

Enhancing Interactivity in Online Classes: A Framework for Enhancing Instructor-Student, Student-Student, and Student-Content Engagement

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Abstract. In the 21st century, the main issue facing education is preparing students to be competitive in the global marketplace. For online higher education, this research demonstrates that the solution to this issue is to provide a deeper level of interactivity to increase student satisfaction and retention by applying best practices in online instructional strategies, and research related to 21st century skills and technology. The purpose of this article is to provide research-based practical strategies related to online instruction, 21st century skills, and technology to updating Interactivity in online classes.

Keywords: E-learning, interactivity, 21st century skills, student satisfaction, retention

Introduction

In the 21st century, the main goal of k-12 education is preparing students to be competitive in the global marketplace. It is our contention that this goal should also apply to higher education as well. For online higher education, this research demonstrates that the solution to this issue is to provide deeper level of interactivity to increase student satisfaction and improve the retention of students in online programs. Applying best practices in online instructional strategies along with research related to 21st century skills that are being used to achieve being competitive in the global marketplace for k-12 students is the means to resolve this issue (Anderson, 2003; Bandura, 2001; Brianthaupt, Fisher, Gardner, Raffo, & Woodward, 2011; Croxton, 2014; Herbert 2006; How online education, n, d.; Preparing 21st century, n. d.; Virtual schooling, 2006). The overall purpose of this article is to provide research-based practical strategies related to developing 21st century skills and increase use of technology to update the framework for interactivity that was first proposed by Terry Anderson and

D. Randy Garrison (1998). The learning outcomes for this article are fourfold: Firstly, develop a philosophical framework that helps lead us towards meeting the needs of 21st century education. Secondly, review the literature for specific strategies related to online instruction, the 21st century skills (communication, creativity, collaboration, critical thinking), and use of technology; thirdly, apply these strategies to the three interaction modalities (instructor-student, student-student, and student-content); and lastly, provide recommendations linking strategies connected to best practices in online instruction, 21st century skills, and technologies to the framework for interactivity.

In the 21st century, eLearning promises to provide a means to improve student satisfaction and retention by joining technology and online interactivity with the 21st century skills of critical thinking, creativity, collaboration, and communication (How online education, n. d.; Preparing 21st century, n. d.; Robb, 2012; Virtual schooling, 2006). Online students require a deeper social connection with interactivity, increased levels of student satisfaction in the online curriculum, and higher student retention rates. Over the past two decades, interactivity has been the way online programs have determined how to improve student satisfaction, academic discourse, retention rates, and dialogue (Grant & Lee, 2014; Na Yi 2003). In utilizing the interactivity construct of student-student, student-instructor, and student-content created by Anderson and Garrison (1998) as the fulcrum of interactivity, curriculum designers have experimented with the means to improve each of the interactivity schema. However, the results have not been encouraging due to the continuing high rates of online students dropping out of their online programs.

There are three sections to this article. The first section provides the philosophical framework for this study. The second section provides a review of the literature on the 21st century skills of communication, creativity, collaboration, and critical thinking; on the role of technology in changing student interactivity; and the changes in the framework of interactivity. The third and final section provides a summary for improving each of the three tiers of interactivity, including instructor-student interactivity, student-student interactivity, and student-content interactivity, in terms of the 21st century skills. We are in an era of engaging in self-reflection to improve the exchange with instructors, content, and classmates to meet the challenge posed by the desire to retain students (Grant & Lee, 2014; Na Yi 2003). Thus, taken all together these sections lead to the introduction of strategies that will lead to greater student satisfaction and higher retention rates.

Philosophical Framework

When considering ways to improve online instruction, one must also develop a philosophical framework that helps lead us towards meeting the needs of 21st century education. It involves “creating a model consisting of a climate of shared learning that collaboratively supports creative inquiry, brainstorming techniques, creating and demonstrating originality, and refining and evaluating ideas” (AACTE, 2010, p. 1). This model is a response to the arguments on core principles, a blueprint of what educators should do that appeared in the AACTE white paper, written by The American Association of

Colleges for Teacher Education (AACTE) and the Partnership for 21st Century Skills. According to these two organizations, “new teacher candidates must be equipped with 21st century knowledge and skills and learn how to integrate them into their classroom practice for our nation to realize its goal of successfully meeting the challenges of this century” (AACTE, 2010, p. 2). This will involve including in course work the 4Cs of 21st century education, which are namely: communication, creativity, collaboration, and critical thinking (AACTE, 2010; Preparing 21st century students, n. d; Robb, 2012; Virtual schooling, 2006). Even though these resources pertain to k-12 teacher education, the intention of this article is for use by higher education online instructors in all disciplines and not just education. The authors of this article feel that what is being done in education to prepare teachers to teach in the 21st century is apropos for all online instructors in higher education as well.

