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Toward transformation: Digital tools for online dance pedagogy

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ABSTRACT

Media advances have changed the ways in which we interact, communicate, teach, and learn. The growth of telecommunication, video sharing sites, specifically YouTube, and social media, have exponentially increased the number of people interested in dance and dance education. Technology presents new ways for students to think about their learning, express their ideas, and problem solve. Dance teachers and artists are recognizing the digital explosion through increased connectivity in all aspects of the profession, artmaking, instruction, and performance. Instructional technological developments seem to be in sync with current art education policy initiatives and educational practices. These developments have increased opportunities for students to customize and take charge of their own learning. The following technological options are considered in this article: online instruction, massive online open courses, dance-specific professional development programs, applications to support dance instruction, and dynamic communication and feedback systems that may be used in the classroom. This article further examines the use of online instruction, handheld devices, and new media technology in teacher education programs. Strategies for the integration of technology in the study, technical training, and creative practice of dance as well as the benefits and limitations of online instruction for dance are addressed.

KEYWORDS

Dance education; new media pedagogy; online instruction; technology

Introduction

Media advances have changed the ways in which we interact, communicate, teach, and learn. Technology has helped transform the economy and forever changed our way of life. The growth of telecommunication, video sharing sites, specifically YouTube, and social media, have exponentially increased the number of people interested in dance and dance education. Dance educators are conducting live webcasts of classroom activities and concerts, and utilizing Twitter to promote, advocate, and communicate, thus expanding their viewership and increasing knowledge of dance and media buzz. Social media's immediate interactivity is similar to the improvisatory and ephemeral nature of dance. Media resources link scholars to practitioners and professionals to children in a dynamic web of ideas. Social media applications such as Snapchat, Instagram Facebook, selfies, microblogs, and digital videos are ways we now connect, experience, and "live" in the world.

With increasingly easy access to the Internet and progressively more powerful "smart" devices in the hands of students and teachers alike, researchers are finding teachers can better connect, engage, inform, and empower students (Bonk & Khoo, 2014). Technology presents new ways for

students to think about their learning, express their ideas, and problem solve. When used thoughtfully, students discover increased capability in taking control of their learning (Stavredes, 2011), customizing and organizing information (Simonson, Schlosser, & Orellana, 2011), and utilizing more collaborative ways of working together and sharing information with a wider authentic audience (Means, Bakia, & Murphy, 2014). Many K–12 and university administrators confirm that technology, when used appropriately, serves as a way to grant access to significant resources to expand worldview and to shape community (Levin & Schrum, 2012).

Dance teachers and artists are recognizing the digital explosion through increased connectivity in all aspects of the profession, artmaking, instruction, and performance. However, we are just beginning to understand the complex implications of technology use in dance education. There are different schools of thought as to the benefits of handheld devices, social media, online instruction, and interactive technology in the teaching and learning of dance. Some educators feel there is no place for technology in the dance studio, while others feel that technological tools should be embraced and brought into the dance classroom.

Instructional technological developments seem to be in sync with current art education policy initiatives and educational practices. These developments have increased opportunities for students to customize and take charge of their own learning. However, limitations in quality instruction and staff development and evaluation hinder the appropriate use and acceptance.

The following technological options are considered in this article: online instruction, massive online open courses (MOOC), dance-specific professional development programs, applications to support dance instruction, and dynamic communication and feedback systems that may be used in the classroom. This article further examines the use of online instruction, handheld devices, and new media technology in teacher education programs. Strategies for the integration of technology in the study, technical training, and creative practice of dance as well as the benefits and limitations of online instruction for dance are addressed.

Online learning

Online, digital, and mediated learning is here to stay. The 2013 Survey of Online Learning revealed that over 7.1 million university students have taken at least one online course. Broadly adopted by academic institutions, current online instruction comes in many different configurations. It can be blended, self paced, video-based, project-directed, student-centered, DVD-packaged, real-time, asynchronous, synchronous, or partially synchronous. It can be free or fee based. Additional considerations include course length from a full semester to a few weeks and class size ranging from 15 students to thousands of students participating in a MOOC. As the configuration of online instruction is changing, online instructional pedagogy is evolving. Courses may look and feel more like a traditional lecture class with posted lectures, video modules, hyperlinks, solitary reading assignments, and examinations that can be adaptable, interactive cooperatives using social media, face to face, and online interaction. They may have fluid discussion groups, class blogs, video sharing, collaborative applied projects, and responsive assessment. Each online instructional framework serves a different population, the size and content of the class, and contributes to students' different learning styles. With the development of MOOCs the online landscape provides access to the world. High school educators are using MOOCs in their classrooms (Pope, 2014) to meet the needs of their advanced students, and arts organizations are delivering online professional development courses meeting the needs of constituents.

