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# VARK Learning Preferences and Engagement of Prelicensure Nursing Students

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Rapid changes in technology continue to open more doors to students seeking online educational opportunities. The growth of online classrooms in undergraduate nursing education is rising year by year. Traditional and non-traditional nursing programs are moving towards online and hybrid programs to better suit student and faculty schedules. The number of online nursing programs has increased significantly over the last decade. Online and hybrid courses require faculty to have a variety of teaching methods to facilitate the interaction between the teacher and the learner. "Online education involves internet-delivered courses or training in which students can participate from any number of locations, including their homes. Course materials are delivered synchronously, asynchronously, or in a combination of both" [1]. Assessment of learners is needed to determine the best learning style for the online or hybrid classroom. With online and hybrid classroom, faculty must learn to turn a non-traditional face to face course into an interactive learning environment with the use of games, case studies, online quizzes and testing, and discussion boards.

As a faculty member, it is important to assess the learning style of each student. It is important to set clear expectations from the outset so that students can assess their own readiness for online learning. VARK is an online assessment used by nursing professors to determine what types of learning styles each student has in the classroom. VARK stands for visual, auditory, reading/writing, and kinesthetic. Visual learning is the use of information unrepresented as maps, diagrams, power points, charts, graphs, and other devices that people use to represent what could have been presented in words. Auditory learners prefer information that is heard or spoken such as lectures, group discussion, radio, email, mobile phones, speaking, web-chat, and talking things through. Reading/writing learners learn from information displayed as words, text-based input and output that includes all forms including manuals, reports, essays, and assignments. The Kinesthetic learning style prefers gathering information through experience and practice, simulated or real, either through concrete personal experiences,

demonstrations, simulations, videos, movies, case studies, practice, and applications. Students can have one or multiple learner styles, meaning that online and hybrid course styles may or may not be successful for them. For example, a student who is auditory would benefit from echo learning recording, because it mimics an in-person lecture only in the online learning environment. When comparing and contrasting undergraduate and graduate students, research shows that undergraduate students are less successful in the online learning classroom, whereas graduate student are successful and have more positive outcomes from this environment. Graduate students are considered adult learners. Adult learners prefer asynchronous classroom, which means that the student and faculty do not need to be online at the same time. Student to student and faculty to student interaction occurs in online chat rooms and weekly discussion boards. For the traditional undergraduate student, it is important for them to have face to face interaction right out of high school to help them learn and adapt to college level courses. Research shows that undergraduate nursing programs do not offer any online or hybrid courses until after Freshman and sophomore year in a traditional four-year baccalaureate program.

Interactive learning in the classroom is a growing phenomenon in nursing education. As this type of learning has grown, online databases have been created to facilitate interactive learning in the face to face classroom and in the online classroom. Technology is increasingly becoming integrated into the learning environment by students and faculty. "Games used for educational purposes, referred to as serious games, are a way to motivate, reinforce skills, and promote collaboration through their experiential format" [2]. Kahoot!, Quizlet, case studies, and discussion boards have grown to be positive learning strategies for nursing students, whether undergraduate or graduate. "In supporting such efforts, there has been a shift from student response such as "clickers" and "zappers" to more contemporary game-based student response systems such as the Kahoot! System. Game-based student response systems are game based systems where the teacher designs interactive

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quizzes projected as regular lecture slides to enable students to respond to questions using a web browser on their digital devices in a game show like situation” [2]. These quizzes can contain images and videos to go along with the question or answer and the teacher is able to control pace of the game for each question. This game can be played individually or as a team where each correct answer gains points for the students and keeps track of a leader board to have a winner at the end. This gaming system allows students to interactive not only with the teacher but each other on critically thinking through each question, just like a team in a hospital would do. Sherlock A. Licorish and colleagues from the Department of information science at the University of Otago in New Zealand conducted a study with 14 students on the effects of Kahoot! on learning. One analysis showed that this gaming system gave students more opportunities to interact and engage with the faculty, peers, and lecture content, as well as having fun doing so. Increasing and retaining knowledge was a topic observed in this study and students stated that playing this game in class helped them remember information during and after class. With strategic use of this gaming system in regards to test and quiz schedule, it can be used as a study guide for students before testing. “Students stated that Kahoot! improved classroom dynamics, engagement, motivation, and learning beyond what would be expected from traditional teaching methods” [3].