A further element of the philosophical framework necessary for this work of achieving 21st century skills is the need to create an education system linked dynamically to self-driven learning of the students themselves. According to Steve Denning (2011),

Education must abandon accountability through the use of detailed plans, rules, processes and reports, which specify both the goal and the means of achieving that goal. Instead, what is needed is “dynamic linking,” which means that (a) the work is done in short cycles; (b) the teacher sets the goals of learning for the cycle; (c) decisions about how the learning is to take place is the responsibility of the students; (d) progress is measured in terms of the questions the students are able to generate, not merely answers that they are able to regurgitate; (e) students must be able to measure their own progress—they aren’t dependent on the teacher’s tests. (p. 2)

Furthering the philosophical framework also involves research about what best instructors do in their college classes. Based on a study done by Bain (2004) on what best college teachers do in face-to-face classes, Brianthaupt, Fisher, Gardner, Raffo, and Woodward (2011) confirmed Bain’s assertions with research from online instructors. These authors discovered that the following from Bain’s General Categories of What the Best Teachers Do were verified by their research on online instruction:

“Fostering student engagement”

- “Create a community of learners”
- “Foster student-to-faculty and student-to-student interaction”
- “Judicious and strategic use of humor”
- “Use of blogs to facilitate reflective thinking, collaborative learning, and knowledge construction”

“Stimulating intellectual development”

- “Create natural critical learning environments”
- “Generate provocative acts, inaccurate and incomplete preconceptions or mental models”
- “Use technology to create engaging and authentic context”

“Building rapport with students”

- “Understand one’s student population and determine the amount of help needed”

- “Let the students get to know the teacher”
- “Keep written records of communication that includes relevant student information”
- “Provide individualized feedback on assignments and activities” (p. 7).

These components of the philosophical framework work together in this study by producing the foundation for this study to develop an updated version of the Three-tiered Framework for Interaction based upon best practices in online instruction with the 21st century skills and the use of additional technology.

Literature Review of 21st Century Skills

Communication. Communication is a process. It can create a shared understanding between people at “linear, interactive, and transactional” levels (Analysis of communication, 2011, p. 1). In addition, “communication is the process of sending and receiving messages through verbal or nonverbal means including speech or oral communication, writing or written communication, signs, signals, and behavior” (Nordquist, 2017, p. 1). This communication must be “across the life cycle, be a model for communication that produces unity, and practice a culture of cooperation, respect, and civility” (Who is welcome here, n. d., p. 1). Organizations need to set as its goals the following that demonstrates this commitment to open communication: “address the diverse needs of learners;” “enhance student literacy;” “foster a respectful learning environment;” and “provide students with skills for the 21st century” (Fostering a respectful, 2010, p. 1). In online instruction, communication is a very important means to build rapport with students by helping students to get to know one another and the instructor. This can be done by using introductory videos or other self-disclosure resources and keeping records of communication that include relevant information (Briantaupt, et al., 2011).

Communication needs to be “two-way,” which refers to situations where both parties share thoughts and respect each other’s opinions (Analysis of communication, 2011; Best practices, 2009). In online education, more so than in face-to-face instruction, there must be communication from instructor to student, student to student, and student to content. Too often schools and colleges are places where communication is “one-way” or “top-down” affair. Interaction between students and between instructor and students, and between the student and the content can encourage everyone to actively participate in “two-way” communication. One of the factors that makes communication in online instruction possible is the use of technology. According to McGilvery (2016), “[i]nteraction through the use of communication technologies is vital to a quality online education because it allows teachers to promote active online learners, and that engagement translates to better learning outcomes and greater satisfaction with online learning, both for student and educator” (p. 1). With the proliferation of technologies capable of being used in online education, instructors need to make their selection in ways that promote the learning of students, satisfy their interest in the course, and keep them in the program. However, communication in online courses is also promoted by the ways in which online courses are developed and structured. The following are ways in

which this can occur: discussion forums; presentation of material; structuring of assignments; assessment choices made available for students; feedback by instructor and by students of student work, including peer assessment and self-assessment; developing literacy skills; addressing diversity issues; and fostering a respectful environment (Analysis of communication, 2011; Best practices, 2009).

