



# Harnessing the potential of online and blended learning in graduate education programs

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## The Idea...

### How can I improve this class?

Every instructor is continuously asking themselves this question. How can I make this better? More relatable? More interactive? How can I engage millennial learners? How can I deliver all this content when we only meet "X" hours a week?

On our own quest for improvement, we heard about 'flipped classrooms' and 'blended learning'. UW-Madison has been encouraging blended learning and offers a course design program for interested faculty and staff. This class facilitates faculty and staff education of online and blended learning and assists them in designing a blended learning course for either an existing or new course offering.

### What is blended learning?

Blended learning is a type of learning format that incorporates digital and online media content and instruction into its class offering. There are various styles of blended learning, varying the balance between in-class and out of the classroom activities. In general, with blended learning the more traditional in-class lecture material is conveyed out of the classroom using information technology; in-class time is then available for more traditional 'homework' or hands-on type assignments. This allows some flexibility, as students can, for the most part, have control over when, where, and how often they access class content. It also frees up precious in-class time for higher-level learning objectives.

## Implementation in (and out of) the classroom

Redesigning or creating a new course is always a challenge. It takes time and dedication and is certainly an iterative process. Creating a blended course is no different. It takes forethought and should evolve over time. For our Human Cytogenetics course we utilize online and active learning techniques through a series of pre-class, in-class, and post-class activities. Pre-class activities include pre-recorded lectures, self-guided case studies, and other interactive online content. This allows us to deliver the necessary content before class. It also gives students the flexibility to complete these pre-class requirements at their convenience and revisit the content at their leisure. Delivering the more traditional lecture material online prior to class enables us to utilize our class time for complex case studies and higher-level discussions. This is especially useful to us as our class only meets once a week for 110 minutes.

The online content is accessed through the university's online learning management system (LMS). This LMS can also host online class discussion boards, class communication tools, and online quizzes. It also houses grading spreadsheets that can be accessed by both students and instructors.

Information technology is used to give students access to both passive and interactive online content. Their progress and usage can be tracked by the course instructor. Our students are able to view lectures ahead of class. They also complete case study examples as a way to check their knowledge prior to class.

## The possibilities...

### How could this pedagogy be used more widely?

Improvements in and availability of information technology has been transforming college and university campuses for years. Some individuals have degrees earned solely by taking online classes. Now, more traditional learning institutions are utilizing information technology and incorporating it widely across their campuses.

In addition to our human cytogenetics blended course design, our laboratory has also created other online, interactive programs for training and continuing education of our professional staff. These modules include topics like learning chromosome identification and nomenclature, and can be expanded for any area or skill level. These stand-alone tools allow learners to progress at their own pace. These types of interactive online tools can be especially useful for programs that want to provide the breadth and depth of knowledge required to populate our field with polymaths, but may lack the available expertise to provide this expansive education.

Online and/or blended learning allows instructors to cover a wide range of topics at the appropriate depth while interactive components help maintain a high level of user engagement. Varied types of learning activities only enhance user participation and information retention.

### How feasible is this approach?

There are many software and web based programs that make this approach relatively affordable and user friendly. Most also include functionality that integrates content from several common presentation software programs.

## Summary

We provide clinical care, education, supervision and support in ever expanding areas of specialization. We are not just working in prenatal, oncology or pediatric clinics, but integrated into a variety of adult and specialty clinics as well as laboratories. In this environment, it is critical that we evolve our graduate school curriculum to address both the increasing call to grow our workforce and to graduate well-rounded genetic counselors. Online or blended learning is one tool graduate programs can utilize to expand their programs through curriculum additions and enhancements and perhaps make distance learning more attainable.

Check out our chromosome identification app, Karyotyper, at: [www.sih.wisc.edu/clinical/cytogenetics/education/](http://www.sih.wisc.edu/clinical/cytogenetics/education/)

And check out the University of Wisconsin-Madison's Blended Learning Toolkit at: [www.blendedtoolkit.wisc.edu](http://www.blendedtoolkit.wisc.edu)

# HUMAN CYTOGENETICS