakeholders and gatekeepers. Additional sensitivity towards neglected groups was advised, in the case of persons who may have disengaged from formal health systems, such as stigmatised groups, or who have limited access, for example patients with mental health difficulties, or disabilities. Further issues identified included a lack of access to content. Here, factors such as location, infrastructure, and more complex issues such as misinformation regarding effectiveness of treatments were all cited by participants as being potential limitations, and finally inconsistencies, or imbalance of messaging were also identified as issues that could undermine access. Multiple pieces of content on the same health topic, delivered from diverse sources could lead to confusion among end-users, whilst other less ‘popular’ topics might be neglected completely. In order to overcome these challenges, participants made a number of recommendations, specifically targeted towards two main areas: firstly, it is critical to assess the end-user accessibility landscape. Here, stakeholder identification, incentivisation and inclusion were suggested as a means to increase program access, and targeted programming to overcome stigma and misinformation were also priorities. Participants also called for greater inter-organisational collaboration to build a more focused approach when deploying mHealth content, overcoming end-user confusion, and creating a ‘single voice’ for content delivery. Finally, in order to ensure improved coverage of neglected topics, participants advocated the use of ‘ground-up’ review, ensuring that end-user identified topics would be included in programming.

Workshop 1B was facilitated by Kat Mason (Medical Aid Films) and Firdaus Kharas (Chocolate Moose Media), and examined strategies that can be used to streamline the production of animated and other digital content for mHealth programming. Participants all cited the obvious benefits that can be derived from using such content, including the ability to personalise programs to increase end-user uptake and connection with the material, as well as the diversity of content types which could help facilitate learning at end-users’ own pace. The varying costs of animation production were also examined, and participants advocated the use of content production tools that combined cost-effectiveness with the ability to deliver key messages on time, and within budget. Specific recommendations made by participants included careful pre-production planning to tailor content to end-users, based on a number of critical aspects, such as the use of innovative approaches to overcome educational limitations among audiences, or segmentation of long content pieces into an episodic format to maintain audience attention. Further, participants advocated creation of content that can be easily altered or added-to, in order to give greater flexibility and implementation within a range of contexts, as well as creation of universally compatible content to overcome issues with device fragmentation among end-users.

Workshop 1C was facilitated by Ben Hennessy (Pegbar) and Peter Truckel (International VFX Hub Bournemouth), who discussed the creation of characters and storyboards for animation design with participants. They identified issues such as the need to fully engage audiences to create the best learning outcomes, as well as discussing strategies for character and storyboard design. Here, specific recommendations were made, such as soliciting the input of proposed end-users to help design characters and settings that would be acceptable and engaging to them. Whilst characters and scenes tailored to one specific audience were recognised to be of value, participants also advocated an alternative approach, where well designed, race and culture neutral characters could also have significant utility when transferring content between programs and countries. This strategy would also help to avoid stigmatising particular groups, as well as reduce the risk of audience inattention due to inability to relate to the characters and scenarios depicted. In addition, participants suggested that the use of humorous characters could also help when discussing subjects that might be culturally sensitive, such as STDs or gender issues.

Workshop 2A was facilitated by Amanda Sugrue (mHealth Alliance) and Dr. Niall Winters (London Knowledge Lab). This workshop addressed the challenge of creating blended learning programs that successfully integrate the correct ‘blend’ of digital content and live instruction, in order to maximise their educational potential. Participants identified a number of challenges within the health education space, which could be successfully mitigated by well implemented blended learning. For example, communication of complex concepts in health care could be simplified through the use of audiovisual and interactive content to aid understanding. Participants also recognised that creation of digital training content for
blended learning should have a clear focus of improving educational outcomes, and should not be done merely for its own sake, or in a rush for technological advancement. Here, delegates recommended that digital content should be considered as a complement to, rather than a replacement for, live instruction. Workshop participants also advocated the use of ongoing program review and inclusion of end-user feedback to ensure that local preferences and accessibility conditions are taken into account during mHealth programming, and in cases where programs necessitated large amounts of content to be managed, the implementation of Learning Management Systems was also advocated. Finally, to overcome challenges due to lack of in-house expertise, greater inter-organisational collaboration was also called-for, to facilitate the creation, sharing, and licensing of content.

**Workshop 2B**, facilitated by Dr. Kunal Patel (iheed) and Jan-Willem Loggers (Text to Change), focused on mechanisms which can be used to deliver mHealth messaging. Core issues such as end-user access and device fragmentation were identified by participants as a particular challenge. Furthermore, participants also recognised the value of ‘lower-tech’ approaches, and cited a number of channels which might be exploited in the absence of the latest 3G or 4G mobile internet infrastructure. The risk of dividing end-users into those who have the means to access the best content, such as smartphones, and network access, and those who lack this capacity, was also acknowledged. Here, simpler techniques such as SMS for health content delivery and feedback, as well as delivery via physical media such as SD card or CD-ROM were all cited as valuable ways to deliver content, and broadcast media such as TV and radio were also highlighted as an alternative means to access audiences where challenges such as limited literacy might be prominent. Other strategies highlighted by delegates included the setting-up of content distribution hubs, at the edges of areas of network connectivity. Content could be downloaded at these hubs, then be distributed on physical media into unconnected areas.

Finally, **workshop 2C**, facilitated by Dr. Alain Labrique (Johns Hopkins Bloomberg School of Public Health) and Dr. Marc Mitchell (Harvard School of Public Health), focused on the issue of ‘supersaturation’. Here, participants discussed the growing challenge of how to best manage the growing streams of messages which can arise as mobile health content production and roll-out accelerates. As many organisations are now producing their own content, there is a risk of overlap between programs, and with so many content types and sources of information available, combined with a lack of coordinated approaches between actors, end-users may become overwhelmed with messaging. Participants agreed that there is a real danger of confusion over which messages to trust, and where to find consistent quality of information. During this workshop, participants related what they considered to be contributing factors to the current situation, as well as recommending ways to reduce overloading of end-users with content. Greater inter-agency collaboration was recommended, so that knowledge can be shared, and tailored content created, reducing overlap. Furthermore, a coordinated approach to the packaging of messages was advocated, so that end-users can be provided with content that is delivered via a ‘single voice’, rather than multiple, disparate sources. Again, end-user inclusion in the content creation process was advocated. Finally, improved strategies for handling and curating content sourced from multiple organisations were suggested, such as the implementation of Digital Asset Management practices and platforms.

This report details participants’ input from the six workshop sessions, with each chapter containing an at-a-glance summary of core issues, potential hazards, and recommendations suggested to overcome them. The content herein is not intended to be an all-encompassing set of rules to follow when creating and implementing blended learning content; rather, it is hoped that this report will act as a starting point that helps build collaboration and knowledge sharing among organisations wishing to include mHealth, digital content, and blended learning approaches in their programs.
mHealthEd: For who? Who is the target audience? What topics are being covered, and are we ignoring any?

Workshop facilitators:

Dr. Johnny Walker (Health Founders)
and
Nand Wadhwani (Mother and Child Health Education Trust)
Identifying and reaching the targeted audience with appropriate content is critical to ensure successful outcomes in health worker and public education programming. Taking this into consideration, the first workshop session of mHealthEd 2013, asked the questions:

“Who is mHealthEd for?”
“Who is the target audience?”
“What health topics are being covered, and are we ignoring any?”

External issues such as resource constraints or limited available knowledge-base have led to situations where content may need to be re-used, or added to programs for which it was not originally designed. Training content originally intended to inform practice among frontline health workers may also contain information that is useful in delivering key health knowledge to the general public, but although such materials can be ‘modular’ (for example short videos of 2-3 minutes in length) and therefore theoretically transferable, they cannot be expected to always be appropriate to a ‘one size fits all’ approach. Here, programs must be tailored to their end-users in order to ensure successful knowledge and skills transfer, or to create effective behaviour change.

To this end, the first workshop examined the breadth of audiences who can be reached by mHealth education as a whole, giving thought to marginalised or otherwise neglected populations and topics of need which may have been ignored in the rush to cover the most urgent conditions, such as HIV or TB. In the shadow of the most prominent mHealth programming, unmet need may exist: for example neonatal care, dental or sight problems, care for patients with mental health challenges or physical disabilities. Here, upskilling of health workers, or raising public awareness of how to access care and mitigate the impact of these conditions, could significantly elevate quality of life and productivity among the targeted populations.
CORE ISSUES AND POTENTIAL HAZARDS

Systems inefficiencies can be addressed using mHealth approaches

- Inefficiencies in the existing healthcare systems must also be addressed. The legacy of the traditional model of hospital and doctor based care delivery has meant that health has become a “doctor-centric” problem; yet this can be unsustainable, unscalable, unsafe, inefficient and ineffective, particularly in regions where there is inadequate provision of facilities, medications, or properly trained physicians and nurses.

- A new model could be advantageous- one which is more focused on care at the community level and primary care, especially at home. It is here that mHealth and associated technologies can enable better support and monitoring, even after consultations/ hospital visits are completed.

Accessing the correct key stakeholders is critical

- It can often seem intuitive to identify the relevant stakeholders and gatekeepers whose participation is needed to implement a program. For example, in targeting child health, mothers and carers are the immediately- obvious target.