Instructors also need to utilize communication strategies to provide an environment that fosters diversity. This would entail understanding “the nature of the experiences that students bring to their online classes to make connections and provide support between learning within and outside the course” (Beyer, 2010, p. 116). Moreover, instructors “must make their delivery systems responsive to how diverse students learn” (Beyer, 2010, p. 116). Finally, instructors need to use multicultural education methods. This would involve students making decisions about “what is best for their given place, time, and circumstances with respect to cultural diversity” (Beyer, 2010, p.116); using multicultural infusion, which is adding a cultural diversity component to a usual activity or assessment; and helping students identify stereotypes and inaccuracies and reduce prejudice (Banks, 2001; Beyer, 1996-1997; Beyer, 2010; Zeichner, 1992).

Creativity. Creativity necessitates researching best practices used by instructors in teaching for equity and social justice. It means teachers need to be prepared to utilize instructional strategies that lead to being the best in accomplished teaching and learning in order that all students have equal opportunity. Educators need to examine how they address issues of diversity and to develop innovative and creative strategies that will increase their effectiveness. As a result, there is a need for cultural and linguistic competence. Cultural competence is defined as “a complex set of cognitive, affective, and behavioral skills and characteristics that support effective and appropriate interaction in a variety of cultural contexts especially with others who are linguistically and culturally different from oneself” (Fantini, 2006, p. 12). It is an ability to step beyond one’s own culture and function with other individuals from linguistically and culturally diverse backgrounds. First, with the increase in the ethnically, culturally, linguistically diverse populations, it is a necessary response to the changing immigrant patterns within the United States. Second, it is a tool to improve the success of schools offering equality of opportunity to students of diverse backgrounds. Cultural competency is a great strategy to level the playing field so that all students have a chance to be successful learners. Culture competency practices can provide educators with an instructional strategy in providing more success in working in a diverse school community (King, Sims, & Osher, 2013).

While multiple perspectives as a concept is generally used to teach history in k-12 schools, it is also a principle central to strategies based upon creativity. Educators can expose students to their own perspectives and teach students how to accept other alternative perspectives. “In recent decades, educators have begun to question the validity of singular (one-sided) narratives” (Multiperspectivity, n. d., p. 1). Instead of just focusing on dominant groups and communities, the idea is to recommend the drafting of multiple

perspectives. When this approach is applied to students from groups outside of the dominant culture, it provides them with validation of who they are and reveals that their groups are part of the curriculum (Multiperspectivity, n. d.).

Collaboration. Americans have throughout its history prided themselves on being self-sufficient individuals. This has especially been true in the school setting. One of the important 21st century skills is collaboration. Employers demand that candidates for employment learn new tasks through working collaboratively with more experienced peers. Thus, educators must change the inclination of schools to promote individual activity while considering collaboration as “cheating.” The net result of this tradition of individuality is that students are underprepared to work as part of a team when they graduate from high school. Teachers need to be taught how to develop collaborative peer interaction, which includes “making decisions about group size, the use of rewards, or what kinds of tasks to assign” (Williams, 2009, p. 1). “Not only do teachers or curriculum designers need to understand collaborative learning techniques and how to select one that is appropriate for their goals, they also need to coordinate activities in order to design effective learning environments” (Williams, 2009, p. 1).

Collaboration is also a way to foster student engagement. This would begin with creating a community of learners within the classroom through student to student and instructor to student strategies. Another way to accomplish this is by using technology to facilitate collaborative learning and knowledge construction (Briantaupt, et al., 2011).

“Collaboration involves synergy. When people work together toward a joint goal, they can accomplish something larger, greater, and with more impact than something done in isolation” (Synergy through collaboration, n. d., p. 1). Instructors need to work with their students to build a collaborative community. Educators may select projects that “involve individual students, teams, or the whole class working with a partner, team, or class” (Synergy through collaboration, n. d., p. 1). Instructors need to consider whether they will just share or whether they will work towards a joint goal. “In other words, a cooperative project would involve each partner sharing their findings or conclusions. However, a collaborative project requires interaction and creation of something larger than the sum of the individual pieces” (Synergy through collaboration, n. d., p. 1).

