ATTAINING 21ST CENTURY SKILLS IN A VIRTUAL CLASSROOM

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ABSTRACT

As society moves further into the 21st century and focuses on becoming more global, current and future learners will need to meet another set of requirements that are viewed as quality indicators and necessary dimensions for future success. These requirements are outlined by The National Education Association as the "Four Cs" of 21st century skills. They include communication, collaboration, critical thinking and problem solving, and creativity. Typically, these skills are taught in traditional settings as the instructor and students interact face-to-face. However, the "Four Cs" can be achieved in online environments as well through the use of various forms of technology. This article addresses teaching and learning the four quality indicators within a virtual classroom. Digital resources that address each of the "Four Cs" and tie into content learning are identified and described. Through the use of the recommended resources, virtual classrooms may have more to offer than seated classrooms in terms of attaining and becoming proficient in the 21st century skills. Further, these recommendations offer a valuable service for making online instruction more effective by way of a comprehensive list of digital resources.

INTRODUCTION

Distance learning is a staple in many postsecondary institutions as online classrooms have become an integral part of coursework in many colleges and universities throughout the United States (Kim & Bonk, 2006). The establishment of fully online, hybrid online, and virtual classrooms have seen a steady increase in the last decade. Since 1995, virtual classrooms alone have grown exponentially throughout the country (Schutte, 1997), suggesting that, now more than ever before, students can learn from anywhere without losing the facets of a seated classroom. All online classrooms are typically defined as "online environments that enable students and instructors to communicate in a synchronous or asynchronous manner" (Parker & Martin, 2010, para. 2). Fully online classrooms take place in an entirely computer-generated setting with no in-person meetings. Hybrid online classes can incorporate both in-person and computer-generated experiences. This article addresses teaching and learning in a virtual environment in which the instructor and students are logged into an online platform at the same time and engage in synchronous instruction (Palloff & Pratt, 2007). More specifically, numerous digital resources are identified that tie into content learning and address the 21st century skills.

The requirements that instructors address in a traditional classroom are quite similar for virtual classroom instructors: creating the course content, structuring the course, teaching the content, and trying to ensure that students learn. However, as society moves further into the 21st century and focuses on becoming more global, current and future learners will need to meet another set of requirements that are viewed as quality indicators and necessary dimensions for future success. The National Education Association (NEA) (2014) has described these requirements as 21st century skills, stating that the study of the three Rs (reading, writing, and arithmetic) in the modern world will not be sufficient enough for the students of today to be attractive, hirable, and employable in the world of tomorrow. They need to be more proficient in the "Four Cs" that outline the 21st century skills as noted in Figure 1: Communication, Collaboration, Critical Thinking and Problem Solving, and Creativity (National Education Association, 2014).

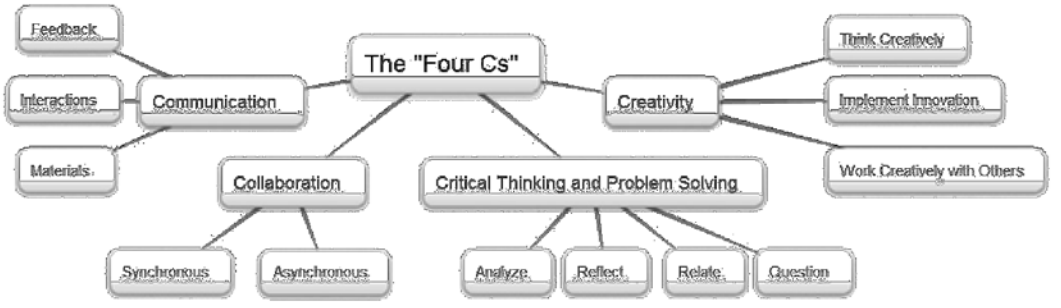

Figure 1: The "Four Cs" of 21st Century Skills created with Bubbl.us

Although the National Education Association (2014) makes it clear that the "Four Cs" need to be fully integrated into classrooms" (p. 6), it is not as clear as to how these skills can be achieved in an online setting such as a virtual classroom. Since the growth rate of online programs is only expected to increase (Howell, Williams, & Lindsay, 2003), each of the "Four Cs" is described along with various digital resources that can be used to implement each one of them.

