

Making Best Practices Better

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When incorporating technology, don't force yourself to change everything you do. Instead, use it to build on what you already do well.

But I'm not good at using computers!" "All this technology is distracting, and it's making our kids dumber!" "The Internet in my classroom is too slow!" It's easy to make excuses for not integrating technology into your classes, and some of these excuses do have merit. If you plan on making the effort to overcome these difficulties, you must believe strongly in the strategies you select and stick to them long enough to at least test their effectiveness.

Technology use is sometimes referred to as a best practice, just another among many, but I wish it were that simple. A stack of laptops or an interactive whiteboard is essentially useless if it simply replaces traditional pen-and-paper lessons without improving student learning. Instead of merely using technology for the sake of using it, we should see technology as an opportunity to make our best practices even better.

Using technology *will* place new, unfamiliar, and often substantial demands on your prep time, but in many cases, after an initial investment of time, the resources are available to you forever and require little time to maintain. Technology tools have become so user-friendly that it's easy enough to pepper your lessons with worthwhile activities that integrate technology even if you're not a computer expert. The strategies I use are feasible for teachers at all levels of technological savvy. So what are my specific strategies?

Build and Maintain a Class Website

My website has all the material that my students need for their classes—reference materials, handouts, resources, and announcements—and that's it. I don't fluff it with "fun stuff" like links to my favorite recipes or pictures of my vacation in Disney World. The class website is all about students' learning. My website also has a mobile version for mobile devices—not a necessity, but it does simplify browsing, especially for students and families using lower-tech mobile devices.

There was a time when you had to be a serious programmer to build a website, but those days have long passed. There are many free tools you can use to create a website. Good tools include [Google Sites](#); [Wix](#); [SnapPages](#); and [Webnode](#). Many web hosting companies include these tools with their hosting and registration fees. Most website hosts also include space for storing documents and images, blog and wiki tools, and even integration to popular social media sites.

Reduce Paper Use

Teachers use a lot of unnecessary paper. For example, if my chemistry students work on a problem set that requires substantial work on paper, they'll be doing the problems in their notebooks—not on the problem sheet. The problem sheet just ends up as a piece of wasted paper jammed in a folder with the rest of the materials the students have collected over the course of the term.

Students have enough trouble keeping their folders and notebooks organized, so I minimize the paper I hand them and simply post the materials for them to view on a smartphone, tablet, or laptop. Students typically work with classmates on these problems, so if someone happens to not have one of these devices, it isn't generally a problem. I also frequently project the materials on my interactive whiteboard. I use the same technique for providing answers—

students don't need a paper copy of worked solutions if they have the lion's share already handwritten in their notebooks.

This strategy is also effective for materials that I'd like students to read. I just post them as PDF files on my website for students to download and read on a screen or, if the student insists, to print out.

I was pleasantly surprised to discover how many of my students have devices with e-reader capability, either dedicated e-readers or tablets and phones with free e-reading apps. For longer readings especially, I use the free software [Calibre](#) to convert documents I've created into MOBI and EPUB formats that students can easily view on their e-readers. E-reader software enables students to highlight and annotate the material, so none of the important note-taking capabilities of traditional ink on paper are lost. Many devices also allow users to share their notes and highlights, increasing opportunities for collaboration.

Although using an e-reader or e-reading app is very intuitive, software like Calibre takes a little getting used to. It takes some trial-and-error to format your homemade e-book for e-readers. I've had the best luck when I start with a Word document with minimal formatting and save it as a web page using Word's "Save as" option. I then import that version into Calibre and convert it. My [website](#) has more detailed instructions on how this process works.

Use QR Codes

QR (quick-response) codes are the square "bar codes" that many smartphones and tablet applications can read if you scan them with the device's built-in camera. They can be generated to share phone numbers, web addresses, or even just a block of text. For example, the QR code below links to my website.



I use QR codes for several basic purposes. The first is to link to the electronic location of documents I generate. If a student loses his or her paper copy, the student can just scan the QR code on a friend's copy and get back in business. I also use QR codes to link to resources relevant to the material in the paper document, such as solutions to problems or more detailed information about a particular topic. This strategy enables me to provide direct access to a large quantity of information without distributing much paper.

In addition, the QR code itself can carry information. Remember those old secret code books that came with the red plastic glasses? You could only read the words on the page when wearing the "secret decoder glasses." Similarly, I can make the answers to problems into a code and include it right on the document. This way, students have access to the answer but in a form that doesn't distract them while they try to solve the problem. It's a high-tech pair of decoder glasses, built right into a smartphone. The text is limited to 160 characters, but that has been sufficient in most cases for me.

You can also post QR codes around the classroom with links to more information about items in the room or references to news articles. I use QR codes to facilitate my anticipatory set or my exit activity. I project a huge QR code on my interactive whiteboard, the students scan it as they come in or as they're wrapping up, and the activity of interest pops up on their phone.