- However, cultural norms and societal structures may also come into play, and undermine access; it may also be of value to access village elders, chiefs, parental figures, husbands and partners, who all may have significant influence over an end-user's health and health-seeking behaviours.

The 'invisible' audience

- Certain groups within target populations may become neglected, either by being overlooked or withdrawing from health-seeking behaviour, for example:
  
  Those with little or no formal education who have difficulty accessing text-based information services and programs due to literacy issues.
  
  People who have had negative past experiences with formal healthcare systems.
  
  Sufferers of conditions which might be subject to local taboos such as STDs.
  
  Patients with mental and physical disabilities, who experience difficulty accessing care.
  
  Individuals who may have been misinformed about the effectiveness of the health system: they may prefer to access 'traditional' sources, such as village healers.

Targeted populations need to be able to access the content

- Lack of health or technology infrastructure, remote location, or even misinformation regarding effectiveness of treatments can all influence end-users' access.

- It is important to take into account ground-level conditions among these stakeholders. For example, would audiences have sufficient level of education to fully understand the intended content, or would facilitators need to be on-hand to provide explanations? If using an mHealth approach within communities, do all members have sufficient access to devices which can receive the content? Would additional centres need to be set up to deliver the information? If a wide enough audience cannot be reached using these, should other approaches such as TV or radio broadcasts be used?
Inconsistency and imbalance of messaging

- Even where there is widely recognised need for content to address specific health issues, there exists overlap of content between organisations. This can ultimately lead to confusion among end-users, who may not necessarily have the background knowledge to decide whose information is the most reliable.

- Although there now exist many well-implemented programs aimed at improvements in public health, covering topics such as nutrition, sanitation and addressing social stigma accompanying conditions such as HIV, there are still many more which have not received adequate attention. For example, during the workshop, issues such as:

  First aid education
  Involving partners / husbands in women’s health choices
  Patient empathy
  Psychological welfare of mothers
  Targeting policy makers

  were identified as current neglected topics among mHealth programming.

- Programming may also be influenced by external conditions, such as drives by local or national governments to cover specific health issues. Funding streams may then become inaccessible to programs that aim to cater to the less-prominent problems.
RECOMMENDATIONS

End-user landscape

- Identify gatekeepers or other key stakeholders who may have an indirect controlling influence on the target population; ensure that participation of these indirect stakeholders is sought and appropriately integrated.

- Ensure that the targeted groups are accessible, and will have the means to access the content - e.g. appropriate technology is in place, literacy is adequate, and content itself is clear and engaging.

- Address cultural aspects which might limit access, for example by introducing targeted education to overcome stigma, or encourage discussion of topics that are not usually openly discussed.

- Make the process participatory and incentivise that participation where possible.

Messaging and content

- mHealth aspects integrated into programs must have clear focus and integrate new media, to prevent end-user information overload.

- Wherever possible, include end-users in the review of planned content, to ensure that it will be acceptable to the audience. They may also highlight other neglected topics that will feed into subsequent programming.

- Consider who would the target population listen to regarding health issues; Community Health Workers (CHWs) and valued community members can be trained to become 'health champions', to deliver multiple health messages, acting as a focal point and providing information via 'one voice'.

- In situations where lack of content may be due to local taboos and social stigma, programming must include capacity to broach such subjects, for example by encouraging more open discussion, or dispelling myths about certain diseases.
**SUMMARY**

**CORE ISSUE**
- Inefficiency in the ‘formal’ health systems model - e.g. hospital & doctor-centric care
- End-user access may be controlled by gatekeepers - e.g. partners, elders & community leaders
- Past negative experiences with healthcare, social stigma & local taboos can reduce visibility of target groups
- Proposed end-users may lack technical knowledge, equipment to access content, or literacy may be low
- Messaging may be inconsistent or unbalanced
- Content coverage is skewed towards only a few topics, based on the most urgent need

**POTENTIAL HAZARD**
- Burden is on the patient to seek care - equity of access is not always assured
- Cultural norms may mean that direct approach to end-users is impossible
- ‘Invisible’ audiences exist - end-users may not always be willing to engage with health programming
- Even when identified, audiences might not always have the means to access mHealth content
- Multiple sources/pieces of content contribute to information overload and end-user confusion
- Neglect of less prominent topics may be perpetuated as content development landscape matures

**RECOMMENDED ACTION**
- Use mHealth methods to move towards community-based care to improve access: the ‘patient-centric’ model
- Seek inclusion of gatekeepers: encourage their participation through education & incentivisation
- Include programming using targeted education to reduce stigma / misinformation and encourage discussion
- Tailor content medium and delivery appropriately: TV & radio PSAs may ensure broader reach than print or mobile-only messaging
- Deploy and package content with clear focus; coordinate between organisations with overlapping interests to form a ‘single voice’
- Train CHWs or community members to act as a focal point for health information and content
- Implement ‘ground-up’ review with end-users and workers at ground level during review and development of content
CASE EXAMPLES

The Jinga LifeTree (Proposed by Health Founders)

- A newly-proposed model of patient-centric healthcare: the Jinga LifeTree- using mHealth approaches to put mothers at the centre of their healthcare ecosystem.

- In many cases, the custodian of wellbeing in a family is the mother, yet often they lack access to personalised care information, they may be ignored in decision-making, and are caught up in health systems which can be already overloaded.

- To alleviate this, new uses of technology are proposed: the Jinga LifeTree- a mobile personalised digital platform, linking mothers to their healthcare team of doctors, nurses, physiotherapists, dentists and pharmacists, helping them access their family's health information securely, anywhere, any time.

- This is combined with JingaSnap- a tool which allows patients to upload a 60-second video, which can then be reviewed by a healthcare professional, enabling them to receive advice and support.

- Even after patients have visited their doctor, or the hospital, they can remain connected to their healthcare team, through the use of these enabling technologies.

Global Diagnostics

- Health Founders built a network, which went on to become Global Diagnostics, in order to help patients in rural and regional communities access the best quality in diagnostic imaging.

- Operations began as an initiative by which patients could send a digital image of ultrasound pictures to a centre where they could be analysed by medical staff.

- GD was built on the philosophy of optimising the use of technology, but without being driven by it.

- Global Diagnostics now works on around 300,000 cases per day, irrespective of location and timing, operating 24 hours-a-day, 7 days-a-week.
SECTION 2

The production process: Streamlining iteration to finalising digital content.

Workshop facilitators:
Kat Mason (Medical Aid Films)
and
Firdaus Kharas (Chocolate Moose Media)
Digital content is by nature highly portable, and can be delivered via mobile internet connection to any location and context, far more rapidly and cost-effectively than paper-based training materials. It also bears significant adaptive advantages for localisation and iterative development, since it can be altered much more easily and quickly than printed media.

These advantages notwithstanding, the underlying process of producing this content may often be neglected. Proper consultation with the proposed end-users, and rate-limiting factors such as having in place the necessary mechanisms to ensure quality of content, such as validation of medical information, can all increase the length of time taken during iteration to final pieces of content. Nevertheless, the most important aspect is the creation of materials which are clear, robust, consistent, and deliver the correct message in a form that is understood and retained by end-users.

During this workshop, participants examined some of the major risks that can disrupt the production process, and strategies that could be used to overcome them. This section covers the streamlining of content production, ensuring the most efficient usage of time and resources to produce high-quality materials for use in blended learning programs.
CORE ISSUES AND POTENTIAL HAZARDS

Within the content itself

- Action delivered via animation can personalize the topic. Audiovisual content that is dynamic and engaging can bring a topic to life, and tells a story. This is paramount for engaging audiences who will then be able to relate to the topic, and feel as though “this is like my own situation”.

- Audiovisual content for learning is a useful supplement to straight text or diagrams, as it helps to reduce the ‘cognitive load’ experienced when understanding and learning complex concepts. When applied to health worker training, demonstrations can be used to show procedures or situations as health workers would see them.

- Content can be delivered in a variety of styles to help engage learners. These can include general views, role play, interviews, voiceovers, demonstrations, and pieces to camera, such as ‘talking head’ lectures.

Within delivery systems

- With regard to end-user access points, such as computers and mobile devices (tablets and smartphones), the current landscape has coalesced into only a few major operating systems, i.e. Apple®, Android™, and Microsoft Windows®. This ultimately can help content producers since fewer versions must be produced.

- If creating platform-specific applications, it is necessary to ensure that the desired target audience are equipped to access this; there may exist some degree of device and operating system fragmentation among the end-users, therefore thorough testing must be implemented to ensure that all end-users will be able to access the content. An alternative approach is to include a roll-out of specific devices to accompany content delivery, however this by necessity will lead to greater overall program costs.

- Facebook®, Twitter®, LinkedIn®, Skype™ and Google® are global brands which can be utilised to increase coverage. Each of these has its own avenues by which audiences can be better targeted. For example, content featured on Facebook pages is easily shared by users across common interests, and by tuning search words and rankings, Google can be used to ensure that awareness of content remains high, as users searching for content around specific topics can be shown relevant content. It is nevertheless important to note that in order for a social media or search engine strategy to work well, maintaining audience attention and allowing continuous exposure of new users to content, frequent curation is required, representing significant commitment of manpower.