COMMUNICATION: FIRST OF THE "FOUR Cs"

According to Gay (2015), "teaching and learning cannot occur without communication" (para. 1). The NEA (2014) defines communication as one's ability to "articulate thoughts and ideas effectively; use oral, written, and non-verbal communication skills in a variety of forms and contexts; listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions; use communication for a range of purposes; use multiple media and technologies, and know how to assess impact and their effectiveness a priori; and communicate effectively in diverse environments" (p. 14). Given the enormous scope of the aspects of communication, there is no doubt that "effective communication skills are critical for instructors to employ in the delivery of pedagogy, classroom management and interaction with their class" (Sng Bee Bee, 2012, para. 1). Various types of communication ebb and flow in every classroom. They include the communication of material to be learned, student-to-student interactions, instructor-to-student interactions, and the feedback loop. As illustrated in Figure 2, these types of communication work as a cyclical process in the classroom.

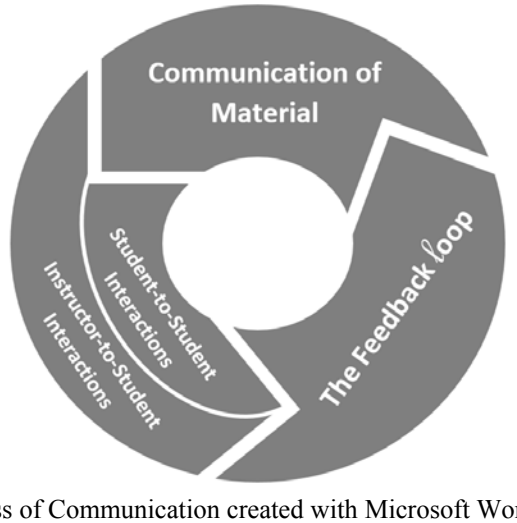

Figure 2: The Cyclical Process of Communication created with Microsoft Word

As these forms of communication occur in seated classrooms, they can and should be part and parcel in online courses as well. There is a plethora of communication technology tools that can be integrated in virtual classrooms, making all the types of communication not only possible, but effective as well.

Communication of Material

There are a number of technologies that instructors in a virtual setting can implement in order to deliver instruction and communicate course content. Presentation platforms such as Prezi, Microsoft PowerPoint, or Blendspace support the ability to communicate content. Much like a classroom setting where a presentation would include supplemental features, the visuals in these platforms have the capacity to be accompanied by audio, thus adding that extra "human" touch making them even more personal and effective. However, unlike traditional classroom presentations where visuals are separate from the instructor's oral lecture, and wherein the instructor's lecture may change from one class period to the next, these platforms accept embedded audio which allows participants to access *both* visuals and audio simultaneously and experience the same presentation without any change or modification in the communication of material each and every time the platform is played.

Videos are another dynamic means to communicate course content. Demonstration videos accessed from YouTube, lecture videos from TED talks, or educational videos such as those on Khan Academy or TeacherTube can be utilized in virtual classrooms as learning tools. These platforms are able to mimic demonstrations, offer guest speakers at no cost, and provide opportunities to practice new learning. Unlike traditional classrooms where experiences like these can only be lived one time, the platforms allow participants to access the material over and over and "relive" the experiences as many times as desired.

Likewise, using an electronic whiteboard such as Camtasia opens the door for instructors to write directly on the screen while participants listen and watch on their own monitors. Unlike a traditional classroom whiteboard, Camtasia offers the ability to archive so that the instructor can record and save an entire class session. Archived material can provide participants a second or third viewing for those who need more processing time. Capturing the material by archiving it for later use fulfils the need for repetition which is almost impossible to achieve in a traditional classroom with a one-and-done lecture.

Interactions

Just as conversations and interactions among students and instructor play an important role in seated courses, the progression of discourse is as vital in a virtual setting. Unlike a campus setting where the majority of interaction is face-to-face, virtual classroom interactions must utilize various technologies to offer a variety of instructor-to-student and student-to-student interactions.