Critical Thinking. According to Rick Medrick (2010), sustainability as a means to furthering student critical thinking is “one of the critical issues in today’s world” (p. 1). As a result, it is one of the predominant themes facing education in the 21st Century. “How we make viable choices, what values guide these choices, and how we can live in harmony with nature and with one another will determine our future survival as a species” (Medrick, 2010, p. 1). This requires that educators and students must “develop new awareness, hone new personal and technical skills, and learn to function on a systems-wide basis to develop new options” (Medrick, 2010, p. 1). To practice interacting in a sustainable and transformative manner, we must create new learning environments based upon critical thinking. A culture based education model can produce a learning environment that enhances critical thinking. The authors of

this article have all experience this through our previous work at Pacific Oaks College. Culture Centered Education (2010) was a white paper based upon over 50 years of experience of educators at Pacific Oaks College in California in using a culture based education model. From the instructors work with developing the Culture Centered Education model, they discovered that once children feel respected for who they are and what they know, their own intrinsic motivation led them towards successfully merging their own knowledge with the knowledge required by the learning outcomes of their coursework. Through this transformational process, their students became bi-cultural and/or bi-lingual, their confidence grew, and they were even more eager to learn. In the transformative learning environment, the teacher and/or learner exhibited the following traits: “exhibit self-actualization, self-efficacy, and risk-taking among learners;” “teachers believe in the process of the learner as teacher and teachers as learner;” “teachers utilize the learner’s vernacular language;” “learners welcome the use of the dominant language;” “teachers and learners grow on a developmental continuum that begins with awareness of their own cultural identity, cultural values and cultural assumptions, and their identity and value orientation affect their practice and relationships;” “teachers and learners continue movement to congruent, culturally literate behaviors and attitudes;” “teachers and learners require a commitment to individual personal growth by challenging one’s social conditioning and cultural incompetence;” “teachers and learners learn to value and respect cultural differences, and attempt to find ways to celebrate, encourage, and respond to differences within and among themselves, while they pursue knowledge about social justice, privilege and power relations in our society;” “teachers and learners learn about themselves and the world around them within the context of culture;” “teachers and learners honor and respect each other for who they are and what they know;” “teachers facilitate, mentor, guide, instruct, and advocate for learners; and learners transform themselves by becoming self-confident, self-directed, and proactive” (Culture centered education, 2012, pp. 3-4).

Other research has also shown that critical thinking can best be achieved by promoting self-actualization, self-efficacy, and risk-taking among learners. In earlier discussions of these traits, often self-esteem was the catch phrase. John Shindler (n. d.) defines self-esteem in three ways: “first, one’s locus of control; second, one’s sense of belonging and acceptance; and third, one’s sense of competence or self-efficacy” (p. 1). More recent studies use the idea of motivation and learning as the concept encompassing all these traits, especially the act of intrinsic motivation. “An intrinsically motivated student works for himself/herself, and for the pleasure, opportunities and the feeling of success it gives” (Motivation and learning, 2010, p. 1). The article, *Motivation and Learning*, relates that the following are sources of intrinsic motivation: “individual goals and intents;” “biological and psychological motivation and needs;” “self-description, self-confidence and self-esteem;” “individual needs, expectations, and descriptions of success and failure; self-awareness, self-experiences and self-efficacy;” “personal factors like risk-taking, coping with anxiety, curiosity; and emotional state and level of consciousness” (p. 2). These student traits originate from the following environments: setting goals by instructors, student, and peers; identifying and respecting student learning

styles; use of rewards and punishment systems; providing educational stimulants that enables critical thinking; and instructors holding high expectations of the students (Battalio, 2009; Motivation and learning, 2010).

The article, *Motivation and Learning* (2010), also suggests that instructors can do a number of things to prepare the learning environment to optimize these circumstances. They include the following:

- “Give students a reason behind instruction in order to motivate them for the instruction.”
- “Ask interesting questions that provoke curiosity in the beginning of instruction.”
- “Both teach concepts or principles effectively and provide attention-drawing examples”.
- “Use previously learned concepts in examples or applications”.
- “Make sure that all students know how to do what and how to reach targets.” (p. 4)

Literature Review of Technology

Technology being used by Americans has soared over the past two decades. This increases the potential of using technology in education as a means towards improving communication, creativity, collaboration, and critical thinking skills. Speak Up, a national initiative of Project Tomorrow, has made its goal to empower student voices in education using technology (*Learning in the 21st century*, 2007). It is the belief of this organization that “technology would engage, enable, and empower students to a new level of learning, leading them to develop the requisite skills they need to compete in the 21st century global economy” (*Learning in the 21st century*, 2007, p. 1). Through this infusion of technology, there will be a chance to lead our nation to increase efficiencies and productivity, and become “a catalyst for defining a totally new approach to teaching and learning that is more relevant to the lives of students in this new knowledge-based economy and world” (*The new 3’E’s*, 2011, p. 1). Based upon the research being done by Speak Up, it was discovered that “students have a very distinct vision of the power of socially-based, un-tethered and digitally-rich learning to improve their academic performance and prepare them to participate and compete in the global knowledge economy” (*The new 3’E’s*, 2011, p. 1). Through the infusion of technology, we can look forward to a future when “schools have access to a rich and varied set of digital tools and resources that provide gateways to new learning experiences not bound by their classroom walls” (p 1). Finally, the use of technology can bring into the classroom the personal experiences of students and collaboration between peers and experts (Friedman, 2015; Loly & Willington, 2002).

