Improving Students Outcome through Integrated Technology in Teaching

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Abstract: *Innovation is balanced with student needs and learning styles. As we respond to the demands of an ever-changing health care environment and a new generation of nursing students with a variety of learning styles, we focused our efforts to help these students incorporate challenging material and use their critical thinking skills. We also focused on developing their roles as nurse practitioners who utilize the latest evidence-based practice. At the same time, we are trying daily to avoid the educational pitfalls of the past, and to transform curriculum to meet the needs of the students and the pediatric population they will serve. Adapting new technologies should be carefully weighed against the traditional methods of lecturing. Increasingly, hybrid courses, a combination of teaching in the digital environment (online) and face-to-face interaction between students and faculty, are proving to be very effective, and the student feedback regarding this teaching method is over whelming positive. In this article, we share some of our best practices to teaching in this hybrid, digital environment.*
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I. Introduction

Nursing education, in particular advanced practice nursing education, is changing in terms of how information is best presented and how students learn [1]. Educators continue to learn and evaluate innovative methods in our approaches to teaching as part of our responses to student feedback and faculty satisfaction with the delivery of specific graduate classes [2]. Disciplines within biomedical science and nursing must push past the era of rote memorization to better prepare nurses for nursing practice in this current decade [3]. We have found, just as research purports, that younger generations of students want information at a faster pace and are more comfortable with technology [4,5]. Additional research data supports the use of new pedagogies [3] and the use of unfolding case studies to bring clinical application opportunities to new material. Recognizing education over the last 20 years has evolved from chalkboards and discussions or overhead projectors, to the over use of tools such as PowerPoint, we, as faculty, are constantly trialing new technologies and education strategies to better engage the student [6,7]. This process challenges our view as educators about how to best present the concepts and learning objectives in a way that moves us along the continuum of Bloom's taxonomy from knowledge to the actual application and synthesis of information or new way of thinking [8]. When presenting difficult or new content such as genetics, every student starts with a different understanding depending on his or her undergraduate background. Some students take an undergraduate genetics course, while others are exposed to some content through their basic science classes. Advance practice nursing (APRN) students perceived having minimal knowledge of topics like genetics [7,1]. At the graduate level, we must assess the exposure of each student as we develop learning methodologies to keep students engaged and prepare them to participate, whether in a synchronous or asynchronous hybrid environment, with challenging content such as genetics. They also summarized the issue best by explaining that the topic of genetics touches many aspects of the care with patients, from physical assessments, diagnostic issues, and assignments of best treatment modalities to integrating content on genetics [9]. It is crucial as nurse practitioner students to learn history-taking and physical assessment of patients during regularly scheduled health maintenance visits or early periodic screening, diagnosis, and treatment (EPSDT) visits [10].The Social Networking Theory provides the insight and genesis for discussing effective and relevant multi-method approaches to deliver content on genetics to the next generation of graduate students. The social structure of the student cohort and the arrangement of how information is presented and how discussions ensue relate to how the students access the necessary resources. The newer generations of students have been exposed to various types of technology with social media and an educational environment that incorporates this technology [11,12].

II.   Concept-Based Presentations

The increased awareness of chronic conditions and silent conditions that require diagnosis via genetic testing can prove to be challenging for the novice pediatric nurse practitioner. Just as McGowan, Wasko[13] found that after the initial adoption period and comfort with use, physicians used more social media, this could also be true within nursing education. Once APRN nursing students are acclimated to the hybrid method of learning and adapt to a new way of learning, the new method could be just as beneficial. Nursing education both at the baccalaureate and graduate level is under pressure to ensure that nursing professionals have the knowledge and skills to meet the health demands of society. Nursing faculty must resist the temptation to use the digital environment as an automatic data dump via lecture and doing summative evaluations via exams [14].Multiple teaching methodologies are needed to ensure students' learning styles are addressed and content is clarified. Distler [15] presents problem-based learning (PBL) as a method to challenge the traditional lecture-test model. Teaching is more dynamic when we allow ourselves as educators to be open to surprises. When the answer is not easily identified by the student, it gives the individual a sense of uncertainty which can mimic the clinical scenario soften present primary care [16]. But if nursing faculty prepare students with resources found in the digital environment and use approaches that incorporate the digital environment with the tools to know where to seek information, when to consult properly, and how to interpret basic results, students can develop into better advanced practice nurses [17].

