Nursing accrediting bodies now require that genetic and genomic content be included in nursing curricula (American Association of Colleges of Nursing, 2008). In addition, a consortia of nursing and other health care organizations have published a document on the importance of genetic/genomic competencies for nurses (American Nursing Association, 2006). While genetic content may be included in many courses it may also be taught as a separate course. At a southwestern university it has been taught as a three credit and more recently a two credit nursing course.

How to teach genetic/genomic content is challenging. Nursing students at a southwestern university have complained that the mandatory genetics course should be removed from the curriculum as it was not seen as necessary for clinical nursing. Course evaluations have been low. Students like the hybrid format with 51% face to face class time and 49% online learning. However, there have been complaints that self-learning of power point slides was not effective because the internet and book were needed to augment information and this took too much time. The two exams were unpopular as they covered an enormous amount of material and it was not clear what content would be on the exam. Case studies were said to be boring as at least 12 groups of students took 30 minutes each to present in class. Diseases and conditions selected were often rare or obscure. Exit interviews of graduating students indicated that they did not value the course and saw little application to nursing. With this in mind, the course was reimagined keeping the hybrid format.

In preparing for needed changes to the course the course instructor reviewed evidence based best teaching practices and contacted the university’s Innovative Teaching Center. Recommendations from the literature are many. Billings and Halsted (2016) discuss the need to help students to think and process information, the importance of reflection, appreciating a variety of learning styles, and the value of immediate feedback. Also mentioned is the usefulness of including technology as a learning tool since today’s students are proficient in its use and respond positively when it is used. Bradshaw and Hultquist (2017) in a review of the literature, add that non traditional teaching strategies and creative approaches should be considered in engaging students. Further discussed is that cooperative and collaborative assignments allow students to be actively involved and participate in the learning experience. Finally, empowering students is also an effective approach in engaging students. The National League of Nursing (NLN) echos the importance of a student centered approach and the high importance of actively engaging students in the learning process (NLN, 2015).

Modifications made to the course took into account consistent student feedback that they wanted to keep the hybrid format as it allowed for a more flexible schedule. Students also voiced they did not want a totally online course because genetics content is seen as challenging and requiring faculty feedback and class discussion. Collaborating with the Innovative Teaching Center, the course was modified taking into account student feedback, but also the teaching imperative to make the course more engaging.

The online portion of the course now requires students to review reading from their genetics book. Each week students review one module choosing to read the chapters or listen to voice over power points of the chapters. The main points are covered in the powerpoints but further clarification can be obtained by referring to the text. Students are encouraged to review end of chapter questions for possible inclusion on quizzes.
Face to face class time is begun by taking a short online quiz on content covered in the week’s module. Quizzes are taken individually through the university’s intranet. Then in assigned groups, students discuss the questions and take the same quiz again. Answers are entered on a scratch off card. Group consensus of answers is required but the opportunity to submit a written rebuttal of a question is provided.

Additional class time is spent in a variety of ways. There may be a short powerpoint presentation by the faculty related to an assignment. Video tapes may also be shown during class asking students to reflect on the role of the nurse or issues around testing, counseling, and working with families experiencing a genetic disease or condition. Thus the class as a whole enters into discussion. There may also be small group exercises related to topics covered from learned material.

The most popular class activity is listening to guest speakers. Speakers tell personal stories of how a genetic condition affected their lives and the role played by nurses and other healthcare providers. Guests discuss issues related to finding out about the condition, their emotional reaction, the financial impact, family reaction, emotional support, decisions around testing, and how the condition has affected their every day life. These stories are emotional and affect the students emotionally as well. Students have commented that they very much appreciated having guests present even though they did not always agree with decisions that were made.

The face to face class time ends with work on assignments. Group homework is done during class time and posted to the intranet before the end of class. Group homework focuses on ethical, legal, and social issues related to genetic conditions. Discussion of opinions for and against a particular case are encouraged. The only individual assignment is to construct and submit a pedigree of the student’s family. Students enjoy this activity as it allows them to gather a family history and reflect on their genetic pool.

Student feedback about the course changes is positive and the course evaluation has improved. Both in writing and anecdotaly students have commented that they enjoyed the class, learned a lot, and have been able to apply knowledge learned in class to cases seen in clinical. Above all students voice that the guest speakers were "awesome" and provided a realistic picture of how genetics affects people’s lives.

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**Title:**
Engaging Nursing Students for Genetic/Genomic Learning

**Keywords:**
Hybrid course, genetics/genomics and interactive methods

**References:**


Abstract Summary:
An undergraduate hybrid genetic course has been unpopular. Students complained about self-learning content and that class was boring. Thus, the course was reimagined. A variety of methods used included individual and group quizzes, group assignments, interactive activities, videos and discussion. Most popular were guest presenters about their genetic conditions.

Content Outline:

- **Introduction:**
  - Why genetic/genomic content is important for nursing students to acquire (professional nursing organization directives). What students voiced as the problems: self-learning was nebulous with little direction and covered too much material for exams, surfing the internet was not a good use of time. class was boring, group presentations were boring and useless, some assignments were not applicable to nursing.
  - Low course evaluations of 2.3 on a 5 point scale.
- **Body:**
  - **Main point:** How the course was structured.
  - Online use of power point slides, face to face activities including lectures, group case presentations, exams, individual assignments
  - **Main point:** Changes made to the course
  - Review of the literature & collaboration with the Teaching Center
  - Online activities, face to face activities, individual and group quizzes, videos, class discussion, group assignments, individual assignments, guests living with genetic conditions/diseases
  - **Main Point:** Feedback
  - Positive comments about new course format.
  - Course evaluation now 3.6 on a 5 point scale.
  - **Conclusion:** Interactive methods enhance acquisition of content and are more acceptable to students. Content does not have to be in lecture format. Guest presenters are very popular with students and may be the thing they remember most!

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