The promise of technology raises a few questions for the authors of this article. How will technology serve to realize communication, creativity, collaboration, and critical thinking skills to help students take advantage of the opportunities that present themselves through globalization of the workplace? What are the most effective ways to integrate technology in online instruction to improve instructor to student, student to student, and student to content interactivity? (Edutopia, n. d.; Prensky, n. d.).

The answers to these questions require an in-depth inquiry into interactivity in online courses and the development of higher cognitive skills, especially with 21st century learners, and through the use of technology (Lynch, Debus, Lawley, & Roy, 2009). There are many tools that can be used to enliven an online course with the overall goal to improve communication, creativity, collaboration, and critical thinking. Instructors and students can use Voki for animation; Eyejot for videocasts; Vocaroo for podcasts; Glogster for collages; Kahoot.it for games; Nearpod, Prezi, and Microsoft PowerPoint for presentations; Zoom, Blackboard Collaborate, GoToMeeting for online live presentations; and Facebook and Edmodo for social networks. Embedding social media increases the level of the three-tier interactions of instructor-student, student-student, and student-content in distance learning courses using social learning (Bandura, 2001) and collaboration (Slavin, 1988). Research has shown that students who were in the higher levels social media usage showed stronger abilities to complete the assignments intrinsically and “85% of students overall remained on task during each lesson” (Callaghan, & Bower, 2012, p.15).

Literature Review Framework of Interactivity

Over a decade ago, research on best practices in online instruction had offered ways to improve online courses. Bill Petz (2004) developed three principles on how to accomplish this task. Principle 1 suggested that the instructor should “let the student do (most of) the work” (p. 33). This would involve students leading discussions for them to learn how to ask thought-provoking questions; students finding and discussing web resources that they share with their classmates; students helping each other as peer assistants; students grading their own assignments; and students creating their own case studies. By the standards of 21st century skills, this Principle would involve communication, collaboration, creativity, and critical thinking skills.

Principle 2 suggests that “interactivity is the heart and soul of effective asynchronous learning” (p. 37), which involves interaction between students, the student and instructor, and the student and content, “with the entire class, in small groups or teams, or one-on-one with a partner” (Petz, 2004, p. 37). This would entail using collaboration of the 21st century skills.

Principle 3 suggests that the instructor “strive for presence” (p. 41). While this presence may involve offering feedback to assignments, the primary means for this occurs with the discussion forums. In sum, this involves promoting the collaboration skill. Presence in discussion responses includes social, cognitive, and teaching categories. Social presence occurs when an online class establishes a community of learning. The instructor and the students work together by expressing their emotions, feelings, and mood through interactivity, and a commitment to the group and the common goals and objectives. Formal techniques used to promote collegiality includes using an introductory discussion forum, providing discussions that involve interpersonal interaction not connected to the content of the course, and the use of an asynchronous chat room. Cognitive presence is “the extent to which the professor and the students are able to construct and confirm meaning through sustained discourse (discussion)” (p. 42) that aids the communication skill. This presence is “demonstrated by introducing factual, conceptual, and theoretical knowledge

into discussion" (Petz, 2004, p. 42). Teaching presence "is the facilitation and direction of cognitive and social process for the realization of personally meaningful and educationally worthwhile learning outcomes" (p. 44). Petz (2004) includes two areas of activities undertaken to develop Teaching presence. The first area involves facilitating the discussion by "identifying areas of agreement and disagreement," "seeking to reach consensus/understanding," "encouraging, acknowledging and reinforcing student contributions," "setting a climate for learning," "drawing in participants/prompting discussion," and "assessing the efficacy of the process." The second area involves using direct instruction by "presenting content and questions," "focusing the discussion," "summarizing the discussion," "confirming understanding," "diagnosing misperceptions," "injecting knowledge from diverse sources," and "responding to technical concerns" (p. 44).

