Increasing Sense of Community in Higher Education Nutrition Courses Using Technology

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ABSTRACT

Sense of community is integral across education formats and can affect achievement, interactivity, and retention. Factors shown to engage students and foster sense of community include the instructor focusing and directing discussions, encouraging open expression of opinions, responding to communications and feedback in a timely way, and giving the opportunity to build relationships. Technology has tremendous potential to enhance these activities at all levels of higher education. This article presents ways in which several technologies are used to enhance student experience in undergraduate and graduate nutrition course work across delivery formats.

Key Words: sense of community, technology, higher education, food and nutrition courses, online course work (*J Nutr Educ Behav*. 2018;50:96-99.)

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INTRODUCTION

Community represents

> *a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together.*[1]

That desire for belonging most likely represents a fundamental human motivation that can illuminate many aspects of interpersonal interaction.[2] In education, constructivist theory underscores interaction with others as the foundation for building knowledge, which is mediated by language and collaboration and maximized by the formation of learning communities.[3] Feeling a sense of community and belonging to a group has been shown to be positively associated with students' motivation, persistence, and academic self-efficacy.[4-6] Alternatively, students who lack this social context and feel alienated are more likely to self-isolate, cut class, and fail, and ultimately to drop out.[7]

Community appears to be integral not only in the traditional face-to-face (F2F) classroom but also in online learning, where it can have an impact on students' perception of achievement,[8] interactivity,[9] and retention.[10] A theoretical support for these findings can be found in the Community of Inquiry model, which emphasizes the impact of social presence along with teaching presence and cognitive presence in the online environment.[11] Confirming this perspective, Ni and Aust[12] determined that community was the most significant predictor of student satisfaction and perceived learning in online course work whereas much research placed it as a primary determinant of effective instruction.[13]

Factors shown to engage students and foster sense of community in F2F classes and bridge the virtual distance in online formats include the instructor focusing and directing discussions, encouraging open expression of opinions, responding to communications and feedback in a timely way, and giving the opportunity to build relationships.[14-17] Technology has tremendous potential to enhance these activities at all levels of higher education.[18-20]

Learning management systems (LMS) are Web-based software applications created to house learning content, student and instructor interaction, assessment tools, student activities, and progress reports.[21] Although LMS can enhance F2F classes, they are integral components in blended formats in which a significant portion of the class is conducted online, and fully online formats. The LMS fosters interactivity through discussion boards and collaboration rooms, and in more recent years, wikis and blogs.[22] What follows is a discussion of several additional technologies that can be used within and outside the LMS to enhance student experience further.

DISCUSSION

The author's institution houses a Center for Teaching and Learning that reviews and makes available new technologies for course integration.[23] The technologies discussed subsequently (video conferencing, classroom response systems, video/audio-enabled discussion platforms, and screen capture apps) were incorporated by the author and

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her colleagues in different ways in blended and online courses within undergraduate and graduate nutrition programs.

Video Conferencing

Because audio and visual cues affect the perception of faculty's and students' social presence, online video discussions can foster group cohesion and increase participation.[24-26] High-definition videoconferencing can facilitate sharing and collaborating on presentations and documents, and some offer free accounts for shorter meeting times with limited participants and professional accounts that allow for longer and larger sessions.[27]

In online programs, videoconferencing is used to make the first impression on prospective and new students. Virtual information sessions are conducted and individual virtual interviews set up for interested students. Once students are enrolled, videoconferencing is used for office hours when necessary. Because the desktop of either the instructor or student can be used, students can present their projects and research. Conferences or collaboration can be arranged among students, preceptors, and faculty.

In blended or online classes, videoconferencing is used to host virtual guest speakers and hold class during weather cancellations. To infuse classes with up to the minute reports of new research, faculty conduct classes when they are away for conferences while students at similar events also can potentially share information this way.

Finally, videoconferencing is used for professional development faculty meetings because part-time faculty, especially those teaching in online programs, do not live close by. Aside from being able to discuss strategies to improve student learning, this use of video conferencing increases sense of community among staff.[20] New technologies are then introduced, giving participants the opportunity to try them out in this venue.

Polling

Classroom response systems (clickers) have been shown to promote discussion and increase student engagement in higher education and to have positive potential in foods, nutrition, and dietetics courses.[28,29] To remedy the expense and maintenance of these devices for students or the institution, Web-based polling software may be considered.[30] This allows class members to participate in real time or through an online course. During a live presentation, the polls are embedded into PowerPoint presentations and students use their smartphones to respond via a text message, a Web page, or Twitter. Students in class via video conferencing can still participate in polling.

Questions can be multiple choice, open ended, brainstorm type, or rank.[30] Polling can be used not only to gauge opinion but also to check understanding of complex concepts; thus they can be adapted for use on both the graduate and undergraduate levels. Results are shown immediately on the PowerPoint slide to all participants and open-ended questions are displayed as a text wall, wall cloud, or cluster, or in ticker format. Although polling software can be used in online courses, the lack of immediacy and access of results in real time can reduce its attractiveness. There are several options as well regarding how data are maintained in terms of student participation to make grading easier.

