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# Technology for Simultaneous Blended or Flex (HyFlex or BlendFlex) Instruction

David J. Rosen, Newsome Associates

Each Technology Solutions for Adult Foundational Education Challenges column begins with a common challenge facing education practitioners. Solutions offered for these challenges, at least in part through using technology, include hardware, software applications such as websites, course management systems, learning management systems, and apps for mobile devices. Each article begins with a description of the challenge, and then examines solutions that involve the use of digital technology.

Originally, the name of this column was Technology Solutions for Adult Basic Education. *Adult Foundational Education* is a new term that steering committee members of the Open Door Collective, other researchers and practitioners, and I have been using to refer to our field that has often been described with terms such as *adult literacy, adult education and literacy, adult basic education,* or *adult education.* An evolving definition of the new name will be found **here**.

## Description of the Challenge

The challenge we take up in this issue is how to provide: (a) *simultaneous blended* instruction that offers adult foundational education learners the choice of two learning modes: in a classroom or simultaneously joining classroom learners remotely, and (b) *flex* instruction that offers a third mode, asynchronous online learning, and the possibility that students can change modes as often as daily. There are many aspects to addressing this challenge including course or curriculum design, professional development and training, assessment, managing the modes, engaging students, and others; one aspect, that we will begin to explore in this column, is using the right technology to match a program or school's purposes and goals, its resources, and its adult learners' needs. This issue of *Technology Solutions* focuses on hardware and software solutions that could be useful for either a *simultaneous blended* or *flex (HyFlex or BlendFlex)* model of *adult foundational education*.

## Solutions

There are several categories of hardware and software solutions to consider, including:

### Classroom Hardware

As you consider what hardware to purchase, you may want to look for videos on a product's website, or on YouTube, that show how the hardware can be used. The hardware examples below include a wide range of costs from just a few hundred dollars to up to $30,000 including installation. Some of these hardware solutions may require or benefit from hardwired (not Wi-Fi) internet access, and high bandwidth broadband. Product brands are offered as possibilities to consider,

Correspondence: djrosen@newsomeassociates.com

depending on your program or school needs, not necessarily as recommendations.

**Tools to broadcast and video record an in-person class session.** Some adult schools and programs use a laptop or smartphone placed on a stand or tripod, with a built-in camera that is focused on the instructor. It is accompanied by software that enables broadcasting, video recording, and possibly uploading and saving a video recording of the lesson. A variation may be to use two video cameras on tripods, remotely controlled, one aimed at the instructor, and the other aimed at the students. The two-camera solution, while including everyone for broadcast purposes may not be feasible for recordings without editing the two videos, a process which can be prohibitively time-consuming and costly, and may require sophisticated editing skills, particularly if an uploaded recorded video is required for each classroom session. The advantages of this solution are that it is relatively inexpensive, that much or all of the hardware may already have been purchased, and that an instructor may already be comfortable using the laptop. An important part of this solution, and one that has many disadvantages, is that a great deal of attention needs to be paid to placement of wired and wireless microphones and speakers to assure that remote learners ("Zoomers") and in-person learners ("Roomers") can all hear the teacher and each other. That may somewhat increase the cost, and unless the classroom is dedicated to these teaching modes it can be time consuming to set up and take down the hardware after each class.

A somewhat more expensive solution is an all-in-one "robot" camera and sound system that tracks and records video and sound of the teacher and Roomer students. Examples of this kind of hardware include:

- OBSBOT
- SWIVL
- Meeting Owl, Meeting Owl Pro and Whiteboard Owl
  *Note: Meeting Owl Pro is intended for larger rooms.*
- Panopto (licensed with an annual subscription)

The advantages of this all-in-one hardware solution include tracking the movement of the instructor as well as the instructor's voice or the voice of a Roomer student who may be talking. While the costs of these devices range from under $300 to a few thousand dollars, this is still at the low-to-middle cost range of the technology solutions. Some devices, the Owl, for example, have built in microphones and speakers that are suitable for small to medium-sized classrooms. Larger classrooms may require two Owls, and an Owl Connect system. Some devices are easy and straightforward to learn and use; others may be more complex. A disadvantage may be that some of the cameras in this range are slow-tracking and that "teachers on roller skates" may have to slow down so the camera can properly track their movement. Another disadvantage is that Large, and/or high-ceiling classrooms without sound dampening may not enable Zoomers to hear everything that is said.

High-end hardware, in quality and cost, may include: a permanently installed ceiling-mounted, wide-angle camera that affords instructor tracking; a permanent wall-mounted, wide-angle camera tracking system; or a permanent two-camera system in one unit (wide-angle, instructor tracking of motion and voice). These are more expensive solutions.

## Display Tools

**A traditional whiteboard or a chalkboard** with a video camera positioned so that remote learners can see it well is an easy, low-cost solution that

may only require a laptop with a camera, but this may have limitations in terms of capturing the teacher's voice.

**An electronic whiteboard (*Smartboard*)** may be a better solution, although more expensive. An all-in-one video camera, or possibly a laptop video camera, may also be needed along with a smartboard so that remote learners can both see what is written on the smartboard and see the instructor. Here are links to two video examples of collaboration tools to support interactive whiteboard in-person and synchronous remote activities. These are not necessarily endorsements.