- Instant messaging and SMS are also tools which can be implemented to create awareness, for example by sending short, targeted messages to end-users.

- New technologies, including pico projectors for mobile devices mean that mHealth content can be delivered in a lightweight fashion. The traditional model of a ‘training centre’ can now be disrupted, since any location can become an access point for groups of learners.

- Today’s generation of internet users are mobile, and they have become used to accessing information, regardless of their location. Content-rich multimedia is fast becoming the norm, and new blended learning models can take advantage of this, with the aim of improving learning outcomes and accelerating the pace of uptake of knowledge.
Preventative healthcare is high priority, therefore its integration into health education content and programming will increasingly rely on delivery to the general public and end-users. In order to achieve this, it will be necessary to seek new avenues of delivery. The past model of exclusively receiving health advice from a doctor or nurse has now become replaced by the ‘health-empowered patient’, whose care is supported by public health programming which aims to reduce the burden on formal health systems by helping people stay healthier without medical intervention.

Costs of production

In creating useable health training content for blended learning, it is important to use the best tools available. However, this may not always mean using the most cutting-edge or highest quality.

Figure 1: The cost of animation. Comparison of approximate costs-per-minute (shown in US dollars) for a range of animation types, showing lower, and upper limits for each method, across low-end and high-end techniques. (Approximate costs as reported by experienced workshop participants.)

- Animation bears different costs, depending on styles and technique. For example, a low-end blend of 2D live action with animation, such as a hand drawing on a whiteboard, can cost from a lower limit of $500 up to $5,000 per minute. Standard 2D animation bears a similar cost, from $1000-$5,000 per minute, whilst hybrid 2D animation can cost from $3-10,000 per minute. Using computer-generated animation may help reduce costs, with lower-end production costing around $2,500 per minute, however this can rise to up to $10,000 per minute. The use of upper-end techniques can produce extremely high quality results, for example via 3D animation using advanced rendering software such as Autodesk Maya®, or stop-motion animation using models or claymation. However, these incur the highest costs, of $10,000 per minute up to $50,000 or $100,000 per minute, respectively.

- Spiralling costs of production may ultimately undermine how much of the original message can be delivered, therefore the use of simpler techniques and technologies, combined with well-designed learning content can often be the preferable route.
RECOMMENDATIONS

Tailor content to the end-user before production

- Choose a content style that suits the audience: the specific message which is to be delivered will influence the medium, length and type of content developed.

- Think about the attention span of the audience: instead of a long 'documentary-style' piece, content could be delivered as a series, with a running theme or visual design.

- In order to maintain audience engagement, music or characters can be added at certain times to keep their attention.

- Use innovative approaches to overcome educational limitations, and improve end-user accessibility.

- With current technology, 3D animations can be used even on simple feature phones, therefore if the visual appearance of the content becomes a critical factor to maintain audience attention, careful design must be implemented to ensure impact.

Aim towards accessibility of content created

- When building a program aiming to deliver training using diverse techniques, such as lectures, texts, and multimedia, new content must be created with the aim of its integration with other materials- this can create synergy to produce truly 'blended learning' as opposed to just 'learning from separate sources'.

- Create content which can be easily added-to or altered; here the approach using animation is advantageous, since localisation may be a simple case of overdubbing. However, it is also important to ensure that visual design matches this goal: is it necessary for signs or key measurements to appear in the animation? Here, accurate translations and on-screen subtitle overlays must be used. In these cases, literacy levels of the audience must also be considered.

- The ultimate goal is to create materials that are easily absorbed- by nature these are likely to be highly visual, so a style which is engaging and well-understood by the targeted end-users is key. Again, proper consultation during the pre-production phase is recommended.

- Avoid the 'dumbing-down' of video content; for example, audiences may be used to seeing content delivered via 3D animation, such as on TV or advertisements, and they may not engage with 2D, dismissing it as being 'cheap' or too simplistic.

Set consistent direction and streamline the project management process

- Having feedback from too many people can slow down, delay, and add cost to the project, and perhaps even spoil the production.

- Keep to a timeline; once this is set, do not let the project overrun.

- Avoid budget shocks by continuous review of progress and revision if necessary.
<table>
<thead>
<tr>
<th>CORE ISSUE</th>
<th>POTENTIAL HAZARD</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>For content to be engaging, it must be personalised to suit its audience</td>
<td>Incorrect format, tone, assumptions about audience education level, and cultural</td>
<td>Conduct review and consult with potential end-users to focus style and format</td>
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<td>sensibilities can all undermine engagement</td>
<td>options during the pre-production phase</td>
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<td>Consider separating content into a series or simultaneous roll-out across different</td>
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<td>formats</td>
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<td>Holding end-users’ attention is critical to build lasting behaviour change</td>
<td>Risk of 'losing' the audience, either through information overload, incorrect</td>
<td>Use characterisation, music or other audiovisual elements at key points to</td>
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<td>and knowledge retention</td>
<td>pacing, or simple ‘boredom’</td>
<td>reinforce messaging and keep end-users engaged</td>
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<td></td>
<td>Maintain consistent style throughout content, especially if it is being used in</td>
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<td>a blended learning program</td>
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<td>Varying education levels may exist among the targeted audience</td>
<td>Risk of added difficulty in communicating complex information such as for</td>
<td>Use innovation to overcome educational / health literacy limitations, such as the</td>
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<td></td>
<td>nutrition, prevention of transmission of disease</td>
<td>‘traffic light’ system for nutrition information on foods</td>
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<td>Use audiovisual elements strategically, showing procedures or techniques close-up,</td>
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<td>or from different angles, to aid viewer understanding</td>
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<td>End-users may operate using diverse platforms and operating systems</td>
<td>Incompatibility between devices may limit end-user access</td>
<td>Generate content that is universally compatible—this can be delivered flexibly</td>
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<tr>
<td></td>
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<td>across contexts, even where device fragmentation is common among end-users</td>
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<td>Ensure expert personnel are available to review content—keep numbers small and</td>
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<td>maintain editorial control.</td>
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<tr>
<td>Budget and timescale control is vital to final content production</td>
<td>Projects running over-time or over-budget risk producing poor-quality or</td>
<td>Implement continuous review process to avoid overrun</td>
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<td>unfinished content</td>
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CASE EXAMPLE

The Three Amigos HIV/ AIDS Prevention Program (Chocolate Moose Media)

- A series of 20 animated shorts designed to teach end-users **awareness of the risk of STDs**, **aimed towards preventing the spread of HIV**.

- Features animated condom characters, who are designed to **destigmatise the use of condoms**.

- **Released in several countries where health programming traditionally avoided sexual health issues** due to cultural climate and lack of open discussion of such topics- the animated humorous format enabled the topics to be broached in a non-threatening and non-judgemental manner, which was critical to engaging audiences.

- **To-date, The Three Amigos has been adapted for use in 41 languages, giving the potential to reach, and be understood by, over 80% of the global audience**.

- The animations are available in a variety of formats, aiming towards being platform 'agnostic', thus ensuring the greatest coverage: they have been **broadcast on TV, and are available on DVD, or to download or stream online**, thus overcoming the problem of device fragmentation among end-users.

- Despite their excellent content, these are not intended to be used as the sole method of HIV prevention education; rather, they are **designed to be one component that is integrated into comprehensive HIV prevention programming**.
SECTION 3

Visualisation: Character design and storyboarding for health education.

Workshop facilitators:

Ben Hennessy (Pegbar) 
and

Peter Truckel (International VFX Hub Bournemouth)
INTRODUCTION

In order to create health education content that is engaging and informative for end-users, while simultaneously delivering critical knowledge, a strong and consistent visual style is required. The 'ergonomics' of the training materials are a critical component in determining knowledge transfer, and avoidance of 'learner fatigue' and 'supersaturation' can play a significant role in ensuring the effectiveness of any content generated.

The adaptability of animation for blended learning is its major strength over traditional, pen-and-paper, and classroom-based formats, since users can review materials at their own pace, whilst better visualisation can improve understanding of complex concepts. However, poorly created digital training content can undermine this purpose, and the goal of the content creation process should be to create materials that enhance learning. To this end, it is important to consider how the message will be conveyed; in order to achieve this, good character design, cultural considerations and proper scene-setting and pacing are critical components of the design process.

This workshop addressed the basic principles for character design and creating storyboards for animation, as well as providing insights into how to hold on to the 'illusion', to keep audiences engaged. Participants were asked to share their experiences of creating animated training content, and to relate potential difficulties encountered when creating content that is not only visually exciting and entertaining, but also efficiently conveys a serious message.
CORE ISSUES AND POTENTIAL HAZARDS

Character design for animation

- For health training content, it is important to be mindful of the context in which the animations will be deployed. Characters’ appearance, setting and behaviour all contribute to creating ‘believable’ scenarios, and help avoid what are classically known as ‘continuity errors’ in animation and filmmaking.

- Characters could be designed to be representative of a specific audience. However, this may have the effect of making such content non-transferable between geographic regions as other end-users may not relate to the characters and scenarios depicted.

- Attention can be given to specific aspects of character design, such as:
  
  Skin colour
  Style of dress
  Body shape
  Cultural mannerisms

- Conversely, it is also possible to create ‘neutral’ characters, with the aim of not tying design to any one race or culture. This can improve the reach of the animations and enhance accessibility.