While online courses have weekly written assignments, the central instructional strategy is the discussion forum (Craig, 2015). According to *Mastering Online Discussion Based Facilitation: Resource Guide* (2009), using primarily discussion threads "can lead to a minimalist approach by students, potentially have lower levels of interactivity, and problems with retention and student satisfaction" (p. 1). According to Cheryl Hayek (2012), instructors should facilitate a discussion forum as if they are the hosts at a party. This would include the following actions: welcome everyone, be present in the forum, keep volume of participation consistent, make sure every person feels comfortable in the new environment, and invite them back. However, if discussions are asynchronous very few instructors can follow through on these suggested actions (Garrison, Anderson, & Archer 2000; Friedman 2015). Another set of suggested strategies call for the use of positive reinforcement by instructors creating a teaching environment that involves the following: open communication, demonstrate ways to support ongoing discussions, establish guidelines for giving students credit (instructor provide, self-evaluation, and peer-evaluation), use of small group activities to help build community and establish peer communication and connection, encourage students to interact informally, and create discussion threads or areas for personal introductions and social interaction (Mastering online, 2009).

A new concept in the success of the use of the discussion forum is the "100 percent Response Model" (Ryan-Rojas & Ryan, 2013). Applying this model involves the instructor responding to every student when they provide their initial response. It can even prove more fruitful if the instructor in his/her response ends with a question. This opens a conversation between the student and the instructor that continues when the student responds to the instructor's question. In practice, the exchange of discussions between classmates is also usually more robust as the student-instructor exchange provides a model for the students to follow in their own conversations. The most important result of this dynamic conversation is that an online community is forged. Research has shown that traditional online classrooms tend to not engage student interest. When online courses encourage the use of social media, interaction in the course increases and students exhibit higher levels of creativity (Bernard, Abrams, Borokhorski, Wade, Tarmin, & Bethel, 2009).

Summary of Improving Framework of Interactivity - Tier One: Instructor-Student Interactivity

Presentation of this final section is based upon the literature review as well as the authors' teaching experiences. Thus, there are no citations to material in this final section since they were already covered in the previous sections or represent our own ideas but verified by the literature review.

Communication. In the effort to improve instructor-student interactivity communication, there are several strategies to which instructors can use. First, instructors should adhere to a "100 Per Cent" Discussion Board response. This means that the instructor responds to every student when they respond to the prompt(s) of the discussion forum and any other time to which the student addresses the instructor. Second, coupled with this practice, instructors should require that students respond to more than the usual two classmates and they should be encouraged to at least read the responses of most classmates to discover what others are saying. Third, the instructor should respond to the students' initial response that connects to what the student stated and end with a question. The student should respond to the instructor's question as part of the requirement to obtain full credit for the discussion activity. Fourth, the instructor should provide timely feedback, which in classes with high student satisfaction and retention rates means within the first 24 hours of the student response. Fifth, instructors should help identify areas of agreement and disagreement to reach consensus/understanding between student and instructor. This can be accomplished by instructors reading the responses between the students but not responding. Instructors also should use direct instruction by presenting content and additional resources, sharing his/her experiences, asking questions, focusing the discussion, summarizing the discussion, clarifying misperceptions, and responding to technical concerns. Sixth, communication between the instructor and students' needs to include addressing diversity issues. This can be accomplished, by including in the introduction discussion, prompts about the students' diversity background and attitudes towards prejudice and stereotyping.

Creativity. Instructor-student interactivity can be improved by instructors using creativity strategies. First, instructors can pave the way for students to learn and demonstrate cultural and linguistic competence. This can be accomplished through the discussion forums, especially through what the students are required to include in their introductory discussions. Second, the instructor could encourage use of technology to develop conversations between students and instructors such as offering an option to use a presentation software to do the introduction discussion or as part of one or more of the discussions. Third, it is important that the instructor fosters student thinking in terms of issues related to equity and social justice by tapping into their own experiences with these concepts. Fourth, instructors should embed within the discussions a means to use social media in discussions between students and the instructor. Fifth, instructors should address issues of diversity and to develop innovative and creative strategies that will increase their effectiveness. Finally, the instructor should encourage multiple perspectives through prodding within

discussion responses to students' initial responses and in questions to which the instructor poses to students.

Collaboration. Instructor-student interactivity can be improved by creating a collaborative community of the members of the class. First, instructors could respond to introductory discussions of all students in promoting a community of the classroom. Through this means, students see the importance of getting to know each other and the instructor. Second, the instructor works with students to encourage the sharing of emotions, feelings, and mood by being a role model. This will require that the instructor shares his/her experiences whenever possible so that the students become comfortable with taking the risk to share their own experiences. Third, the instructor should develop collaborative peer interaction by mentioning in response to one student what other students have said as means to encourage students to read other students responses and respond to more classmates. Fourth, the instructor should foster collaboration that requires interaction and creation of something larger than the sum of the individual pieces. This can be accomplished by developing cooperative group activities and using direct instruction that was mentioned in the Communication section above. Fifth, the instructor should help students to see the value of accepting the diversity of the class. Finally, the instructor should encourage students to share their commonality. While accepting differences is important to form a community, it is also very important that with all the differences there is many things to which the students have in common.