III.   Using Technology To Enhance Teaching & Learning

Technology provides numerous tools that teachers can use in and out of the classroom to enhance student learning. This page provides an introduction to some of the most common. Faculty members should consult SMU's office of Academic Technology Services, which provides many kinds of support, including hands-on training in using classroom technology [4,10]. (Click here for classroom-specific information about the setup in many campus buildings). SMU's STAR (Student Technology Assistant in Residence) Program is also available to help with short-term instructional technology projects [1].There are also numerous on-line resources about using technology to enhance teaching in a number of different ways. For example, Teaching with Technology 2, from the Learning Technology Consortium, offers 17 peer-reviewed essays on using different kinds of educational technology, and the book can be downloaded for free. MERLOT is a huge, peer-reviewed, multi-disciplinary resource for learning and online teaching. Here's a curated list, from About.me to Zotero, of free online tools that you can use in your teaching [15].Below are links to resources on using specific types of teaching and learning tools [5,10,17,18].

3.1. Blackboard:

SMU uses the course management system Blackboard. For help creating Blackboard courses and learning the basics, consult Academic Technology's Blackboard help page, as well as this Blackboard online tutorial. Access your Blackboard courses here.

3.2. Presentation Software

Sometimes it's helpful to provide visual aids to complement teaching, stimulate discussion, or allow out-of-class teaching. Tools designed for this purpose, such as PowerPoint, can be used well or used badly. Click here for resources that provide advice for thoughtful use of PowerPoint, as well as a few additional presentation tools.

3.3. Classroom Response Systems ("clickers")

One way to encourage student engagement is by using electronic devices that allow students to record their answers to multiple choice questions and allow you to instantly display the results. The anonymity encourages participation, and their answers help the teacher know when further discussion is needed. Use of clickers can also serve as a catalyst for discussion. Click here to learn more about using response systems effectively.

3.4. Online Projects and Collaboration Tools

Technology can support student collaboration on creating new knowledge, reflecting on what they are learning, or working together to achieve a deeper understanding of course material. These articles provide ideas about their use and misuse.

3.5. Information Visualization Tools

Technology can also clarify and stimulate thought through transforming words into pictures. Here are some tools to help lead your students to think more critically by encouraging them to visually structure information.

3.6. Flipping the Classroom

How can we make the best use of the classroom time we have with our students? Sometimes a great way to move them toward higher levels of understanding is to move the lecture out of the classroom, and use in-person time for interactions that require applying, synthesizing, and creating. "Flipping" doesn't have to use technology, but tools such as videos, podcasts, online quizzes and the like can help in and out of class activity work together. These resources explain the theory underlying this teaching method and provide practical suggestions for making it work.

3.7. Podcasts

Whether for a flipped class or just as a resource for your students, you may want to create a podcast that conveys information students need for initial learning or review. SMU's Academic Technology Service can provide instruction on creating podcasts, and will loan you a podcasting kit. These articles discuss how to make and use podcasts effectively.

3.8. Games

What could be more engaging than a good game, used well? These articles discuss why a game may lead to deeper learning and give some examples of their use in higher education.

3.9. Teaching with Tablet Computers

We're only beginning to explore their many possibilities for higher education. Here are some ideas.

3.10. Converting a Face-to-Face Course to an Online Course

Teaching online, whether in a hybrid course or a wholly-online course, requires different techniques and different tools. Without the F2F contact, professors will need to be even clearer about setting and articulating expectations for digital work and participation. Encouraging interaction between professor and student and among students is an additional challenge, as is monitoring student learning as the course progresses. The online environment requires the use of basic technologies to digitize course materials as well as mastery of the university's learning management system. And various tools like Skype allow synchronous communications, while blogs and Twitter can encourage asynchronous interaction. Here are some ideas to get you started.

IV.   Conclusion

Educating nurses will continue to be a challenge for faculty. When we, as nursing faculty, embrace change and move forward, great personal growth can occur for both the faculty and students. Collecting data and measuring outcomes is an essential to the adaptive nature of our healthcare environment, and requires constant evaluation of how students are reacting to the fast-changing curriculum and integration of various teaching methodologies. The most disconcerting issue encountered by our team of nurse educators and faculty while exploring and testing new approaches was the vulnerability we felt as the expected authority in issues related to pediatric care. As nursing faculty, you cannot always anticipate the questions or direction that conversations can take, so being prepared for not knowing all of the answers can be difficult. However, this acceptance and preparation lends itself well to showcasing the need to be fluid, looking for the best answer, and using technology to provide the best evidenced based practice examples.

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