- Simpler character lines helps maintain clarity, and is good for keeping to budget; furthermore, too much detail can be distracting for viewers.

Foundations of animation and storyboarding

- The storyboard is a key tool for the production of animation. In making a storyboard, it is critical to understand storyboard ‘language’. Storyboards are generally composed of panels, where designers and directors can draw in a simple visual representation of what will be shown on-screen, accompanied by notes describing actions that take place, as well as camera angles and changes in perspective.

Figure 2: Example storyboard layout from iheed’s animation on malnutrition, designed by animator Sunny Rai. Showing scene visualisation and director’s notes on voiceover progression.
There are significant aspects which must always be considered during content creation. Here, basic cinematography rules apply, and these contribute to maintaining the attention of end-users, allowing them to focus on the message, rather than trying to interpret what is happening on-screen.

Never cross camera lines.
Never cut off joints, or body parts with the camera.
Maintain consistency during scenes- for example during dialogue, ensure that characters are always kept on the same side of the screen to avoid confusion.

Although striking visual design and on-screen action are important tools to help engage viewers, it is also important to keep direction and messaging consistent. Jumping excessively from one scene to another can be confusing for audiences, and risks losing attention.

Conversely, different types of shots- for example viewing a scene from the side, and then above, can help clarify what is happening, or enhance visualisation.

Backgrounds, objects or colours can all be used to indicate focal points and draw audiences' attention.

When scripting and storyboarding, use the 'RRIPE' strategy: 'Read, Re-read, Plan, Interpret, Execute'.
RECOMMENDATIONS

Cultural awareness and audience preferences

- Consult with end-users during the planning phase. This can be invaluable in setting scene design and styles for characters in health training animation.

- Audiences used to seeing particular styles during other programming, such as on TV or in print can help guide producers to design characters that can be related-to, and are culturally-appropriate.

- Always be aware of the barriers that end-users and thus, content creators, will face, such as:
  
  Level of end-user education

  Ethnicity

  Personal values

  Intolerance

  Stigma

  Stereotypes

- Commit to creating characters aligned with a specific design philosophy. This is particularly important when dealing with health topics that may be culturally sensitive, such as STDs or gender-specific problems. On one hand, creating characters that are identifiable as belonging to a certain race or culture can help to draw audiences into the situation, making it more 'real' for them. However, there may also be value in using neutral origin characters to avoid tying the health condition being discussed to only one culture or ethnicity.

- Humour can also be used to broach more serious topics, and creation of characters such as anthropomorphised animals, or inanimate objects, can help to overcome or lessen any stigma or taboos that surround the topic. These may also be of value when creating content for younger audiences, who may already be used to seeing such characters in entertainment programming.

Animation design and storyboarding

- Focus on creating animations that can fully engage end-users, paying attention to basic rules of scene-setting and storytelling.

- Use on-screen action and visuals to draw the audience’s attention to important points, however the use of overly flashy or busy styles should be avoided, in order to prevent the underlying message from being hidden.

- With complex scenarios and visualisations, showing scenes from different angles can aid explanations and help to improve understanding.

- Develop understanding of storyboarding technique as a tool for rapid iteration of animated productions.
SUMMARY

CORE ISSUE

Animated content must be engaging for audiences

- If audience attention is not held, message uptake may suffer
- Too much on-screen action, or rapid scene transitions can confuse audiences
- Audiences may have difficulty understanding disease processes or medical procedures

Characters in training animations must be visually appealing to help audiences relate to specific scenarios and messaging

- Use of one particular culture or race of characters can help end-users to identify with the scenarios depicted
- For sensitive topics, showing a single group or ethnicity risks causing stigma, or may alienate audiences of different backgrounds

Design process for animations may be slow, requiring repeated revision

- Time taken for each iteration may result in project running late, or over budget

POTENTIAL HAZARD

RECOMMENDED ACTION

Solicit input from proposed end-users to help visualise settings and design

Keep scenes consistent, transitioning only when necessary

Show processes from different angles or perspectives, enhancing visualisation

Tie in character design with local audiences, however be aware that content may not be transferable to other users

Use neutral settings and characters without specific racial / cultural identifiers, or even non-human characters

Consider using humorous characters and scenarios to overcome audience discomfort when discussing ‘taboo’ subjects

Learn and utilise good storyboarding technique, allowing flexibility during the design phase in response to feedback

mHealthEd 2013 Workshop Report
SECTION 4
The 'blend' in blended learning: Strategies to integrate digital content into health worker training programs.

Workshop facilitators:
Amanda Sugrue (mHealth Alliance) and Dr. Niall Winters (London Knowledge Lab)
INTRODUCTION

The term 'Blended learning' is generally applied to teaching programs which combine traditional face-to-face instruction with content such as multimedia materials that can be delivered via remote means, for example internet connection. These materials take many forms, including interactive content such as tests with instant feedback, video content including animation or live action which helps illustrate concepts that are difficult to visualise from simple text or static images, as well as more complex content such as simulations. The use of blended learning has the potential to help significantly improve the speed and effectiveness of health worker training programs, particularly in the case of CHWs, whose practice may be hampered by having to spend time traveling to centralised locations to receive further training. Instead, digital content can be delivered directly to these health workers in the field, and this approach also offers tools that enable remote support and monitoring.

The goal of blended learning is not to add extra training types and content for their own sake, but instead to improve training through the intelligent application of the right balance of media and techniques. However, the integration of such content into programs is in itself a complex issue, and the proportion of digital and multimedia content incorporated into training must be tuned to maximise accessibility as well as knowledge and skills uptake.

This workshop engaged participants to examine the ways in which digital media can support blended learning, drawing on their experiences of the types of strategies used to include these materials into coherent programs for training.
CORE ISSUES AND POTENTIAL HAZARDS

Using digital media to support blended learning

- Digital media can help learners to visualise and understand complex concepts or practical skills, which might otherwise be difficult to learn from lectures or texts.

- Implemented in the correct manner, digital media can reinforce learning, making it a more interactive experience: applications that deliver knowledge, combined with follow-up tests, or interactive simulations, can all improve end-users' connection with the material.

- Through interactivity and improved visualisation, digital media can make difficult topics such as statistics more 'live' and 'real' for learners, helping uptake of key data handling skills.

- Digital media can be more easily targeted to specific users, and facilitates the subsequent customisation of the learning content to be local and specific. Focusing on end-users, particularly children, or groups who may not have previously engaged well with formal educational programs, can allow them to play an active part in the development and production of content, helping to tailor it to their specific learning needs.

- Materials can be easily revised at the learner's convenience. Here, Learning Management Systems (LMSs) such as Moodle™ (Modular Object-Oriented Dynamic Learning Environment), can be used to ensure easy access to content, by delivering it through a single portal. However, care should be taken to ensure that any LMS does not simply become a repository for disparate pieces of content; rather, it should be used to support the coordinated delivery of an optimal combination that supports blended learning.

- Online communications tools can also supplement teaching, for example via live instruction, supervision, or group collaboration through services such as Cisco’s WebEx®, which can connect a remote user to support via live video, or even simple text chat.

Blended learning

- The 'blend' in blended learning is the mixture of content types and learning styles used. This blend must be tailored to each audience, however across sectors there is growing acceptance that certain strategies, such as use of repetitive exposure, and better visualisation can produce more effective learning than others.

- Different content types included in blended learning programs are intended to complement, rather than replace, each other.

- A significant advantage of blended learning and digital media is that end-users can follow a more 'natural' pathway through the content, accessing and absorbing materials at their own pace. Digital media content is amenable to this, since it can be reviewed easily; repetition is acknowledged as being a key factor in learning uptake.

- Through expert implementation and ongoing review, Jhpiego has further refined the key and necessary aspects of blended learning. In their 2012 integrative review of effective techniques for in-service training*, Jhpiego examined the four key components of blended learning: timing, location, media and technique. The use of pedagogical techniques such as case-based learning, with real-life scenarios and simulations is a more potent tool than didactic methods such as lectures or texts. The delivery of the
former can be greatly strengthened through the use of digital content, and the consideration of not only the medium, but also the technique in which it is applied, is needed to produce lasting educational outcomes. *Please see p. 42: INFORMATION RESOURCES

**Figure 3: Example structure of a blended learning program.** Instructor and peer learner interactions are supported by technology channels enabling remote live contact, such as video chat and instant messaging. Concurrently, electronic content can be delivered via online or physical methods, supporting learning through a combination of video and other content which can be reviewed and absorbed by the user at their own pace.
RECOMMENDATIONS

Maintain awareness of blended learning content types

- Take into account the range of content types which could be integrated into programs, but focus on maximising educational potential through a correctly balanced approach. This will ensure improvement in delivery where it is genuinely needed, rather than trying to simply add as many different content types as possible.

- Blended learning incorporates several factors: timing, location, media and technique, and the correct combination of these must be understood in order to be able to create and use a blended learning program.

- If necessary, use parallel approaches for media formatting to ensure that content can be accessible by all potential end-users. For example, slideshows delivered online can also be converted into .pdf format, which can be downloaded in situations where there is limited available bandwidth.