Instructor-to-student interactions

Instructor-to-student interactions are communications initiated by the instructor and directed towards students. These interactions serve a fundamental role in any learning environment, including virtual classrooms. The first and arguably the most important communication instructors direct towards students is the outline of their expectations. This instructor-to-student communication format usually takes the form of a syllabus. With today's society so accustomed to information being presented in many different ways, it seems counter-intuitive to only have one online document act as a course guide. Remind can supplement the course syllabus as instructors connect instantly with participants by way of quick, simple messages to any device, such as a smartphone or computer. Working much like a text message but without access to the instructor's phone number, this platform allows the instructor to send one-way reminders directly to participants' devices regarding items such as assignments, various projects they should be working on, upcoming events, class changes, or any other pertinent course

information. Further incorporating the human element, this platform allows instructors to attach files or voice clips to announcements they send or to announcements scheduled for a later date. In seated classes, reminders are relayed directly in class often with some participants paying attention, others not, and some not in attendance. This is not an issue in a virtual classroom when Remind is used. Announcements that the instructor sends appear instantly on the participant's account and can be referenced at any time for further clarification or confirmation. Remind allows back and forth communication between instructor and student in a multidimensional manner that 21st Century students are comfortable and familiar with as well.

Student-to-student interactions

An important aspect of learning is the assurance that students are given the opportunity to think and reflect on class instruction, reading material, projects, etc. Just like a traditional classroom, it is necessary for a virtual classroom instructor to afford the time and space for participants to work in small groups. Sococo provides online workspaces that connect remote users by recreating the personal proximity and functionality of a physical setting. This platform offers breakout rooms, chat sessions (with optional text, visual, audio, and screen share), and the means to engage in thoughtful conversation and practice with material that is presented. Small group opportunities allow participants to engage in learning through social processes such as recalling information that was presented, exploring an understanding of the material, or even designing and executing a challenging project to its culmination. The instructor can use the breakout rooms to differentiate instruction as members in each of the rooms are directed to various discussions, activities, or challenges. After a period of time, the students in each breakout room can return to the main classroom for continued whole class discussion and reflection, or evaluation of the challenge that was posed. Although often used for student-to-student interactions, each breakout room can be as independent of each other as the instructor affords.

Feedback Loop

One of the most beneficial elements of the education process occurs when students provide responses to the instructor, and the instructor reciprocates. This process creates a feedback loop, ensuring that interchange is never one sided. In a seated classroom, the feedback loop is easily illustrated when instructors query the class for answers through various questioning techniques. Likewise, instructors in a virtual classroom can implement the feedback loop through the use of virtual surveys and polls. An opinion-oriented instrument that can be used is Poll Everywhere. This platform utilizes a simple three-step procedure: ask a question, obtain responses, and view real time results. The straightforwardness, coupled with the interactive, subjective, and innately fun nature of this platform holds student interest and attentiveness. Polls can also be used to obtain brief snapshots of the classroom climate such as whether the students understand the material, agree or disagree with presented concepts, etc. Everyone in the class shares his/her opinion, including the instructor. This polling practice can often lead to lively discussion and debate.

In contrast to the more opinion based polls, virtual surveys can serve as a content-focused mechanism, gauging immediate comprehension of content. Socrative and Kahoot! offer features that instructors can use to ask participants on-the-spot questions pertaining to content material. These questions can increase course participation and engagement and provide the instructor with quick, valuable insight into material comprehension. Data received from the survey results on these platforms can be accessed effortlessly for instant feedback that can be made available to everyone simultaneously, or used by the instructor to better define the direction of instruction or develop future lessons.

Another form of on-the-spot feedback is the use of a point system to sanction classroom participation, cooperation, team building, etc. In a seated class, this could be activity oriented

wherein points are posted somewhere in sight for team challenges, review games, etc. ClassDojo enables instructors to assign positive and/or negative points (or 'dojos') for students' dispositions, cooperation, or participation. The instructor can also request more participation from participants or assess their contribution to the class. Participants can see this feedback privately. They have immediate, real-time insight as to how the instructor is interpreting and/or responding to their participation; from this, they can make any necessary adjustments. The type of instant feedback that this platform provides allows online instructors the ability to boost classroom discussion, reinforce positive remarks, and encourage sharing in a virtual environment.

Successful classrooms employ many techniques to enable the communication of material, student-to-student interactions, instructor-to-student interactions, and effective feedback looping. These same techniques are, and should be no different in a virtual setting. With the utilization of some of the abovementioned technologies, virtual classrooms help attain the first of the "Four Cs": Communication.