Online learning has become indispensable in today's higher education arena. Benefits for dance students include:

24-hour access to a wider range of discipline-specific information and resources (Puteh, 2008); access and equity for those individuals with disabilities and for students who struggle with face-to-face instruction (Zhang & Bonk, 2009); and flexible course schedules allowing students the ability to work at their own pace (Puteh, 2008; Stavredes & Herder, 2014). It also brings students from diverse locations together in the creation of new learning communities that support the fluid sharing of ideas, viewpoints, and perspectives (Simpson et al., 2012); while perhaps reducing the instructional cost (Puteh, 2008); increasing personal responsibility for learning (Salmon, 2011); and facilitating the formation of borderless cross-disciplinary and cross-cultural learning environments (Bonk, 2014; Zhang & Bonk 2013). Additionally, a few research studies identify online instruction to be more successful than traditional instruction (Angiello, 2010; Angelino & Natvig, 2010). The 2010 U.S. Department of Education Evaluation of Evidence-Based Practices in Online Learning conducted a systematic search of empirical research studies of online instruction and found that "on average students in online learning conditions performed modestly better than those receiving face-to-face instruction" (p. 8). The study identified 51 independent effects such as student learning outcomes and further identified positive effects of blended learning. However, the report also cautioned that because there are so very few studies it is hard to generalize.

Dance online

In 1997 leading technologists Iris Garland and Lisa Naugle offered the first dance-specific online class in LifeForms animation (Garland & Naugle, 1997). In the course, students used LifeForms software to create and share choreographic animations. Since then many university dance programs regularly offer online courses largely to serve general education content to university students who are required to take a fine arts, history, or Humanities credit and who may be interested in dance.

My professional experience in dance technology spanned interactive multimedia, process-based dance documentation, K-12 multimedia curricula and website design, immersive technology environments (Parrish, 2007), and videoconferencing in teaching, training, and rural instruction (Parrish, 2008, 2009). My training in online instruction was self-directed and choppy. I met with the information technology (IT) department a few times for a crash course on how to organize and post course content, how to evaluate student work, and use the grading analytics. I was also aware of high dropout rates that plagued other online programs and was determined to find ways for the students to stay connected and engaged.

My first semester teaching online felt flat. I have since adopted a constructivist philosophy in my online classes encouraging student ownership, creative problem solving, applied projects, interactivity, increased and ongoing communication, and interaction beyond the course. I continually design new ways for students to contribute and succeed in the online environment. This was achieved by having a clear visual interface and systematically laid out course objectives, assignments, and deadlines, increasing required interactivity among students and myself, including social unstructured conversations, and addressing course content in interesting applied projects.

After the stress of my initial online course diminished I discovered the joy of online instruction as one of increased personal connectivity, heightened productivity, communication, and closeness. By moving pedagogy infrastructure from readings and papers to the inclusion of new media, collaborative projects, communication evaluation, and assessment online, I get to know my online students more completely than in traditional courses. Using social media, Google talk, group chats, sharing performance videos, and live streaming dance classes continues to help each group of students form their own community. This format does require I spend more time planning classes, organizing content into modules, setting up conversation and interactive procedures, reading, and giving detailed feedback than I would for similar on campus classes. While time zones must be considered, especially with international students, I have the opportunity to collaborate with teachers who are shaping their community and world. Our online dance education student applied thesis projects range from the development of podcasts for teacher education to using smartphone and curated media application as assessment tools.

Characteristics of successful online dance instruction

In terms of the principles of online pedagogy there are many schools of thought. High quality online instructional pedagogy for dance requires: (a) a clear and responsive instructor; (b) encouragement, particularly initially when students may feel challenged and disconnected to an unfamiliar learning style; (c) relevancy to both immediate and long term goals of the student; (d) careful planning of the design interface; (e) layered communication methods; and (f) activities that are collaborative and discovery-based. I will elaborate on some of the benefits and policy considerations.