- Assess the types of content which would be acceptable to end-users. Audiences may expect certain types of content to be delivered, such as video or remote live instruction. If these are absent, they may disengage, perceiving the program to be outdated or 'cheap'.

- Live instruction should not be overlooked. The use of live video chat, or instant messaging services, can be used to for teaching, and also allow end-users to give and receive feedback, as well as giving them a familiar point of contact if they require additional support.

Program infrastructure

- If appropriate, incorporate the use of a Learning Management System which can act as a portal for access to content, as well as capture data on users' preferences, learning patterns and achievements. There are a large number of LMSs available commercially, and their integration can significantly reduce the administrative burden of a blended learning program. Ensure that interface with the LMS is also tailored to support learners- it should not be used merely as an online folder where files are stored.

- An LMS can also be used to receive rapid feedback from end-users, which can then inform subsequent programming to ensure optimal performance of the blended learning strategy. Regular review and curation of the content stored on the LMS is needed to ensure that the latest information is available to users, and that changes to the curriculum are integrated in a timely manner.

- Aim for increased collaboration between organisations, to share expertise, and license training content that may have already been successfully deployed, avoiding waste of resources.

- In addition to tailoring content to suit its audience, it is also important to consider the quality of that content. For example, if creating content for use in a program used to train specific competencies, it is critical to base that content on recognised guidelines - for example those set out by the WHO and medical training bodies such as the Royal College of Physicians, which will ensure that training has been standardised and can be used to pass on the appropriate skills.

- Review educational research literature to maintain awareness of current models for educational media production.

- Appropriate supervision must be in-place when content is rolled out. Will there be mechanisms in
place to track and ensure that training goals are reached? Will there be a monitoring system to make sure that the content is used in the right context, and in proper combination with the other blended learning materials?

Iterative development

- Development of blended learning content and programs is not an exact science, and it may be difficult to get it right first time; as with any learning program, the development generally becomes an ongoing process, with key revisions based on use and evaluation.

- The future of blended learning is simpler technology, combined with better content. Some end-users and frontline workers may not have access to more advanced applications, therefore the 'lowest' level of technology and access must be taken into account.

- It is advantageous if a sufficient range of expertise is available within the team. Educators, content experts, and implementers can all contribute meaningfully to the production process.
### SUMMARY

**CORE ISSUE**
- Complex concepts can be difficult to understand through text and image description alone
- Live contact with instructors and peers is an important component for feedback and to aid learning
- Creating an effective 'blend' of content is dependent upon end-user preferences and local conditions of access
- Full implementation of blended learning may require a large amount of electronic content
- Organisation may lack expertise in-house to create and administer blended learning program

**POTENTIAL HAZARD**
- Risk of slow knowledge transfer and learner attrition
- Risk of creating surplus or overlapping electronic content where live instruction is the superior method
- End-users may not engage well with specific content types, or may be unable to access certain content such as large downloads
- Organisations may lack sufficient personnel or expertise for administration of content
- Creating new content may take excessive time and waste resources if it is already available elsewhere
- Risk of creating content which is incomplete, or incorrect
- Risk of end-users over-relying on electronic content

**RECOMMENDED ACTION**
- Include audiovisual and interactive content to aid rapid understanding
- Aim to create content that is complementary to, rather than a replacement for, live instruction
- Conduct regular program review, based on use and evaluation
- If necessary, implement use of a Learning Management System (LMS)
- Aim to create partnerships between organisations to create, share or license validated training content
- Base content on recognised best-practice guidelines such as from WHO / Royal College of Physicians
- Implement supervision, monitoring and feedback to ensure correct usage of blended learning materials

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*mHealthEd 2013 Workshop Report*
SECTION 5

Putting programs in place: Mobile network and technology infrastructure - what are the models and channels for content distribution?

Workshop facilitators:

Dr. Kunal D Patel (iheed) and Jan-Willem Loggers (Text to Change)
INTRODUCTION

Mobile networks and associated technologies have experienced a rapid worldwide expansion, particularly across LMICs, where it is estimated that 4 out of the 5 billion current mobile phone connections are located. This offers the unprecedented opportunity to deliver educational digital content to frontline health workers and the population as a whole. The use of now commonplace technology such as mobile broadband and 3G / 4G networks means that more sophisticated tools and content including video, face-to-face online chat, or downloadable applications, can be used. However, such infrastructure must either be in-place before programming starts, or its roll-out must be integrated.

Whilst many advances in technology for mHealth and digital content have been driven by the 'high-tech', high-income country context, this does not preclude their application in less advanced settings. Conversely, although it is true that mobile network infrastructure is growing throughout LMICs, for many end-users reality is still very much grounded in a less well-connected model, and the lack of technological resources is still a pressing concern when delivering content for blended learning. Nevertheless, there exist approaches which could be used to overcome these, such as the delivery of content on physical media such as flash drives, enabling users even in remote and unconnected areas to access the latest health content.

This workshop explored the types of channels which can be used to deliver health training and healthcare content to end-users, taking into consideration that the use of a 'technology-driven' approach such as mHealth does not necessarily mean that the program itself must always make use of the latest, cutting-edge technology.
CORE ISSUES AND POTENTIAL HAZARDS

Focused targeting of smaller, specific audiences can inform scale-up

- The aim of digital content for healthcare and health education is to reach wider audiences than would be possible through other means, but successful scaling of activities is reliant on focused, early-phase roll-out within a targeted group of individuals, or communities.

- For content delivery via mobile devices, baseline surveys must also be carried out to identify the degree of device fragmentation among intended end-users—for example if the majority are using Java®-based phones, whilst others use Android™, content development should be aligned with this, ensuring that the maximum possible number of users can access the content.

- The process of review, end-user feedback, and ongoing content and program development can be aided by first delivering the content to trained end-users, such as paid health workers, whose levels of literacy and technical knowledge may be higher than the population as a whole. Further, their knowledge of conditions in the field can help inform subsequent phases of implementation. These workers can be invited to participate in subsequent development, to ensure that the channels of access, the media itself, and the messaging, is appropriate to the accessibility context of the population at large.

The most advanced technology is not always required

- Baseline surveys of end-users' technology access will inform approaches needed. For example, if there is significant access to feature-phones or smartphones, the use of higher-end content such as downloadable video or applications could be implemented. Yet in situations where only basic mobile phone access is high among the target population, even simple methods of distribution such as SMS can be highly useful tools.

- Even where technology access IS high, movement of end-users into and out of areas which lack network coverage may need to be taken into account, therefore approaches using different modes of content delivery may have utility, for example downloaded video content can still be accessed even when offline. Additionally, in locations where the delivery of content and applications directly to end-users’ devices is impossible, alternative routes such as distribution via SD card, or optical media such as CD-ROM could be considered. This channel can then also be used to help gather information regarding participant numbers, locations etc.
• The use of parallel channels of distribution, such as via radio and TV broadcast can help coverage in cases where limited literacy may be an issue.

**Technological considerations**

• Training or distribution centres can be set up around points of access: for example where program expansion into rural areas is desired, a local training centre could be set up at the furthest point of access to networking technology. This can then act as a hub to receive the latest content, which can be distributed into the field via physical means, such as on SD card. This could provide a stopgap solution for a faster means of delivering training content, whilst awaiting more permanent solutions such as expanding network reach through building of base stations.

• Devices can be distributed to end-users, in order to run specific applications or to ensure compatibility with a particular content delivery platform. This strategy generally fits in as part of a large-scale, end-to-end solution, and relies on high levels of donations or financial and logistical investment; it can potentially be achieved through partnership with an appropriate technology provider.

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**Figure 5: Example channels for distribution of mHealth content.** Showing types of mHealth content (grey panels), ordered by relative level of technology required, and examples of implementations for which they can be used (orange panels; non-exhaustive list).

- MASS MEDIA (TV, RADIO, CINEMA)
- SMS/ PICTURE MESSAGE
- VOICE CALLS/ MESSAGES
- VIDEO CONTENT DOWNLOAD
- LIVE VIDEO CHAT
- STANDALONE APPLICATIONS

**Relative level of technology required**

- Blended learning for health workers
- 'Information shots' for awareness generation and sensitisation for neglected health issues
- Public health information for the general community
- Targeted reminders/ advice to support medication adherence
- Recruitment of participants to health programs
  - Quizzes to test/ reinforce health knowledge
  - Hotline/ call centres for live feedback
- Integrated reporting tools for frontline workers
- Live health monitoring
  - Expert support for field workers
  - Real-time disease tracking
- Interactive learning (e.g. anatomy atlases, simulations)
RECOMMENDATIONS

Improving end-user coverage

- Use ground-up approaches within program design- for example set up phased implementation to create an ongoing feedback loop that informs development. Here, a program may initially target paid health workers, who may have greater levels of literacy, background knowledge, and access to devices on which mHealth content can be used. They may also have knowledge of technology access conditions among the general population and can advise on the suitability of content and delivery methods for subsequent phases of delivery.

- Program access could be incentivised, for example with small rewards for participation such as mobile phone credit.

- Outreach via public media channels on TV and radio can help to generate interest and encourage program enrollment.