Video/Audio-Enabled Discussion Platforms

To increase the sense of community, some online instructors seek to bring the synchronous components of real-time interaction into online courses. However, students often choose asynchronous online courses or programs owing to demanding schedules or remote geographic location, and/or they may live in multiple time zones, which makes the required synchronous activity impossible.[18]

Video/audio-enabled discussion platforms circumvent this issue by allowing participants to have an online asynchronous conversation regarding images, videos, documents, and presentations during which they can see and hear each other.[31] These platforms can be incorporated into an LMS or used as a stand-alone system. Studies suggest that within online courses these platforms can bring a perception of community and sense of the instructor's social presence closer to that of an F2F course.[32,33] Furthermore, they can be more effective in promoting connectedness and reducing the sense of isolation than text-based discussion.[33]

In the first week of an online course, students can introduce themselves by creating a video. Classmates can then respond by audio or video and are delighted to see and hear each other. For course content, instructors upload PowerPoint presentations without narration into the discussion platform where narration is then added to each slide. As students go through each slide, they comment or ask questions using audio or video that can be answered by the instructor or other students in a similar fashion. Case studies are presented in which each student is assigned to answer specific questions, with all responses in full view of the class. There is potential for use with inter-professional initiatives facilitating those from different health disciplines who have different schedules having access to the same asynchronous case study.

As part of an assignment in an online graduate community nutrition course, students create lesson plans that include a PowerPoint presentation uploaded and narrated through the audio/video-enabled discussion platform. Students are able to rerecord each slide until they are satisfied with how the slide sounds. All other students and the instructor view and listen to the slides and then comment or question with an option for private feedback. This type of assignment could also be appropriate for an advanced undergraduate course.

In courses with some classroom component, the last few weeks may be devoted to final project presentations. Requiring part of the project via a discussion platform with a shorter in-class presentation can save classroom time and maximize class feedback.

Screen-Capturing Computer App

Screen capture technology is downloaded software that records anything on the desktop with narration, including mouse movements.[34] Versions that record up to 5 minutes are often free whereas those needed for longer clips

are available at reasonable fees. Because the brief clip is saved as a URL link, it is easily shared with others. Instructors often find that they can give more detailed feedback in less time and return assignments faster with this method. Because instructor feedback and response timeliness are integral to feeling connected to the instructor (but sometimes are challenging with many assignments in online courses) audio feedback thus fosters student perception of connection.[14,35,36]

Students who were asked to produce their own clips, such as an assignment creating and explaining a nutrition education handout, reported improved communication skills and increased awareness of how they actually came across when presenting. Although instructors in blended classes can review the syllabus and emphasize critical points, such as how final grades are weighted, this can be missed in online courses in which the syllabus is merely loaded into the course. Making a clip highlighting important points in the syllabus alleviates this deficit and can increase the instructor's presence.

IMPLICATIONS FOR RESEARCH AND PRACTICE

More research is needed to assess the impact of specific technologies across formats in nutrition and dietetics education on the perception of community. One challenge is that studies are best designed when comparisons are made among courses delivered in similar format, content, and demographic composition although the use of technology varies. For programs offering only 1 section of each course, or 2 sections but each delivered in a different format, this is difficult.

Despite this dearth of study within the nutrition discipline, there is an increasing body of evidence suggesting that when technology is appropriately infused in blended and online courses, motivation and retention are affected.[37-39] Thus, nutrition educators should explore and consider new technologies for appropriate use in a variety of formats. Some faculty may be resistant to trying new instructional methods, but with adequate support and encouragement, they may be more likely to be retained and engaged.[40]

Another consideration is giving students experience using tools they are likely to use as effective nutrition professionals who promote community in increasingly virtual environments. Health departments use video conferencing to train professionals and community workers in wide geographical areas; similar technology is then used to connect with target populations.[41] Telehealth/telenutrition includes various technology-assisted ways to conduct synchronous and asynchronous virtual communication when patient/client engagement is a consideration.[42] With increased Internet access by underserved populations owing to the rise in smartphone ownership, online education strategies used by programs such as the *Supplemental Nutrition Assistance Program* and the *Special Supplemental Nutrition Program for Women, Infants, and Children* are promoted.[43]

Emerging technologies being tailored for use in education strive to approximate workplace scenarios and enhance critical thinking, group dynamics, and peer-to-peer learning.[44] Of particular benefit to those in health disciplines are game-based and problem-based designs. Some are being developed using existing Web technologies; others use augmented reality, which incorporates images, video, and audio into real-world spaces, and virtual reality in which users interact with a computer-simulated environment.[44-47] These are exciting developments with potential to expand and enhance the educational tool set as they are adapted for nutrition and dietetics education.

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CONFLICT OF INTEREST

The author has not stated any conflicts of interest.