A responsive instructor

In online instruction the instructor should be approachable, real, and responsive to the students' needs.

Stavredes (2011) argues that the facilitator needs to help motivate the learner by telling personal stories and demonstrating knowledge and passion in the subject area. Sharing photos, stories, and professional challenges paints a picture of the instructor that feels real, and not just a series of one size fits all pull down statements and empty fluffy greetings identifying the students as "a pleasure to have in class." It is suggested that the instructor adopt a more constructivist instructional style serving more as a facilitator and feedback to students be delivered using multiple methods, which are ongoing, conversational, and personalized. Stavredes and Herder (2014) identify the importance of consistent and ongoing feedback to students and promote the use of both unstructured open and honest conversations and formal conversations about curricular content. Top down authoritative instructional style restricts communication and student wellbeing. Without interactive, approachable, and "authentic" interaction all learning deteriorates.

Encouragement and belonging

Sitting for hours and hours can feel like torture for some dance teachers, and their students, whose lives are active, embodied, and mobile. Online delivery can be frightening for dance teachers that have been working in a dance studio their entire lives. Creating a class climate that supports mutual trust and sharing is key. Faculty need to encourage and support students' growing knowledge in the online system. Students need to know that they can fulfill what is expected of them. Social interactivity is key to success by incorporating activities where students get to know one another and get to know the professor as they learn the technology interface. In online instruction students should feel connected to the university, faculty, and fellow students even if they are not sitting in a traditional classroom on campus. Liu, Magjuka, Bonk, and Lee (2007) identify the sense of belonging in an online community as essential to student engagement, perseverance, and overall course satisfaction. Further cultivation of a sense of belonging may influence students' perception of learning achieved in online courses. Commonly used text-based timed feedback threads can resemble a game of beat the clock with students quickly entering the required number of responses, long before the instructor realizes that nothing of substance has been exchanged. Sharing specific response criteria and guidelines for entering conversation threads with respect for differing opinions increases student satisfaction, relationship development, and encourages deeper social exchange among students.

Relevancy

Course content and activities must be interesting and relevant to real world application. Further, content must be aligned with incentives to support students' desired goals. Researchers Bonk and Khoo (2014) identified that without relevance, "learners fail to tune in" (p. 157). Course activities need to arouse and sustain curiosity and need to be aligned with state and national standards for dance. The course content such as readings, assignments, videos, and activities need to fit within the students' real world experiences and be process oriented and problem based, emphasizing the construction of new knowledge that can be applied to the students instructional practice. An exciting example of media relevancy aligned with online learning, social media, and audience feedback systems occurred in a high school choreography class in Virginia. They used blogs and Twitter posts before, during, and after dance performances to advertise, journal, critique, and deliver immediate audience feedback. This highly responsive constructivist practice led to increased student and audience participation in the process, heightened reflective thinking, and meaningful interaction on student choreography.

Smart course design

Successful online instruction requires consistent interface with clear design, layout, feel, content, and delivery method in order to create a sense of grounding and stability. Without smart course design students may be unable trust the instructor and themselves in the class. Keller (2008) identifies that students, "must have the personal conviction that they will be able to succeed" (p. 178). All too often faculty, with little training, is responsible for collecting, organizing, and uploading course content themselves. This can become problematic when students and the instructor cannot remember where content can be found, resulting in increased time, anxiety, and stress with the course. The learning curve is steep and such disorganization can result in student discontent and exploding faculty e-mail boxes. This type of experience can poison the faculty from teaching online in the future. First and foremost, students must know where to find assignment guidelines, rubrics, deadlines, and submission buttons. Software like Canvas and Blackboard build these tools into the platform but an instructor can customize and choose to use or omit preconfigured interfaces. Further, faculty must define grading timelines, specifically how many days are required for grading and feedback. Communication, interface, and grading consistency breed trust and trust allows the students to succeed.