Use an adaptable technological approach

- Make use of as many available content delivery channels as needed:
  
  **2G connectivity via mobile phone networks**
  - SMS content
  - Voice messaging
  - Live calls with supervision/ support lines

  **3G / 4G connectivity and mobile internet access**
  - Video content
  - Access to online information resources
  - Downloadable applications
  - Live video chat

  **Physical media, which can be delivered by hand**
  - Flash memory such as SD card
  - Optical discs such as CD-ROM, DVD
  - Portable hard drives

  **Mainstream media**
  - TV
  - Radio
  - Cinema

- Adjust content delivery to local conditions via flexible use of technology: blended learning content that would normally be distributed online or via mobile network can also easily be adapted and distributed via physical media for less well-connected areas.

- When appropriate, use innovative strategies to ensure maximum coverage- for example, set up technology hubs, which can receive content via the internet or mobile network, then distribute via physical media to more remote, offline regions.
**SUMMARY**

**CORE ISSUE**

- Sufficient technology may not exist among the intended end-users to access digital and blended learning content

**POTENTIAL HAZARD**

- Risk of incomplete coverage of program

**RECOMMENDED ACTION**

- Conduct thorough baseline assessment to examine technology access levels of intended end-users
- Use feedback from early user consultation to inform subsequent use of content delivery channels
- Add, or supplement program with, physical-media delivery through distribution on flash memory, hard drive, or preloading onto devices
- Fully utilise other channels for content delivery such as SMS, voice messaging, radio and TV
- Set up distribution 'hubs' at the edge of connectivity limits

**LOCAL TELECOMMUNICATIONS INFRASTRUCTURE MAY BE POORLY DEVELOPED**

- Content access via network may be impossible, creating a divide between those who can and cannot access it

**GOOD NETWORK SERVICES MAY BE IN PLACE, BUT HAVE LIMITED GEOGRAPHIC REACH, SUCH AS TO RURAL AREAS**

- It may be impossible to gain sufficient penetration of content into underserved areas
Workshop group 1: Program title: “No!!”

**Area of focus:** Raising awareness and improving care for depression and other mental health challenges in rural Nigeria

- **Core challenge:** Depression is overlooked by the formal healthcare system. This program would aim to test baseline knowledge and attitudes towards depression, sensitise workers to this issue, and deliver information to overcome knowledge gaps.

- **Starting point:** This program will initially research current awareness of mental health, what curriculum, if any, is in-use already, and the extent to which other NGOs are operating in this area. It will first target paid health workers, and can deliver training via media including basic broadcasts through public channels. Phased implementation would then target Community Health Workers and the public at large.

- **Accessibility:** Most health workers would have access to mobile phones, radio and TV, representing a variety of channels for content delivery. Platforms such as SMS messaging services and rapid-feedback quizzes would be used to widen reach. The general public might have lower levels of literacy, therefore an adaptive approach to content delivery channels would be taken, maximising message penetration. Where connectivity is an issue in rural areas, physical media distribution could also be used. Content such as video, with voiceover in the three most common languages could be employed.

- **Participation would be incentivised using strategies like giving credit for prepaid mobile phones, and registration would tie in with data collection on users. This program could also be integrated with other health worker education programs, becoming a discrete 'module', where participants would gain certification after completion.

- **Outcomes:** Raised public awareness of depression, and provision of health workers with tools and training for intervention.

Workshop group 2: Program title: “T4F”

**Area of focus:** Non-emergency first aid support in urban South Africa amongst pre-school care givers

- **Core challenge:** many care givers do not have secondary education and are not well-informed about basic non-emergency first aid. This program would aim to get more caregivers registered and engaged, enabling them to access more information resources.

- **Starting point:** this program assumes that all caregivers have access to basic mobile phones, and begins by registered users being administered a quiz using simple text messages.

- **Accessibility:** other channels will act synergistically with the SMS program, to provide tips and reminders on first aid. The program will be sensitive to the issue that most infants are cared for outside of home. An additional hotline will be used for non-emergency situations, and will provide information and clarification for users, in order to mitigate the challenge of having several messages competing for attention outside of the program itself. The major tool employed will be via SMS messaging to drive caregivers towards training bodies.

- **Outcomes:** Raised awareness and knowledge of non-emergency first aid among pre-school caregivers, as well as increased uptake of formal training programs.
Workshop group 3: Program title: “HELP”

Area of focus: Young adolescents in Syria and raising awareness of child trafficking.

- **Core challenge:** This program would aim to increase safety of vulnerable children and adolescents, by raising awareness of dangers such as child trafficking and encouraging the adoption of peer support networks. A high degree of portability is required due to the fluid nature of the context, and often rapid changeover of resources in conflict zones.

- **Starting point:** The program would aim to deliver education to camp workers, in conjunction with various actors on the ground, such as UNHCR or IFRC, and simultaneously engaging in education of children via a peer-to-peer system including games and other entertainment channels such as animation shown on portable devices.

- **Accessibility:** This program may include diverse channels to deliver information, including paper-based content, taking place in a lower-tech environment such as a refugee camp with largely-analogue services. Tools such as smartphone applications with offline capabilities could be leveraged, and the program could be rolled out in parallel with other drives such as distribution of tablets or smartphones into the camp community as a means to increase knowledge and address other challenges, such as sanitation awareness. Gameification could be used to maintain young people’s interest, encouraging them to interact and socialise with one another and build informal peer networks. An alert system could also be introduced, which could help monitor if a child is on their own or at-risk, for example using SMS messaging. However, distribution networks for the hardware itself must also be in-place, and other problems such as theft may arise.

- **Outcomes:** Increased engagement of young people in peer learning about safety risks, raising their awareness of ways to seek help, and building support networks to increase personal security.
SECTION 6

Creating intelligent payloads: Avoiding end-user supersaturation with health education content.

Workshop facilitators:
Dr. Alain Labrique (Johns Hopkins Bloomberg School of Public Health) and Dr. Marc Mitchell (Harvard School of Public Health)
There can be little disagreement that blended learning and digital training content for health workers, as well as general public health programming, represents a tool which could make a significant contribution to the speed and efficiency with which learning occurs. However, numerous content sources and providers have arisen, leading to overlap between programs. There is now such a richness of content available in some areas which have to-date received the most attention from Global Health and International Development organisations, that it is becoming increasingly difficult to deliver a consistent and focused message. Concurrently, due to the ever-expanding presence of improved networking infrastructure, it is now easier than ever to deliver health worker training and public health content.

Whilst the improved flow of information, helping to empower patients and health professionals with key knowledge, is a desired outcome, end-users can now find themselves becoming overloaded with information, giving rise to the problem of 'supersaturation'. The risk of confusion and 'message fatigue' may actually disengage the target audience, who may find it difficult to understand which messages are the most credible.

This workshop asked participants to apply their expertise to suggest solutions to overcome the 'supersaturation' problem, drawing on their experience of issues which have arisen in the past, and strategies which could potentially help to deliver more coordinated health messaging and programming.
CORE ISSUES AND POTENTIAL HAZARDS

Training is often delivered on an ad-hoc basis

- Often content for health worker training and public health messaging is created in response to a direct need. In the absence of an overall coordinated strategy between as many stakeholders as possible, this by its very nature can lead to fragmentation, and a lack of formal unified training courses.

- This model of content creation has led to a 'purpose-built' mentality, resulting in a large proportion of current content being non-modular in nature.

- Organisations and their trainers across programs have their own approaches to content delivery methods and types.

- There is currently a disease-based focus within health programming, and as a result, it is often the case that there is a lack of a common patient-focused approach.

Decision-making occurs predominantly from the top-down

- Limitations of resources and personnel can create the risk that a lack of end-user consultation during pre-programming will cause content and messaging to become mis-aligned with needs on-the-ground.

- Changing organisational guidelines and priorities may create imbalance in messaging, or within the content itself, resulting in redundancy and overlap.

Communication between actors may be neglected

- Organisations may be operating in the field with overlapping interests. A lack of communication can create the scenario where several parties commit resources to producing training content, whereas a collaborative effort could save time and money, as well as providing end-users with more focused programming.

- There does not yet exist a unified platform or catalogue to manage digital health training assets, which could be used by stakeholders to access the best validated training and public health materials. Greater inter-agency cooperation could help to create such a platform.

Inefficiencies at multiple levels

- Content delivery models used may not have been reviewed with end-users and education experts to ensure that training is delivered in the most efficient manner.

- There may be a high turnover of staff or end-users, leading to a lack of institutional harmonisation.

- Engagement with end-users may not be carried out in the most efficient manner- there may be access problems, either physical or due to lack of infrastructure, or personal such as illiteracy.

- Lack of resources may create conditions where training can only be delivered with whatever materials are available at the time.

- There is also the risk that lack of evaluation of training methods and content, as well as poorly-captured data, can undermine program effectiveness.
Generic approaches may not always be the most transferable

- Creation of a ‘generic’ program for use across regions and contexts may not be the most effective use of resources, as it may lack the flexibility to suit the baseline ability of learners in every case.

- Thorough needs assessment, with concomitant program review, can help to avoid problems which can arise from the 'one size fits all' approach.