COLLABORATION: SECOND OF THE "FOUR Cs"

Wherever communication exists, the opportunity to collaborate can occur as well. The NEA (2014) offers its definition of collaboration as an experience wherein one "demonstrates the ability to work effectively and respectfully with diverse teams", exercises "flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal", and assumes "shared responsibility for collaborative work, and value the individual contributions made by each team member" (p. 20). Collaborative learning is not new. It became popular when twentieth century research suggested that students learned faster and retained more when they became partners in the process of teaching and learning instead of remaining mere receivers of knowledge from their educators (Banerjee, 2012). The NEA (2014) promotes the importance of collaboration by including it as one of the "Four Cs". They state that when students work collaboratively, the group is able to generate more knowledge than one single individual and collaborative efforts put forth by any group are keys to future success in today's global society (NEA, 2014).

It is very common to see active collaboration in seated classrooms as individuals work together in partners, teams, and groups. Collaboration is often avoided in a distance education setting due, perhaps, to unfamiliarity with the technology tools that might be required. The avoidance however, could be due to a misinterpreted mindset. "The essential ingredient for successful distance education is not the technology: it is collaboration between the key participants using that technology" (Beaudoin, 2015; Duffy & Kennedy, 2004, p. 203). Technology is the infrastructural backbone for the delivery of online courses (Duffy & Kennedy, 2004) and is not the end goal. As outlined in Figure 3, the use of synchronous and asynchronous formats provides the means and opportunity for each virtual classroom participant to reach the end goal of the second 21st Century Skill: Collaboration.

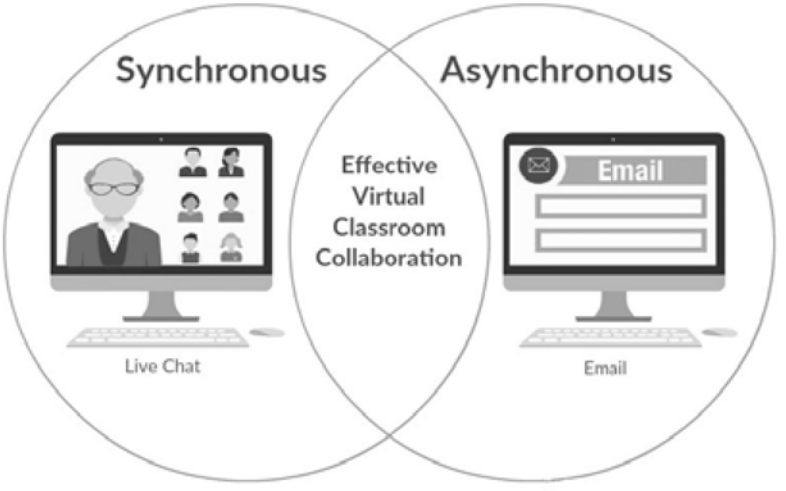

Figure 3: Blending of Online Formats to Attain Collaboration created with Creately

When educators realize that the end goal is really to harness "diverse human skills with information and communications technology to deliver effective distance education" (Duffy & Kennedy, 2004, p. 210), rather than mastering collaborative technologies, effective collaboration can begin. Present day technologies such as the examples described below offer a vast range of opportunities for promoting collaboration in any format of virtual classroom learning environments (Beldarrain, 2006).

Synchronous Collaborative Technologies

The synchronous learning environment in a virtual classroom involves learners and instructors participating simultaneously (Hrastinski, 2008). Synchronous technologies transform online courses into a distance learning communities where participants consistently interact with one another during the learning process. Typically, these interactions involve users asking and answering questions in real time and are "commonly supported by media such as videoconferencing and chat" (Hrastinski, 2008, p. 52).

Google made synchronous communication easier with Google Drive and Google Hangout, platforms that increase real-time collaboration between learners. Google Drive is a service that has the capacity for collaborators to simultaneously edit the most widely used Microsoft Office applications. Participants can work together to edit documents, spreadsheets, and presentations with the changes appearing instantly for others to see and to continue adding. This platform utilizes color codes that change for each participant, thus easing the identification of individual edits. In addition, a text chat feature allows participants to discuss changes in real-time and to collaborate on future ideas. Google Hangout also increases real-time collaboration through face-to-face virtual meetings. This platform enables invitation-only access to a virtual space where individuals can have a one-on-one conversation or a live group chat for up to 100 people; host a free video call with one individual or a group of up to 10 individuals; share photos, maps, emoji, and stickers all in real time; and participate in chats from any device, across Android, iOS, and the web. The collaborative tools described above provide participants the opportunities to learn together, increase social presence, promote interactivity and build a sense of community (Parker & Martin, 2010). The features of these two synchronous technologies demonstrate the possible versatility that virtual classroom participants can take advantage of to collaborate in real-time.