- KappIQ Smartboard. https://www.youtube.com/watch?v=3ojsMEcIxdk
- Vibe https://vibe.us/demo/

**An interactive projector**
If you have an interactive projector with your presentation software, you can show Zoomers what you are working on in the classroom. One of the possible disadvantages is that it is a projected image that may not be able to be clearly seen by the remote learners.

**An interactive television**
This is like a giant tablet on a wall, it can function as a personal computer depending on what software you may have purchased. You may be able to control it with a wireless mouse or a keyboard. It may also have presentation software included.

**A document camera**
With a document camera Roomers should be able to see a projected document, but the image may not be clearly visible to your Zoomers. You'll need to try it out to see.

**Audio: Microphones and speakers**
If you are not using an all-in-one system, wired or wireless speakers, and microphones (ideally wireless, and moveable across the classroom) – need to be properly placed so all Roomers and Zoomers can hear. You may need several microphones. Wireless microphones, for example ones like these https://www.adorama.com/l/Audio/Microphones-and-Accessories/Wireless-Microphones , should be considered. A wireless lapel microphone for the instructor could be especially useful. One inexpensive and clever solution to microphones for Roomers is the *Catchbox* throwable microphone. You can learn from a video about this at https://thom.catchbox.com/

**Classroom laptops, Chromebooks, or electronic tablets for each Roomer**
Some adult schools and programs have invested in providing a laptop, Chromebook or electronic tablet for each student in the classroom. These are often kept on a cart rolled into the classroom. For *Simultaneous Blended* and *Flex* models these need to have the capacity to connect to the adult school or program Internet which may need to be a hard-wire connection if there are many students in the classrooms. If Roomers have these, or other devices or their own, they log into the same videoconference that the Zoomers log into. They can participate, at least for part of the class session, in online breakout rooms with their Zoomer classmates. They can also easily take advantage of other online apps and software, or a learning management system (LMS).

## Software

### Software for the synchronous mode

**Web videoconferencing tools for the synchronous instruction mode**
These include, among others: Zoom; Google Meet; GoTo Meeting; Webex; and *Microsoft Teams*. Whatever videoconferencing tool you use needs to be able stream the in-person mode and display the remote synchronous mode in a way that is

seamless for class Zoomers and Roomers. In Flex models, where instructors may want to video record and post each class session, it is helpful to have a videoconferencing tool that can automate that process, for example, automatically save each recorded session on a particular page of an LMS or website dedicated to that class, where learners can easily go to find all the video-recorded sessions. Synchronous sessions may be recorded, captioned, catalogued, archived, and uploaded to an LMS such as Canvas or Google Workspace. A convenient captioning tool that can be used with Zoom and possibly some other videoconference software tools is Cielo24 Captioning.

**Software for the asynchronous mode**

There are many possibilities for the synchronous mode. Some adult schools and programs put this Flex mode in place first using a high-quality, online course designed for their students' needs and their level(s). They may then create the in-person and online synchronous modes to align with that course to provide extended or enriching opportunities to those who prefer to learn synchronously. Other programs simply host the synchronous session video recordings so that learners who could not attend can view them asynchronously, and so that any learner can review segments of the recorded videos as needed. Some programs and teachers design their own asynchronous curriculum, possibly based on their successful in-person curriculum. For these, the software used is a LMS such as *Google Classroom, Canvas, Schoology*, *Moodle*, or another LMS. It may also be possible to use a website for this purpose such as *Weebly/Space, Wix*, or another free or low-cost instructor-made class website.

## Hardware and Software Video Resources

To explore these hardware and software solutions further:

- Search YouTube Videos to see hardware product demonstrations that could be used for Simultaneous Blended or Flex model instruction
- Learn more about *flex* model hardware, for example, as used at Waubonsee Community College in Illinois. This site includes:
  - Flex Delivery (a 2-minute video)
  - Flex Overview slides

  https://facultydae.waubonsee.edu/instruction/delivery/flex-introduction
- Watch a World Education EdTech Center webinar video recording of this Distance Learning Strategy Session, "HyFlex Model in Adult Ed: Tips on Technologies & Strategies"
- Explore HyFlex Mobile Kits with slides by Reed Dickson, Program Manager for Faculty Development, PimaOnline, Pima Community College, Arizona https://docs.google.com/presentation/d/1Rwa6FRsElz4NBVhK-YotX3ffQudw5iq1uEs67VLX9do/edit#slide=id.g1013c79c93d_0_87

## Reflections and Analysis

Purchasing hardware is complicated. It requires instructors and IT staff to work together to get the right teaching/learning solution(s). It might be helpful for a program using a *simultaneous blended* or a *flex* instruction model to talk with instructors and administrators at other programs using these models about their needs, what hardware and software they have bought, what technology they may have rejected, or purchased and later discarded, and why. If your budget is very limited and you need to begin, limited solutions are possible for between $1,000 to $2,000 Dollars per classroom; however, while these solutions may be adequate, they may not be ideal. It would be very helpful to adult schools and programs if adult professional development centers in states

in which several adult schools or programs have been using these models could develop technology purchasing guides for programs and schools that are new to these models. Also, adult schools and programs new to *simultaneous blended* and *flex* models may benefit from using more advanced and proven technology if their funders could support budgets for it.