Generating QR codes is simple—several free tools on the Internet enable you to paste in your link or text, click a button, and get a QR code. Try <http://qrcode.kaywa.com> or www.the-qrcode-generator.com for straightforward, easy-to-use generators. There are even extensions available for most major web browsers that will add to your right-click menu the option to generate a QR code from any link or other selection on a web page.

Once you have the code, just paste the QR image into your document and label it. I label my QR codes with the name of the document to which the QR points and a URL for users without a smartphone. To make the URL more manageable on the printed page, I shorten it using an address-shortening tool like tinyurl.com or bitly.com. (You will want to scan the QR codes on the paper documents yourself to make sure they point students to the right place before you copy and hand them out.)

Encourage Online Research

My 9th grade physical science class starts the year studying the components of experimental design. Much as a musician studies great musicians or a business major studies great companies, we study great experiments and experimenters and then talk about the commonalities in the experiments. I send students to the web to select an experiment in a field that interests them from a list on Wikipedia and then let Google do the talking. Students prepare a summary of what they learn using several guiding questions I provide, and then we come together and talk in small groups and as a whole class.

I use the Internet for many things that I could do with paper or books, but that I would *not* do—or have students do—if I had to rely solely on paper or books. Having students review stacks of paper resources to come up with a half-page summary in the limited time of a class period is not worth the effort when hundreds of resources are waiting in cyberspace. Many students are exceptionally adept at what I like to call "surgical searching"—locating specific key words and phrases in large blocks of text, carefully extracting the specific information they need, and moving on to the next page. This strategy might not do for formal research, but it is fantastic for short, fast-paced lessons in the classroom meant to generate some basic information on a topic.

In general, this technique will be effective for small research activities that do not require or cannot afford a large investment of time. In math class, for example, students might kick off a unit on circles by locating and explaining how the area of a circle was determined prior to the development of the concept of pi. Or history students studying the early U.S. presidents might spend a few minutes searching for information about a current event that has some relationship to the issue of presidential power.

I will be the first to say that user-contributed websites, such as Wikipedia, have their flaws and should be used only with caution. However, one of the blessings of the Internet is the proliferation of people willing to work hard on something and share it with others for free simply because they enjoy the work. Sites like Wikipedia have become popular because of their value for providing general information. I discourage students from using sites like these as their *only* sources, especially for larger projects, but articles on these sites often include a list of references to legitimate, accredited content. In fact, Wikipedia has gained credibility with me in recent years because the site requires contributors to cite references.

Share or Create Screencasts

Any good teacher knows that offering more than one way for students to absorb the concept in question increases the odds of learning. I've found that screencasts—basically, digital recordings of your computer screen, often with audio narration—offer a simple and effective way to differentiate instruction. [Khan Academy](#) has been a pioneer in screencasting; check it out for lots of great examples.

A big advantage of screencasts is that students can watch them anywhere—on phones or computers, or even on TV using DVDs you provide for them. I find screencasts to be an effective means of differentiating instruction and sending the "lecture" home, thereby increasing time I can spend guiding students in class as they work on specific skills. Bergmann and Sams¹ offer excellent information on the value of screencasts and how teachers can use them. There are screencasts and recorded lectures for just about any topic all over the web, and most people who make them available don't mind if educators use and share links to them. You can create your own, but it is a substantial time commitment and requires specialized software and hardware if you want to do it right.

Use Blogs to Teach Writing

Young people—teenagers especially—are already publishing on the Internet, even if it's only in snippets. Their status updates and text messages are far from great literature, but they demonstrate students' interest in expressing themselves in writing that their peers can understand. It's not a big step, then, to encourage them to publish their

classwork in the form of a blog or other electronic publication. There are dozens of free websites for just this purpose—just search for "free blog" and start exploring.

For my science classes, I prefer succinct but productive reading and writing activities with concise but rich answers.

As long as you insist on students' accountability for their grammar, spelling, and style, writing in short bursts on a blog is sure to improve their literacy skills. English and social studies classes will put students' ability to write coherent, lengthier works to the test.

Subtle and Effective

The strategies I've detailed in this article have proven effective in my own classroom. None of them require a particularly high level of tech knowledge, but each has contributed in a productive way to my practice. Most important, each of these strategies serves to simply enhance specific lessons, refine other teaching strategies, or provide alternatives to my current methods. They haven't completely replaced any particular lessons in my repertoire.

Using computers for their own sake adds nothing to the learning environment. But weaving technology into the culture of your classroom ensures that the technology does not become a distraction. Try these strategies—or create and share a few of your own. At the end of the day, the most important thing is that you've made the effort to improve your practice, addressed appropriate standards, and helped your students learn.

To make life easier for this significant user base, it's important to provide sufficient font sizes and colour contrast.⁷ In doing so, you'll also make screen viewing easier for other mobile users, who may struggle to read small or illegible fonts when they're on the go. Mobile users may have little time to digest information, so it's good practice to display your value proposition above the fold. As a bonus, this technique can help boost your conversion rates too. Share.