Asynchronous Collaborative Technologies

In contrast to a synchronous learning environment, an asynchronous learning environment "supports work relations among learners and teachers, even when participants cannot be online at the same time" (Hrastinski, 2008, pp. 51-52). This type of learning "makes it possible for learners to log-on to an e-learning environment at any time, download documents or send messages to teachers or peers", and is "commonly facilitated by media such as e-mail and discussion boards" (Hrastinski, 2008, p. 51). Blogs, such as Edublogs, can be used in asynchronous virtual environments as a platform for group work. The instructor can individualize or group students, have a selected group work on creating a blog collaboratively, and can monitor continuous progress with detailed user reports. WIKIS, like Dreamhost, can foster collaboration through the collaborative building and editing of an online site. A WIKI is a "collection of web pages that are linked to each other, and reflect the collaborative works of many authors" (Beldarrain, 2006, p. 142). Much like Google Drive, WIKI edits are recorded and logged as participants collaboratively work on a project. WIKIS are often compared to blogs, but "are thought to be more permanent and serious than blogs and serve as repositories of knowledge" (Beldarrain, 2006, p. 142). WIKIS, like Dreamhost, can be used in the classroom in an effort to gain common interest, similar to the students at Bowdain College who initiated their own collaborative WIKI to share their love of romantic literature and poetry (Beldarrain, 2006). This example demonstrates how asynchronous technologies can be used in an educational setting through collaboration in delayed-time**.**

Synchronous and/or asynchronous learning environments contribute to collaborative learning. Synchronous courses are innately more social. Asynchronous courses, due to the nature of their structure are more content-related. "Many people take online courses because of their asynchronous nature, combining education with work, family, and other commitments." (Hrastinski, 2008, p. 52) However, when educators rely mainly on an asynchronous format, they risk the result that participants may feel isolated and not part of a learning community (Hrastinski, 2008). Used together, synchronous and asynchronous technologies can create an online environment where "the learner may access the information while actively collaborating in real, or delayed time at the learner's convenience" (Beldarrain, 2006, p. 145). As technology advances (which it always does), more opportunities for real-time and/or delayed-time instructor-to-student and student-to-student collaborations will develop. Regardless of what type of collaborative technique the instructor chooses to use, it must "seek to motivate, cultivate, and meet the needs of the 21st-century learner" (Beldarrain, 2006, p. 140). When used in this manner, technologies foster the 21st century skill of collaboration that NEA (2014) states is "not only important but necessary" for present day participants (p. 19).

CRITICAL THINKING AND PROBLEM SOLVING: THIRD OF THE "FOUR Cs"

Bullen (1998) provides the argument that "distance education is rooted in a transmission model of learning that inhibits the development of critical thinking" (para. 4). Contrasting this point of view, instructors of online classes can choose instructional technologies to address critical thinking and problem solving, increase the ability to reason, formulate judgments, make decisions, and solve problems (NEA, 2014). Additionally, instructional technologies that "involve students doing things and thinking about what they are doing" (Bonwell and Eison, 1991, p. 2) promote active learning, which in turn, enhance critical thinking and problem solving (Mandernach, Forrest, Babutzke, & Manker, 2009). The implementation of critical thinking and problem solving skills in any instructional setting, including virtual classrooms, are valuable skills that enhance learners' abilities to make connections across disciplines, think about and analyze how they are thinking, and face real world situations now and in the future, with more independence and ownership. To cultivate critical thinking and problem solving skills, instructors need to build upon lessons and activities that enable their students to complete the steps outlined in Figure 4 that illustrates the steps and skills of critical thinking and problem solving.