Correct prioritisation of training programs is a necessity

- In cases where there is a rush to create content to address a specific urgent health issue, there is the risk that neglect of other topics arises; too much content may be generated for the 'popular' problems, and what resources are left over are assigned to everything else.

- Whilst implementation of technology driven approaches can reduce the cost of training programs, their over-use can be a significant driver of message overload.

The training industry is still in its infancy

- Creation of training content and programs has become a significant business model, and opportunities for market expansion means that companies may be willing to commit equipment such as technology infrastructure or mobile handsets.

- There may be too many companies providing training, combined with a lack of accreditation or certification, therefore end-users may not know whose program is the most advantageous.

Figure 6: Models of content delivery. Showing hypothetical examples of content delivery from multiple disparate sources, top-down programming and non-collaborative approach (A), and alternatively using a single integrated approach to produce streamlined content packages, to be delivered via recognised, authoritative channels, and integrating end-user feedback for ground-up programming (B).
RECOMMENDATIONS

Coordinate training approaches

- In order to avoid the ‘ad-hoc’ training mentality, content creation should be approached with the mindset of enabling its transfer between programs. New content can be created to be ‘modular’, so that programs can incorporate it into coordinated packages of messaging.

- Review of different training approaches across organisations can inform the development of more streamlined methods to deliver training content.

- Be mindful of end-user ergonomics- creating content and messaging with the end-user as the focus, rather than only considering the health problem.

Change decision-making structures to include end-user feedback

- Implement ground-up approaches to programming, such that potential end-user feedback is given significance before programming starts. This will help to overcome issues arising from content being created, then found to be not fit for purpose after being rolled out.

- Ongoing review of programs will enable greater responsiveness to field conditions; during phased implementation, solicit end-user input, then adapt content and messages accordingly.

Aim for greater collaboration

- Baseline needs assessments must also include review of other actors providing training in the field, and can be done in collaboration with Ministries of Health and other government bodies.

- Where such actors have well-made and validated tools, time and resources can be saved by seeking collaboration to share and jointly contribute to content and messaging creation.

- This can also have the benefit of giving end-users a more focused source of information, rather than delivering several different sets of overlapping messages.

- Adapt techniques from the Digital Asset Management (DAM) industry to organise and tag content more efficiently.

Address specific inefficiencies

- Continuous review of training models with content and education experts can help streamline programs, reducing inefficient use of resources. Strong program direction is needed where high rates of staff or end-user attrition may occur, to avoid losing progress along with personnel.

- End-user access to programs must also not be neglected. Here, it is important to ensure that they are willing to participate, for example through incentivisation, and that they have the means to access the content itself. Thorough needs assessment can reveal potential hazards.

- Proper monitoring and evaluation of training programs and content, as well as end-user experiences, must be given priority.

- Do not implement blended learning content for its own sake; it must instead be used as a specific and necessary adjunct to other training methods to ensure maximum educational outcomes.
SUMMARY

CORE ISSUE

Lack of coordinated training approaches

Tendency towards top-down programming

Training and content production environment is non-collaborative

Multiple sources of content exist, with overlap

Multiple program / structural inefficiencies may exist

POTENTIAL HAZARD

Fixed content, created on an ad-hoc basis cannot be flexibly implemented in other programs

Diverse training styles exist between organisations and individual trainers

Training content is often tailored to the specific health condition, without considering end-users

Content may be well-made, but ineffective in knowledge transfer or behaviour change in the field

Program may lack flexibility to respond to changing or unexpected field conditions

There may already be program overlap with other organisations working in the field

Too many sources of information cause end-user confusion

Lack of monitoring and evaluation feedback can undermine progress

Progress may be lost due to staff / end-user attrition

End-users may be unwilling, or unable to participate

RECOMMENDED ACTION

Create content that is 'modular', and is easily transferable

Conduct review of training methods to find the optimal combination of techniques

Use end-user consultation to match content types and delivery methods for best engagement

Implement ground-up approaches to programming, allowing responsiveness to end-user needs

Conduct regular review with end-users, and include feedback into subsequent phases of program

Conduct review of other implementers during pre-programming phase, and seek collaboration if appropriate

Aim to provide end-users with focused messaging, even if individual pieces come from different organisations

Implement digital content in conjunction with other methods, only where it will have the most impact

Use Digital Asset Management strategy to collaborate and share content

Conduct ongoing program review with content and education experts

Use appropriate program direction and data management practices

Ensure end-user accessibility through incentivisation and infrastructure

mHealthEd 2013 Workshop Report
Note

Workshop facilitators for mHealthEd 2013 were drawn from the following organisations. The descriptions featured in this section are taken directly from each respective organisation’s website, and no ownership is claimed, or implied, by iheed or mHealthEd.

Workshop facilitator: Dr. Johnny Walker

Health Founders (http://www.healthfounders.com)

Never before has there been a more compelling time and a more urgent need to disrupt and transform the way we deliver healthcare to the people of our planet. The traditional Healthcare system is simply unsustainable despite the phenomenal efforts of everyone within the ecosystem in putting their shoulder to the wheel.

We deeply believe that at least part of the solution lies in harnessing the potential of “exponential technologies” through the power of “exponential thinking”. Our whole focus has got to change from the traditional hospital based doctor focused solution. We want to leverage Health Informatics to create compelling, personalised, digital and mobile solutions for the stakeholders of the wider Healthcare ecosystem, focused on empowering the individual to take ownership of the well-being.

We are gathering together some of the most creative entrepreneurial thinkers on the island of Ireland and around the world to see how we can Look. Listen. Design. Disrupt and Transform Healthcare today.

Workshop facilitator: Nand Wadhwani

The Mother and Child Health Education Trust (http://www.motherchildtrust.org)

Our projects deal with broad programmes involving large numbers of people, and they often cite statistics to discuss the health concerns of these people. We wish to remember, then, that every statistic is comprised of a large number of individuals – individuals loved by their families and communities, and individuals who (or whose parents) work hard to contribute to those communities. Too many of these individuals die before having a fair chance at life while many others who live are left to lead a life forever handicapped by a childhood of hunger, illness and both physical and mental underdevelopment.

Behind all our efforts is the principle that every individual matters, that life is a precious gift and every unnecessary and avoidable death is a great tragedy and moral challenge.

We also wish to remember that health education is at its core an attempt to value life and each individual, and that a new order of health can be achieved to save these lives, which is our prime goal and purpose.
Medical Aid Films (http://medicalaidfilms.org)

MAF aims to save the lives of vulnerable women and children in developing countries by providing innovative training and education through film.

MATERNAL AND CHILD HEALTH CARE MUST IMPROVE
We bring health educational and training films to remote areas of the world, improving their level and access to health provision with a focus on improving maternal and child health.

SAVING LIVES THROUGH TRAINING AND EDUCATION
There are clear and simple ways to improve the health of mothers and newborns, however education in these life saving practices is not reaching the poorest communities. Our mission is to allow this knowledge transfer to reach those that need it most, working in partnership with existing organisations.

DELIVERING THIS INFORMATION THROUGH FILM AND ANIMATION
Film excels as a teaching and training medium for all audiences: women, mothers, unskilled health care providers and skilled health professionals. Film provides an engaging and easy to understand format that transcend culture and can overcome literacy, language and educational barriers.

We “train the trainers”, increasing their skills and providing them with the medium to improve the level of health education in their clinics and communities.

Because our films are left behind and can be watched again and again, they deliver sustainable skills which remain with the trainers and can be passed on. The local communities are empowered with skills and knowledge that are difficult to divert or corrupt.

Chocolate Moose Media (http://www.chocmoose.com)

Firdaus Kharas began creating media in 1995, founding Chocolate Moose Media, a hybrid social enterprise making for-profit television series and not-for-profit media campaigns. He also established television production companies in Canada and in Asia including partnerships with the Royal Family of Malaysia, the News Corporation and UTV of India.

To date Firdaus Kharas has created, directed and produced nearly 2,400 animated behavior change communications shorts in six series. The animations have been shown in more than 150 countries, adapted into over 90 languages, reaching more than a billion people in their own language.

Pegbar (http://pegbar.ie)

Pegbar.ie is a dedicated Animation Networking Organisation. Pegbar started its operation in late 2008. Since then, they have facilitated a number of talks from celebrated animation artists, film makers and storytellers such as Norton Virgien, Tomm Moore, Eamonn Butler, Bruce Block to name a few. Pegbar has hosted a number of networking events, showcasing animators work, as well as allowing animators to build new relationships and generate possible animation opportunities at the same time.

In 2009, Pegbar set up http://pegbar.ie and started posting Irish Animation based news. Pegbar.ie also conducted and posted a number of interviews with renowned artists such as Joanna Quinn, Stephen Silver and Tom Caulfield. The website also posted links to animation resources, Irish Animation Companies and Artist’s blogs. Through the organisation’s development, Pegbar has co-operated and co-organised with a number of other bodies and events including Meet for Real, Crewger, Enterprise Ireland, Animation Ireland, the Screen Directors Guild of Ireland, Electric Picnic and the Science Gallery.
International VFX Hub Bournemouth (http://www.internationalvfxhub.com)

Launched in March 2012, The International VFX Hub is a joint initiative from The Media School (incorporating The National Centre for Computer Animation) at Bournemouth University (BU) and The Faculty of Media and Performance at The Arts University Bournemouth (AUB). Acting as the initial point of contact to the creative and technical expertise available in the Animation and VFX departments of both institutions, one of The VFX Hub’s primary aims is to provide commercial outlets and links to industry for students, graduates and academic staff.