Community and social connections

Course design needs to build in virtual interaction opportunities and collaborative participatory learning activities in order to combat the sense of aloneness of online education (Van Dusen, 2014). At times online communication seems to mimic the banter of "I state-ments" reminiscent of the "what I did for my summer vacation reports from elementary school." In efforts to humanize the classroom and get to know my students meaningfully, I instituted weekly "Skype Dates" to discuss progress and address questions relating to the module topic. Skype and other videoconferencing applications provide a glimpse into one another's lives and serve to open up dialogue and build community connection. Peer-to-Peer Skype Dates heighten discourse and professional application of the content as well as enhanced engagement and collegiality across the miles. Conversations and discussion with peers that use social media to extend the class should be required and varied. Social digital interaction can take many forms including Google hangouts, Facebook groups, Twitter, chat rooms, peer mentoring, video based share activities, and webinars. Online students need support from classmates to feel that they have a place within the class community where their ideas are valued and their contributions are crucial to the success of the course.

Collaborative discovery-oriented activities

Problem-based learning activities where students communicate and collaborate to tackle the problem can be an effective way for students to share their ideas, create new products, and contribute to the community. Pedagogically, discovery learning in online courses can encourage students to be more self aware, responsible, and accountable for independent and collaborative achievements. Collaborative problem-based learning is an effective way to encourage confidence and create community and content mastery while affirming complex learning in dance. An interesting example of discovery-based collaborative online learning occurred with middle school students using Comic Life, iMovie, and Audacity to support problem-based methods. Working collaboratively students created a public service announcement (PSA) and poster illuminating a substantial concern or issue that they were facing. The collaborative project took on many forms, from a PSA encouraging parents to play games and dance with their kids, to a poignant comic speaking to the impact of "diva" and "mean girl" culture that is often experienced in reality TV's *Dance Moms* style of competitive dance

instruction. Students advocate self awareness by instituting Liz Lerman's Critical Response Process feedback practice, which encourages affirmation, observation, thoughtful questioning, listening, reflection, and knowing the difference between criticism and opinions as tools for building acceptance and community (Lerman & Borstel, 2003).

Challenges in online instruction in dance

Challenges in online instruction of dance include: (a) time to develop pedagogical practice that is aligned with instructional goals in dance; (b) access to resources including hardware and software packages appropriate to dance instruction; (c) training in content specific professional development; (d) limited numbers of qualified faculty; and (e) assessment of the instruction and delivery of online courses. Next, I will elaborate on some of the challenges in online instruction for dance and identify arts policy considerations.

Time

It takes longer for faculty to design, develop, and facilitate online courses than traditional courses. Additionally, student-teacher communication in online instruction is different from face to face instruction and may require additional time and effort in the preparation of responses (Allen & Seaman 2014; Gabriel & Kaufield, 2008). Major (2010) suggests that as a result of increased time required for online instruction, faculty teaching loads be reduced and a teaching assistant appointed. University programs need to compensate faculty for time spent in the development of online classes. Administrators, not having the experience of teaching online, are often unaware of the time requirements faculty experience when teaching online classes.

Access

It can be difficult for schools and universities to stay current in the ever-changing landscape of technology. Access and sufficient financial resources to purchase hardware and software packages appropriate to dance instruction are needed (Parrish, 2001, 2007). Movement specialists require computers, projectors, smartboards, laptops, video cameras, and multipack iPads in their classroom. Teachers need support staff to assist with technology integration in the dance studio and on stage to assist in the practical and creative use of technology in the dance class. Issues continue to hinder the inclusion of technology online including firewalls, uneven signal strength, and conflicted operating systems on hand held devices such as iPads, tablets, computers, and

smartphones. Universities and school administrators need to establish an ongoing process for technology use and include programmatic access to computer labs and fiscal resources.

Training and professional development

Dance educators need content-specific professional development in dance technology. Without adequate access to up-to-date technology, resources and tech support personnel dance educators are left to figure things out on their own. Continuous challenges such as firewalls, signal strength, and operating system compatibility issues can deter teachers' use of technology in classes and lead to frustration, loss of class time, and disuse (Parrish, 2007; Risner & Anderson 2008). Most online university faculty begin teaching with little or no training in the instructional delivery method (Fish & Wickersham, 2009; Gabriel & Kaufield, 2008). Instructors need ongoing support and training for the development of online instructional skills in order to support student success in the course. Faculty must become familiar with research-based methods for effective online instruction. Increasingly university programs are offering courses in new media and video dance technology, yet until this becomes the norm in teacher preparation programs teachers are entering classrooms with limited skills in technology integration for dance.