Critical Thinking. Instructor-student interactivity can be improved by fostering a critical thinking environment. First, instructors can foster critical thinking by getting students to think in terms of multiple perspectives. Instructors may need to illustrate the concept of multiple perspectives and whenever possible to identify its occurrence in discussions and student work. Second, instructors should encourage interactive social conversations and dialogues using technology. This can be accomplished by using digital software to host synchronous conversations. Third, instructors should make viable choices available and promote an environment that values choices. Fourth, instructors should promote transformation of the students by modeling his/her own transformation and encouraging students to identify how they are being transformed by the course. Fifth, instructors should foster an environment where the student performs as teacher and the instructor perform as a learner. Finally, instructors should promote self-actualization, self-efficacy, and risk-taking among learners.

Summary of Improving Framework of Interactivity - Tier Two: Student-Student Interactivity

Communication. In the effort to improving student-student communication interactivity, there are several strategies to which instructors can use. First, instructors can create a means for students to lead discussions with their classmates. Obviously, instructors must build into the course design the flexibility for students to develop the prompts for discussions. This may work best in using synchronous meetings either involving video conferencing

technology or just an open chat forum. Second, instructors could make it possible for a continuous conversation between students to take place. In part this can be achieved by instructors offering part of the grade for discussions to make this happen. Third, instructors can encourage students to provide feedback to classmates in both their discussions and assignments. Both the continuous conversations and offering feedback could also be accomplished by using cooperative learning groups to have continuous dialogue between group members. Fourth, instructors need to provide opportunities for students to share their diversity with their classmates. Multicultural infusion activities that add a diversity element to the usual content would be a means to achieve this goal. Fifth, students should be encouraged by instructors to share the technology they use when they meet the literacy requirement. Students can do this by using social media as well as when they post their work. Sixth, students need to be encouraged to offer peer- or self-assessment of their work and the work of their classmates. Finally, instructors need to foster a respectful learning environment that identifies areas of agreement and disagreement and promotes seeking to reach consensus among students.

Creativity. Student-student interactivity can be improved by instructors using creativity strategies. First, instructors should provide the means for students to help each other as peer assistants. This could include making it possible for students to partner with a peer or a group of peers, aiding when needed. Second, instructors should engage students in sharing cultural and linguistic competence with each other. This should begin with the introductory discussion but can continue to occur during the discussion forums, and when students are working on the assignments. Third, instructors should encourage the use of technology to develop conversations among students. This can be accomplished by providing access to social media. Fourth, instructors should involve students in conversations about equity and social justice. Just as students may have opportunities to share cultural diversity through multicultural infusion activities, students should be able to share their experiences with equity and social justice.

Collaboration. Student-student interactivity can be improved by creating a collaborative community of the members of the class. First, students should be encouraged to respond to the introductory discussion to more than the minimum required of classmates and read introductions of all classmates. Second, through the access to social media or synchronous or asynchronous chats, students should be encouraged to express their emotions, feelings, and mood to build empathy and trust. Third, instructors should help students develop collaborative peer interaction through the discussion forums. Fourth, the instructors should allow students to collaborate through interaction that builds upon the creation of something larger than the sum of the individual pieces. In other words, students can be assigned a part of an assignment and work together to produce a group version of the student's assigned part. Fifth, students should be encouraged to share their multiple perspectives. This can occur when the directions in the Guided Response for discussions ask students to respond to students that have a different perspective. Finally, students are

encouraged to share and inquire as to each other's culture. This can also be accomplished by using the same method used to share multiple perspectives.

Critical Thinking. Student-student interactivity can be improved by fostering a critical thinking environment. First, instructors should provide opportunities to help students identify each other's multiple perspectives. Second, instructors should engage classmates in social conversation and dialogue using technology. Third, instructors should promote an environment of students making choices in how they do discussions and assignments by encouraging student to share how they made their choices and access to the alternative choices they made. Fourth, instructors should create an environment where students can practice interacting in a sustainable and transformative manner. This can best be done by following the Culture Centered Education model, which calls for students honoring each other's self-efficacy and triggers their innate curiosity and intelligence. Fifth, instructors should provide a means for students to perform as teacher and learner. This can best occur when students are teaching and learning from each other. Finally, instructors should create an environment where students can share efforts to promote self-actualization, self-efficacy, and risk-taking. This works best in an environment that have its members respect each other.