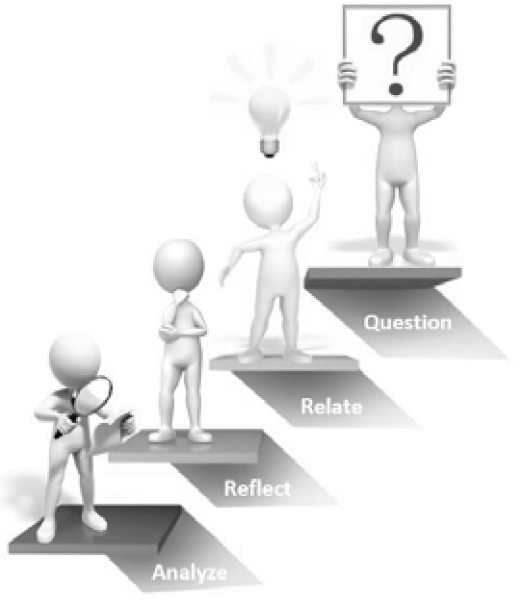

Figure 4: The Steps and Skills of Critical Thinking and Problem Solving created with Presenter Media

Analyze

Critical thinking and problem solving are promoted when individuals are given opportunities to analyze important concepts, results of research findings, and differing theories or ideas (Alexander, Commander, Greenberg, & Ward, 2010). Analysis is really "a form of detective work" that involves breaking down the elements or structure of something and then formulating judgments and connections in an effort to better understand (Rosenwasser & Stephen, 2011, p. 79). An example of analysis in a traditional classroom is note taking that occurs when participants annotate material with thoughts, ideas, and/or connections. The use of annotations allows instructors to ascertain whether there is a general understanding of fundamental principles, or conversely, whether content material is being misunderstood or misinterpreted. Analysis in a virtual classroom is possible when participants use platforms like Scrible or Diigo to annotate material and record notes right *in* a webpage or online document. The annotations can be saved, continuously edited, and shared. Scrible and Diigo enable the instructor to view and track all annotations in real-time in order, for example, to ascertain the students' understanding of material and overall conceptual understanding.

Reflect

According to Alexander, Commander, Greenberg and Ward (2010), students need to be given opportunities to reflect, to determine the importance of a concept, research finding, theory, or idea. Content reflection involves sharing thoughts about material. Process reflection includes perceptions, thoughts, feelings, and actions as participants sift through the material presented (Ostorga, 2006). Penzu Classroom is a journaling tool that supports both content and process reflection. Virtual classroom participants can use this platform to construct an electronic journal specifically for reflection. The individual journals can be shared with and/or assessed by the instructor using the same platform through typed or handwritten comments adding a more "human touch."

Reflection also involves work. Its importance lies in the fact that through reflection, learning occurs. Therefore, much practice is necessary. However, as often as participants actively engage in reflection, Ostorga (2006) noted that "educators often find that many students struggle to engage in reflection" (p. 6). A simple and engaging mechanism that virtual instructors can use to promote reflection is OneWord . Students are given sixty seconds to reflect on one word that is provided by the instructor as a prompt on a webpage. They use the next sixty seconds to write anything that comes to their mind as they reflect on the word. This platform feature is quick, fun, and can be used repeatedly by providing different words that constantly change and challenge the students. By doing so, students become more and more proficient. OneWord helps guide and assist the growth of online participants as they generate quick, personalized, and progressively deeper learning responses.

Relate

Participants need to have opportunities to relate or apply what has been learned to some aspect of their lives (Alexander, Commander, Greenberg, & Ward, 2010). When students see connections between themselves and the content learned, they naturally become more engaged. Typically, connections are made to three broad areas: oneself, the community, and the world (Keene & Zimmerman, 1997). There are a number of tools that enable participants to make connections to the world. A Virtual Field Trip (VFT) is a great connection tool because it offers first-hand sights and sounds. Premade VFT experiences such as Discovery Education Virtual Field Trips, Google Art Projects, Smithsonian, Inside the White House, and Google Sky to name a few, offer "visits" to iconic locations for rich and immersive learning experiences. The benefits of using premade VTFs are pretty obvious. They reduce the legwork it takes to produce a self-made virtual field trip, and they are typically of excellent quality for both visual and auditory modalities. However, there are limitations. Due to the fact that they are pre-made, they often do not fit into all of the content an instructor may want to cover. They might cover too much or too little. One way an instructor can "adequately cover all of the material that she wishes on a virtual field trip is through the use of a 'personalized' field trip" (Mandel, n.d., para. 11). EDpuzzle can be employed to create a more customized and personalized virtual experience. Instructors can upload any video and embed questions, comments, and feedback. The instructor can also video his/her own experiences and share them as a VFT. The instructor can customize embedded questions, comments, and feedback as he/she acts as a docent and thus assures that the goals and objectives of the content are being met.

