

Using Google Hangouts on Air for Medical Education: A Disruptive Way to Leverage and Facilitate Remote Communication and Collaboration

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Your residency program has been regularly hosting a journal club for residents. The trainees rotate at multiple sites and find it difficult to attend the sessions. In addition, you would like to have experts, and ideally authors and journal editors, participate in the journal club. How can you do this?

Solution: Google Hangouts on Air

Google Hangouts is an instant messaging and video chat platform that launched in 2011. This cloud-based application allows participants in different locations to video-conference, share individual screens, text chat, and collaboratively edit documents in real time. This free software is increasingly used for study groups in graduate medical education^{1,2} and for facilitating meetings across distances. Google Hangouts creates a fully interactive experience for participants.³

A recent modification is the live version, called Google Hangouts on Air (GHOA). This involves the integration of real-time YouTube broadcasting to a public audience from a “live” Google Hangouts session. This allows for remote learners to connect and view an online panel of speakers. Additionally, the sessions are automatically archived to YouTube, which allows for later asynchronous viewing and sharing. The use of YouTube has been previously described as a method for disseminating recorded educational materials to learners.⁴ GHOA enhances this by directly broadcasting new educational content involving multiple educators at separate locations in real time to an unlimited-size audience. Although

GHOA is comparable to other free (eg, Skype) and subscription-based (eg, Adobe Connect, Go-To-Meeting, WebEx) videoconferencing software, 3 key advantages of GHOA are that it is free, it broadcasts to an unlimited number of users, and it auto-archives presentations for later viewing on YouTube.

An Avenue for Blended Learning

Blended learning is a term used to describe the integration of online with classroom learning. The **BOX** provides a glossary of terms used throughout this paper. The concept of blended learning was first introduced in the mid-20th century, but has recently resurged, partly because disruptive technologies have made self-publishing easier for teachers.⁵ We have successfully integrated GHOA sessions to host panel discussions,^{6,7} facilitate journal clubs with lead authors of publications,^{8,9} and interview the author of a book club selection.¹⁰ Much in the same way that existing videoconferencing tools and YouTube videos have done in the past,^{6,7} GHOA is a communication tool with the ability to augment almost any existing educational program. GHOA also can host multiple speakers simultaneously. Ultimately, GHOA is a novel, no-cost solution that holds great promise in disrupting communication technology.

Five Suggestions for Running a Successful GHOA

1. Mind the Medium

As with any teaching tool, it is important for teachers to match the teaching strategy to their goals and to the medium. GHOA allows for synchronous videoconferencing

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BOX GLOSSARY OF TERMS

Bandwidth: A computer science term that quantifies the bit-rate of a communications array and is related to the amount of data one can transmit through the Internet.

Blog: Derived from the term weblog, a blog is a dynamic webpage with periodic new content displayed in reverse chronological order.

Live-stream: A real-time transmission of video or audio over the Internet.

Live-tweet: When an individual posts comments on Twitter about the discussions or quotes from an event during that event.

Podcast: A digital audio file distributed through web-based syndication or streaming technologies that is typically part of a series.

with up to 10 people who may not be able to meet face-to-face. The ability of GHOA to automatically live-stream and immediately archive the public video for a global audience makes it ideal for panel discussions, seminars, and conferences. But this functionality may not be ideal for every pedagogical context.

To determine whether GHOA is a suitable format for your lesson, initial considerations should address the following questions:

- Why do you want to disseminate lessons using the GHOA medium? What is the added value?
- Would your discussion be better served in a different format, such as a nonlive video broadcast, a podcast, or a blog post?

2. Prepare Well

Schedule in Advance GHOA allows speakers to participate in live sessions without traveling. It can be challenging to schedule speakers, particularly if they live in different time zones. Online scheduling services, such as Doodle.com, that can accommodate for different time zones may be helpful.

Ensure Panelists Have Functioning Technology To create a Google Hangout, all panelists must have a Google+ account. Google has a single sign-on service that integrates across all of its cloud-based apps (eg, Gmail, Google+, Google Drive, YouTube), so most panelists will likely have access to Google+.

Rehearse Before “Going Live” A few days before the actual on-air broadcast, it is advisable to prepare a general script to share with panelists. This allows everyone to prepare talking points as well as understand the overview of the discussion order, timing, and pacing. Then, on the day of recording, ask the panelists to join the GHOA group 30 minutes ahead of the scheduled broadcasting time to troubleshoot any technical difficulties.