Summary of Improving Framework of Interactivity - Tier Three: Student-Content Interactivity

Communication. In the effort to improving student-content communication interactivity, there are several strategies to which instructors can use. First, build into the course a means for students to provide feedback on their classmates' work. One practice that can make this possible is to use technology like open chats either synchronous or asynchronous to provide feedback by students of their classmate's work. Second, introduce a mixture of multiple intelligences within the content to open communication based upon the learners' learning styles. Third, when students respond to the question the instructor asks in response to the student's initial response, include their response as part of the grade of the discussion. Fourth, instructors should build assessment opportunities based on the student using a variety of technologies such as websites, blogs, and presentations or using social media. Fifth, instructors should offer students opportunity to critique the content and self-assess their work and assess the work of peers. Sixth, instructors should employ instruction based upon students' having choices. While offering a technology option in terms of completing the assignment is one way, the choice could be a different set of prompts to cover the learning outcomes. Finally, instructors could either host a synchronous meeting or create video vignettes for each week of the course that further prepares student for the content and assessments.

Creativity. Student-content interactivity can be improved by instructors using creativity strategies. First, develop curriculum that involve students researching best practices used to obtain equity and social justice. Using an open forum through social media or chats synchronous or asynchronous, and assessing through a required journal might be an option. Second, instructors

should address issues of diversity and develop innovative and creative strategies that will increase student effectiveness in working in a diverse global marketplace. Third, activities should be provided by instructors that encourages students to create some of the resources for the course such as finding and sharing websites, videos, or research studies. Fourth, content should encourage students to exhibit cultural and linguistic competence. This can be accomplished through discussion forums or embedded in the prompts for journals and essays. Finally, instructors should build technology into teaching content and assess learning. This practice can be connected to offering choices of technology options as well as the course embedding video vignette lectures, audio-visual-kinesthetic activities, and synchronous lectures using a delivery systems like Zoom, Blackboard Collaborate, and GoToMeeting.

Collaboration. Student-content interactivity can be improved by creating a collaborative community of the members of the class. First, provide discussions that involve interpersonal interaction between students that is not connected to the content of the course. This could be accomplished by offering social media sharing, opening a synchronous delivery system like Zoom, Blackboard Collaborate, or GoToMeeting to give students a chance to exchange ideas as a required part of the curriculum. Second, provide asynchronous chat room as means to encourage students to get to know each other. Third, an opportunity should be given peers to replace individual work with collaborative work. Students could select projects that replace individual student work with teams, or the whole class working with a partner, team, or class cooperative projects. Finally, instructors could create content that encourages cultural sharing and inquiry, investigating equity and social justice, and culture centered activities.

Critical Thinking. Student-content interactivity can be improved by fostering a critical thinking environment. First, provide students with the opportunity to use choice to trigger their own intrinsic motivation by allowing them to determine their own assessments. This can be done by making meeting a course outcome as the assignment and leaving the means to meet the outcome up to the student. This would make a great final project and earlier assessments could be built to scaffold towards creating the final project. Second, instructors should build multiple perspectives and multicultural infusion activities into the course work. Third, create assessments that involve social conversation and dialogue using technology such as blogging or social conversation. Fourth, instructors could provide content that uses scaffolding leading to a transformative experience for students. Fifth, instructors could create content designed to encourage students to perform as teacher and learner. Finally, instructors could provide content that include ways to promote self-actualization, self-efficacy, and risk-taking among learners.

Conclusion

Through the search of the literature on best practices in online instruction and strategies connected to the 21st century skills of communication, creativity, collaboration, and critical thinking along with new technologies, this article

provides ways to increase student satisfaction and retention by improving the framework for interactivity. Earlier research (Anderson & Garrison, 1998) had provided the framework for interactivity to structure successful online courses. Over time, other research on online instruction (Grant & Lee, 2014; Robb, 2012, modified and added to the framework for interactivity. Some changes have taken place through the years but online education continues to have low student satisfaction and retention rates. Since the goal of American education has been to better prepare its students to be competitive in the global marketplace, it made sense to borrow the 21st century skills from k-12 education and apply it to higher education online instruction. At a future date when the recommendations made in this study have had a chance to be implemented, research will still need to be done to see what if any improvements there are in the student satisfaction and retention rates. Both the institutions with which the authors are associated are already implementing many of the recommendations presented in this study. We look forward to updating this study with a future report of the outcomes related to student satisfaction and retention rates when using the framework for interactivity from strategies based upon best practices in online instruction and 21st century skills of communication, creativity, collaboration, and critical thinking.

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