Question

The oldest, and still most powerful teaching tactic for fostering critical thinking and problem solving is Socratic teaching, a process that focuses on giving students questions, not answers (Paul & Elder, 1997). By probing participants through questioning techniques, the instructor keeps the discussion focused, stimulating, and intellectually responsive. The instructor applies questioning techniques to periodically summarize and draw as many individuals as possible into the discussion (Paul & Elder, 1997). The use of Socrative in a virtual classroom makes the process simple through a "quick question" feature. The instructor can follow up content material by posing facilitating questions, and can respond to students' answers with further relevant questions that require them to think critically and find solutions to problems. This platform has the option for participants to view peer responses. Additionally, roles between instructor and participant can be reversed when participants take the lead and pose probing questions.

It is vital that virtual classroom participants be given opportunities to foster the same abilities that a traditional classroom provides, including the ability to "effectively analyze" content, "to reflect critically on learning experiences", "to interpret information", and "to ask

significant questions" (NEA, 2014, p 9). These talents are not innate and can be fostered with the use of technologies similar to the ones outlined in this section. When used in a manner that addresses the four aspects of critical thinking and problem solving outlined by Alexander, Commander, Greenberg, and Ward (2010), technologies work as tools to support this 21st century skill.

CREATIVITY: FOURTH OF THE "FOUR Cs"

Since the ability to possess an "innovative capacity and a creative spirit are fast becoming requirements for personal and professional success" (NEA, 2014, p. 24), it stands to reason that the NEA places so much importance on creativity as a necessary 21st century skill. Virtual classrooms have the capacity to be valued as much as traditional classes. It is essential that they too focus on the development of creativity (Shaheen, 2010). It may prove beneficial to think of creativity in terms of common synonyms and educational terminology. Figure 5 outlines dimensions that are viewed synonymously with creativity.

Figure 5: The Dimensions of Creativity created with Wordle

These dimensions can be cultivated within a virtual classroom setting. With the use of instructional technologies, participants can engage with tools that build on their ability to practice creative thinking, work creatively with others, and innovate (NEA, 2014).

Thinking Creatively

Creative thinking is a state of mind and that involves creating ideas either alone or as a member of a collaborative group (NEA, 2014). Sparking creative thought can begin initially through brainstorming, sometimes referred to as mind-mapping. Bubbl.us and Popplet offer virtual mind-mapping experiences as participants construct mind-map diagrams that capture facts, thoughts, and images. Much like a web, relationships and connections can be further generated to continue the dialogue and foster more ideas. Stromboard offers virtual classroom participants the ability to collaborate. This platform was originally designed for business use and it stretches mind-mapping a step further. Stromboard allows participants to create a personal mind-map or collaborate with others to generate and build mind-maps together, as they are able to comment and vote on ideas, and/or share an ongoing or finished product.

Working Creatively with Others

Working creatively with others involves being open and responsive to new and diverse perspectives other than one's own (NEA, 2014). Virtual classrooms have the innate ability to

incorporate perspectives from around the globe. Pen pal platforms like ePals and PenPal Schools can expand participants' views on topics as they engage in content related conversations with global partners. These conversations take place in the security of a registration-required environment. They can involve email, photographs, images, as well as sound and video clips. Conversations can involve the digital presentation of an idea or discourse stemming from creative thinking activities such as mind-maps described above. To add an extra element of creativity, participants can use Voki and create an avatar to share with their pen pal rather than just sharing a photo. These pen pal platforms provide participants with diverse perspectives needed to foster creative thinking. When used simultaneously with Voki, participants are able to put their creativity into action.

Implementing Innovation

There comes a time in the creative process when participants must act on creative ideas. This is called implementation innovation (NEA, 2014, p. 25). There are countless ways that technology can assist participants in harnessing creative thought. One example involves the creation of digital fiction or nonfiction stories. Creatavist and Steller have the capacity to merge video, image, audio, and text together so that a digital story reads much like a digital magazine, eBook, or web page. Powtoon and Animaker take a more animated approach to digital storytelling by involving stock and customizable cartoon animations alongside texts and audios that are embedded in a video format. Unlike traditional classrooms where written stories either incorporate sight (reading) *or* sound (listening), a virtual classroom allows digital stories to combine both senses.