The project is supported by Creative Skillset and was set up in response to the 2010 NESTA report on the UK VFX industry, which highlighted the fantastic achievements of British companies but recognised that to build on that success more young people needed to be encouraged to pursue a career in VFX and animation. Through a variety of academic and commercial projects, designed to inspire the next generation of artists and technicians, the VFX Hub aims to stimulate interest among the under 16s and to make the subsequent transition from education to employment easier by building stronger connections with industry partners around the world.

mHealth Alliance (http://www.mhealthalliance.org)

The mHealth Alliance champions the use of mobile technologies to improve health throughout the world. Working with diverse partners to integrate mHealth into multiple sectors, the Alliance serves as a convener for the mHealth community to overcome common challenges by sharing tools, knowledge, experience, and lessons learned.

To accomplish this, the mHealth Alliance advocates for more and better quality research and evaluation to advance the evidence base; seeks to build capacity among health and industry decision-makers, managers, and practitioners; promotes sustainable business models; and supports systems integration by advocating for standardization and interoperability of mHealth platforms. The mHealth Alliance also hosts Health Unbound (HUB), an online knowledge resource center and interactive network for the mHealth community.

The mHealth Alliance is hosted by the United Nations Foundation, and founded by the Rockefeller Foundation, Vodafone Foundation, and UN Foundation. The Alliance now also includes HP, the GSM Association, and Norad among its founding partners.

London Knowledge Lab (www.lkl.ac.uk)

The London Knowledge Lab is a unique collaboration between two of the UK’s most prominent centres of research – the Institute of Education and Birkbeck. The Lab brings together computer and social scientists from a very broad range of fields, including:

- education
- sociology
- culture and media
- semiotics
- computational intelligence
- information management
- personalisation
- semantic web
- ubiquitous technologies

This means that issues can be tackled from many different perspectives, and this is reflected in our mission, to

- Understand the place of digital technologies and media in our cultural, social and educational relationships with knowledge – finding, acquiring, creating, and sharing it;
• Design, build and evaluate systems, processes and interfaces that enhance these relationships; and
• Examine critically the assumptions about knowledge and learning that underlie the increasingly wide range of applications of digital technologies.

The ways in which we learn, and what we need to know, are changing. Our research aims to explore and invent the roles of technology in this process, and to understand how technology relates to broader social, economic and cultural factors.

Workshop facilitator: Jan-Willem Loggers

**Text to Change** ([http://www.texttochange.org](http://www.texttochange.org))

Text to Change (TTC) has a wide range of experience in conceptualizing, managing and analyzing mobile phone-based programs. We developed a flexible and easily scalable mobile platform, with state-of-the-art tools and techniques, to send out and receive text messages, voice and data. TTC also has strong relationships within the mobile industry in the countries they work in. Therefore we deliver the full package from database and software development to content development, data analysis and interpretation as well as the visualization and reporting, based on our partner’s needs.

Since Text to Change’s founding early in 2008 we have continuously worked on innovative mobile solutions for development. TTC was the first of its kind in Africa; mobile phones had never been used before on such a large scale for social purposes. Our sophisticated and innovative mobile platform, used in more than hundred projects, enables different types of programs:

- Interactive and incentive-based quizzes to educate, engage and empower people on wellbeing related issues
- Programs that use mobile phones for Health Management Information System purposes
- Data collection surveys via app and SMS
- Personalized medicine reminder programs
- Price information systems for farmers
- SMS-driven menu system

These are a few examples. Besides the development of our platform we also have developed various mobile applications for traditional mobile phones (i.e. the old style Nokia phones). These applications are mostly used for projects where advanced data collection in the field is required. An example is a data collection application for village health workers. Instead of using the traditional paper forms the health workers can use our applications on their own phone to report their monthly data directly to the ministry of health in digital format. Text to Change is further an expert in using mobile technology in interventions relating to health and data collection by using SMS, a communication technology that is supported by even the simplest mobile phones. Despite of the growing number of smartphones in the world, people in rural areas in developing countries can best be reached by text messaging, which is - and will be for a while - the most widely used data application in the world.

Workshop facilitator: Dr. Alain Labrique

**Johns Hopkins Bloomberg School of Public Health** ([http://www.jhsph.edu](http://www.jhsph.edu))

The Johns Hopkins Bloomberg School of Public Health has a big mission: **Protecting Health, Saving Lives – Millions at a Time**.

Since its founding in 1916, the Bloomberg School has advanced research, education and practice to create solutions to public health problems around the world.

Faculty, staff and students have helped eradicate smallpox, made water safe to drink, improved child survival, reduced the spread of HIV and uncovered the dangers of tobacco smoke.

Researchers and scientists are now discovering ways to eliminate malaria, increase healthy behavior, reduce the toll of chronic disease, improve the health of mothers and infants, and change the biology of aging.
Every day, the Bloomberg School works to keep millions around the world safe from illness and injury by pioneering new research, deploying knowledge in the field and educating tomorrow’s public health leaders.

**Workshop facilitator: Dr. Marc Mitchell**  
**Harvard School of Public Health** ([www.hsph.harvard.edu](http://www.hsph.harvard.edu))

Mission and Objectives
The overarching mission of Harvard School of Public Health is to advance the public’s health through learning, discovery, and communication.

To pursue this mission, the School produces knowledge through research, reproduces knowledge through higher education, and translates knowledge into evidence that can be communicated to the public, policy makers, and practitioners to advance the health of populations.

Our objectives are:
- to provide the highest level of education to public health scientists, practitioners, and leaders
- to foster new discoveries leading to improved health for the people of this country and all nations
- to strengthen health capacities and services for communities
- to inform policy debate, disseminate health information, and increase awareness of health as a public good and fundamental right

The field of public health is inherently multi-disciplinary. So, too, are the interests and expertise of the School’s faculty and students, which extend across the biological, quantitative, and social sciences. With our roots in the basic sciences, we are able to confront the most pressing diseases of our time—AIDS, cancer, and heart disease—by adding to our knowledge of the biological, chemical, genetic, and societal forces underlying disease. Core quantitative disciplines like epidemiology and biostatistics are fundamental to analyzing the broad impact of health problems, allowing us to look beyond individuals to entire populations. And, because preventing disease is at the heart of public health, we also pursue the social sciences to better understand societal influences of health-related behaviors and to inform public policy—both of which are critical elements to educating and empowering people to lead healthier lives.

From advancing scientific discovery to educating national and international leaders, the Harvard School of Public Health has been at the forefront of efforts to benefit the health of populations worldwide. Shaping new ideas in our field and communicating them effectively will continue to be priorities in the years ahead as we serve society’s changing health needs.
Note

**SECTION 4** makes specific reference to Jhpiego's 2012 report, “Effective in-service training techniques, timing, setting and media: Evidence from an integrative review of the literature.” This can be found at:

http://reprolineplus.org/resources/effective-service-training-techniques-frequency-setting-and-media-evidence-integrative

**Jhpiego (http://www.jhpiego.org)**

Who We Are:
Jhpiego is an international, non-profit health organization affiliated with The Johns Hopkins University. For 40 years and in over 155 countries, Jhpiego has worked to prevent the needless deaths of women and their families.

Jhpiego works with health experts, governments and community leaders to provide high-quality health care for their people. Jhpiego develops strategies to help countries care for themselves by training competent health care workers, strengthening health systems and improving delivery of care.

Jhpiego designs innovative, effective and low-cost health care solutions to ensure a level of care for women and their families. These practical, evidence-based interventions are breaking down barriers to high-quality health care for the world's most vulnerable populations.

Mission and Values:
Jhpiego is dedicated to improving the health of women and families in developing countries.

From our origins as technical experts in reproductive, maternal and child health, Jhpiego has grown to embrace new challenges, including HIV/AIDS, malaria, cervical cancer prevention and urban health—reflecting the increasing interconnectedness of global health. We take the latest knowledge in science and technology, apply it to develop practical, low-cost health care solutions and make them available from home to hospital, village to city.

Jhpiego assists countries in confronting and addressing health needs for women and their families. We do this by educating and preparing front-line health workers (doctors, nurses, midwives and community health workers) with evidence-based skills and techniques to deliver quality health care. Jhpiego believes that because many people cannot reach needed services easily and expeditiously, services must be made available to people where they live and in their community.

To meet that need, Jhpiego designs and implements effective, low-cost, hands-on solutions that can be delivered by a community health care worker in a home or by a doctor or a nurse in a hospital. We support and are working toward integrating treatment services and health interventions for different illnesses so women and families can be treated for several conditions in a convenient place at one time.

We build local capacity to strengthen health systems through advocacy, policy development and performance improvement approaches. Jhpiego’s ultimate goal is sustainability—leaving behind a well-prepared network of health care professionals and a strong foundation that they can build upon when we move on.
# Alphabetic List of Attendees

(Based on registration lists.)

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<tr>
<th>Surname</th>
<th>First name</th>
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<td>Agogo</td>
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