We have created a handout for Academic Life in Emergency Medicine (ALiEM), available at <http://aliem.link/ghoainstructions>. ALiEM is a multiauthor website that features medical education content transmitted primarily via blog format. It recently has integrated various other media, such as GHOA, to augment its content. This preparation sheet instructs users regarding the setup process and discussion etiquette.

3. Assign Appropriate Roles in the GHOA

Moderator Unlike in-person discussions, conversations over the Internet can quickly become awkward when multiple people speak simultaneously. Moderators can keep conversations on track and ensure smooth transitions between speakers. The moderator can also choose which speaker to show on the screen.

Backchannel Manager GHOA has an integrated Q&A functionality that allows an online audience to post comments or questions. Alternatively, a third-party platform, such as Twitter, can be used to host comments and questions. A backchannel manager monitors and curates questions and collaborates with the moderator to interject these real-time questions into the conversation. Panelists should be prepared to answer these unfiltered, unscripted, and often delayed questions. Note that the broadcasted YouTube link typically is delayed 30 seconds to 2 minutes, depending on the viewer's bandwidth. Thus, the panelists may need to “double back” to address a delayed question posed by such viewers. Ultimately, the purpose of a backchannel manager is to maximize audience engagement in this video broadcast modality.

iReporter During a GHOA, an off-screen panelist can be a dedicated “iReporter” of the conversation. This can be in the form of live tweets or liveblogging.

4. Keep the GHOA Session Brief

Brevity is a key to success in GHOA sessions. For instance, in the 2 most popular ALiEM GHOA discussions with publication authors, the average viewing duration was 9 minutes 24 seconds (out of 33 minutes 7 seconds based on 323 views) and 7 minutes 30 seconds (out of 13 minutes 25 seconds based on 787 views) for the period of March through June 2014.^{8,9} Generally, videos should be kept to less than 20 minutes, with the main message delivered as early as possible because of viewer drop-off behavior. This is consistent with previous studies of learners in Massive Open Online Courses (MOOCs).^{11,12}

5. Identify and Empower Superusers

Implementing new technology innovations in medical education can be daunting, and technical problems can detract from learning. Identifying a group of residents and/or a chief resident who are facile with technology as superusers can help others get started in using GHOA and ensure a smooth experience (TABLE).

Limitations of GHOA

In order to engage in GHOA, the panelists and the audience must have access to Internet-enabled devices. Panelists in particular must have camera-enabled devices.

Conclusion

GHOA is a powerful teaching tool in the modern educator toolbox, by facilitating a live-streamed video broadcast journal club featuring discussants, experts, and authors/editors that is automatically archived on YouTube. Learners at various sites can participate in the session and ask questions through Twitter and a backchannel manager.

TABLE **CONTRASTING MEDIA**

	Face-to-Face Lecture	Live or Recorded Online Lecture	Live or Recorded Online Panel Discussion
Possible via GHOA?	No	Yes	Yes
Technical requirements	Requires very little technology. Usually the speaker will have electronic slides, a projector, and possibly a microphone.	Requires recording technology, including cameras and/or audio capture equipment for the lecturer's voice. To use GHOA for this, use a laptop that is live-streaming and point its camera toward the speaker.	Requires recording technology, including cameras and/or audio capture equipment for the panelists' voice. To use GHOA for this, the host facilitator needs a live-streaming laptop with its camera pointing at the host. The panelists should also have their own laptop or mobile device pointing toward themselves.
Advantages	Fewer technical difficulties.	Wider dissemination possible. Instantaneous archival and retrieval possible (since it streams directly to YouTube).	May include more than 1 teacher and may connect multiple teachers traditionally distanced by space (eg, British guest speaker for an American audience). Wider dissemination possible. Instantaneous archival and retrieval possible since it streams directly to YouTube.
Disadvantages	Difficult to disseminate beyond the walls of a given institution. Impossible to replicate.	To be the host of GHOA, you are required to have a computer to live-stream the discussion. The video should be thought of as a live broadcast, and thus it would be difficult to do significant editing once aired.	To be the host of GHOA, you are required to have a computer to live-stream the discussion. The video should be thought of as a live broadcast, and thus it would be difficult to do significant editing once aired.

Abbreviation: GHOA, Google Hangouts on Air.

Several residency programs can collaborate to host a journal club and invite authors or editors. The entire journal club session would be available to off-duty residents for asynchronous viewing. We have been successful in implementing GHOA for various educational endeavors to reach wider audiences. Whether it is a blended model using GHOA to connect with a few international experts or a direct live-stream broadcast to YouTube for thousands of audience members, GHOA can expand an educator's traditional reach.

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