Quizlet is a free online website that provides learning tools for students that includes flashcards with study and game modes that can be created by faculty or by the student themselves. This study aid can be used online or by downloading the application to a smart phone, making studying accessible to students at any time. Along with Kahoot!, Quizlet can be used in a game-based learning setting. Dr. Sandra J. Davidson and colleagues researched how using game-based learning with evidence-based practice can improve the student experience in nursing education. One important aspect of technology in nursing education is that it continuously adapts to the generation of students year by year. Nursing innovators across the country work daily to create more platforms to use in nursing programs in order to make the learning process much easier. Technology is growing, however keeping the classroom interactive can still be in paper form. Case studies are a tool used by universities across the country in nursing education. Case studies can be used in the classroom, online, and in the hybrid setting for educational purposes. In nursing education, case studies can be used in many different situations, such as giving the student the opportunity to make their own decisions regarding plans of care for the patient described in the study. Critical thinking and prioritization are key in nursing education and knowledge growth and with the use of case studies the learner has a chance to increase those skills. The use of technology is growing across universities not only in nursing education but across all majors. Research has shown that online based learning with the use interactive activities such as games, quizlets, and case studies can be used across many topics in nursing education. Examples included in research included basic nursing facts, application of nursing, evidence-based practice and research, evaluation tool for the course, and course structures for medical-surgical nursing, pharmacology, and pathophysiology. Concept mastery and prioritization skills can be gained by the use of technology and interactive game-based learning in the classroom and online.

The flipped classroom, known as a hybrid classroom, is a growing trend in nursing education programs. Research shows that faculty centered traditional learning environments are no longer suitable for the new generation and adult of learners. “The flipped

classroom, by providing individual and iterative learning and not just unilateral knowledge delivery from the teacher, enables students to share learning content with classmates, engage in high order thinking, and improve their academic achievement” [4]. In flipped classrooms, learners participate in interactive classes after prior study using online content such as recorded videos from faculty, power points, and online discussion boards. In order to assess if a course is suitable for hybrid delivery, VARK can be used on both undergraduate and graduate nursing students to determine what is the best learning environment for them. With the hybrid classroom, faculty can make it optional for face to face contact throughout the semester. This option gives freedom to students to choose what the best way of learning is for them [5,6]. For the adult and graduate learner, giving the option for a completely online course learner environment gives them the flexibility to continue with a full-time bedside nursing occupation while receiving a higher education. As faculty, interactive learning can still be used in the online environment, via discussion boards, case studies, games created by the instructor, and open forum messaging to the instructor. Research by Vasiliki Betihavas and colleagues showed that the flipped classroom in nursing education has increased the students’ academic performance due to freedom to use their preferred learning preference [7].

With all new research and evidence-based practice comes potential problems. Interactive learning in the classroom and online environment can face problems such as competition amongst students, technology problems, learning environment differences, and class size. For games such as Kahoot!, teams are encouraged to increase communication and collaboration amongst students to help teach them these skills for clinical settings [8,9]. With the help of VARK, faculty can determine early on in the semester if the learning environment is suitable to successful interactive learning in the classroom. With the use of technology, faculty may face computer issues and decreased knowledge of technology making it difficult to use this learning activity to help students in nursing education. Research suggests that class size can have a negative impact on the use of gaming and interactive learning in the classroom. Case studies were used as an example where class size can have a negative impact on mastery of concept of the students. Many researchers suggest three to four students per case study give the higher successful results in mastery of educational concepts in nursing. In regards to a flipped and hybrid classroom, potential problems that can affect the learning environment are less interaction between faculty and students, technology, cost, and class size. With the use of an online environment, technology failures effect the class as a whole and can decrease the success rates of students due to lack of content. Universities across the country are decreasing cost in tuition with the choice of online courses, making the college use money from a more suitable environment for many learners. As nursing education faces problems with changes, faculty can help to facilitate a positive outcome for new learning environments in the field of nursing [10,11].

Rapid changes in technology continue to open more doors to students seeking online educational opportunities. The number of online nursing programs has increased significantly over the last decade. Online and hybrid courses require faculty to have a variety of teaching methods to facilitate the interaction between the teacher and the learner. Undergraduate and graduate students can better grasp nursing concepts with the use of interactive games such as Kahoot!, case studies, and quizlet, along with the freedom of optional face to face or online course work [12,13]. Evidence

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based practice shows success rate of students has increased due to the use of VARK and finding the best learning environment for nursing students, both undergraduate and graduate. Nursing education is making large strides in developing new ways of teaching and learning for nursing students across the country and the world.

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