It is vital that instructors challenge participants to think more systematically and creatively (Jenkins et al. 2009). The use of technologies can encourage creative thinking, offer opportunities to work creatively with others, and serve as the anchor for participants to gather, collaborate, and innovate. Incorporating technologies into virtual classrooms can influence potent learning experiences that encompass much of what society hopes that students will be able to achieve in the 21st century and beyond (Bernard Robin as cited in University of Houston College of Education, 2016).

CONCLUSION

A number of digital resources have been offered that make online instruction through virtual classrooms effective. By supporting the use of these resources, this article has paved the way for instructors to effectively incorporate the NEA (2014) 21st Century Skills into virtual classroom settings. Technologies, such as those discussed in this article, can be utilized to provide participants the time needed to remember, understand, apply, analyze, evaluate, and create factual, conceptual, procedural, and metacognitive knowledge (Krathwohl, 2009).

In a global society, there is an innate need for students to become proficient in each of the "Four Cs". When merged into and threaded through instructional content, communication, collaboration, critical thinking and problem solving, and creativity are completely accessible and possible through a virtual environment. Thanks to extensive innovation in the field of technology, it is easier than ever to embed and combine these closely intertwined 21st century skills. When used appropriately by instructors, virtual environment participants can "harness technology to become effective problem solvers, collaborators, communicators, and creators" (NEA, 2014, p. 31) in their fields of study today and the challenges that lay beyond. The use of technologies like those outlined in this article suggest that, not only can students learn from *anywhere* without losing the aspects of a seated classroom, but the virtual classroom experience may have *more* to offer in terms of attaining and sustaining imperative skills in the 21st century.

APPENDIX

The "Four Cs" of 21st Century Skills: Technologies and URLs

Communication	
Technology	**URL**
Blendspace	https://www.tes.com/lessons?redirect-bs=1
Camtasia	https://www.techsmith.com/camtasia-education.html
ClassDojo	https://www.classdojo.com
Kahn Academy	https://www.khanacademy.org
Kahoot!	https://getkahoot.com
Microsoft PowerPoint	https://products.office.com/en-us/powerpoint#
Microsoft Word	https://products.office.com/en-us/word
Poll Everywhere	https://www.polleverywhere.com
Prezi	https://prezi.com
Remind	https://www.remind.com
Sococo	https://www.sococo.com
Socrative	http://www.socrative.com
Teachertube	https://www.teachertube.com
TED Talks	http://www.ted.com
YouTube	https://www.youtube.com
Collaboration	
Technology	**URL**
Creately	https://creately.com
Dreamhost	https://www.dreamhost.com
Edublogs	http://edublogs.org
Google Drive	https://www.google.com/drive
Google Hangout	https://hangouts.google.com

Critical Thinking and Problem Solving	
Technology	**URL**
Diigo	https://www.diigo.com
Discovery Education Virtual Field Trips	http://www.discoveryeducation.com/Events/virtual-field-trips/explore/index.cfm
Edpuzzle	https://edpuzzle.com
Google Art Projects	http://www.googleartproject.com
Google Sky	http://www.google.com/sky
Inside the White House	https://www.whitehouse.gov/about/inside-white-house/interactive-tour
OneWord	http://www.oneword.com
Penzu Classroom	http://classic.penzu.com/content/products/classroom
Presenter Media	http://www.presentermedia.com
Scrible	http://www.scrible.com
Socrative	http://www.socrative.com
Smithsonian	http://naturalhistory.si.edu/panoramas
Creativity	
Technology	**URL**
Animaker	http://www.animaker.com
Bubbl.us	https://bubbl.us
Creativist	https://www.creatavist.com
ePals	http://www.epals.com
Mindmup	https://www.mindmup.com
PenPal Schools	https://www.penpalschools.com
Popplet	http://popplet.com
PowToon	https://www.powtoon.com

Steller	https://steller.co
Stormboard	https://www.stormboard.com
Voki	http://www.voki.com
Wordle	http://www.wordle.net

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