Faculty isolation

Finding quality faculty capable and willing to spend the additional time to teach online classes can be challenging; some universities have solved the problem by hiring graduate students and adjunct professors to handle the high volume. One of the risks of online instruction is social isolation and the feeling of segregation from colleagues and missing out in departmental collegiality.

Instructional and course evaluations

When polled, many academic institutions view online instruction as a viable method of providing quality instruction at a reduced cost (Garbett, 2011). However, online university faculty struggle with the lack of instructional evaluation methods for promotion and tenure. In light of the fact that junior faculty are more likely teaching the bulk of online instruction the development of new methods for course observation including project-based, formative, and summative assessment metrics need to be established.

In conclusion, online instruction in dance education has both benefits and limitations. Resistance to change

presents a considerable challenge in the implementation of online instruction. New technologies are integral to how students connect and engage in the world. Technology can support students' comprehensive experience in the construction, creation, and sharing of their knowledge in dance. Administrators need to create policy for defining proper use of new media in school arts programs including faculty support, technical infrastructure, course management systems, resource allocation and maintenance, strategic professional development, and training packages for faculty and the evaluation quality of distance learning classes. Additionally, the development of longitudinal goals that are aligned with state arts standards and national new media standards will increase creative and artistic viability.

Online degree programs are becoming cost effective for students and are leading in the development of feedback tools and conversations regarding online credentialing. New pedagogical models for synchronous and asynchronous instruction have emerged and are making an impact on global access to information, especially in developing countries. Highly specialized discipline specific online course options may include open access, videoconferenced, live interactive, hybrid and distributed programs which transform access, increase visibility and extend the "footprint" of the university and the discipline of dance.

Content delivery systems

MOOCs: Educating the masses

MOOCs are fully developed open access online courses with the goal of giving everyone access to a world-class education. Companies like Coursera, Edx, and Udacity partner with universities and work with the top professors to develop and teach online courses to tens of thousands of students at low cost or in some cases at no charge to the student. The for-profit Coursera and non-profit edX, led by Harvard and the Massachusetts Institute of Technology, have almost 13 million users and more than 1,200 online courses (Pope, 2014). MOOCs include readings, videos, assignments and key assessments that serve as a knowledge bank of information on a vast range of topics from parenting in the digital age to the artwork of Andy Warhol. Award-winning choreographer and media artist, Stephen Koplowitz, from the California Institute of the Arts, partnered with Coursera to offer a 6-week MOOC: *Creating Site Specific Dance and Performance Works*. The course provides a comprehensive view of the practice and the creation of site-specific work. Students view dance works, listen to lectures,

watch interviews with artists, read articles, complete weekly applied dance activities, and submit ideas and assignments to course forums. In 2014, *Creating Site Specific Dance* had more than 11,000 students enroll (Koplowitz, 2014).

One of the challenges with MOOCs is the high student dropout rate. The average completion rate is less than 7% (Jordan, 2013; Parr, 2013). Without cost to the user and or grade incentive many students sign up for classes that they never complete. University faculty has expressed concern about the quality of MOOCs, rejecting the construct that online instruction assignments and interactive community can replace the quality of faculty in classrooms (Pope, 2014). Challenges in design and pedagogy include figuring out how to personalize the standardized "transmission model" of one-size-fits-all content-driven pedagogy. Interestingly, the highest group of MOOC course completers are teachers, with a 28% completion rate (Pope, 2014), and many teachers identify that they are using resources like edX with their Honors and Advanced Placement (AP) students.

MOOCs are currently in transition with large companies like Coursera now focusing on teacher training and educator-oriented content and Udacity concentrating on corporate training (Pope, 2014). Ideas about what they offer, and whom they might help, are evolving as rapidly as the MOOCs themselves. A growing number of MOOC curricula designers and faculty are implementing more active learning and user centered constructivist educational models (Dede, 2013; Mintz, 2014). Koplowitz's *Site Specific Dance and Performance Works* course and a select group of other Coursera's courses are identified as part of their Signature Track of courses. Students who receive a passing score in a Signature Track course can also receive a certificate of completion at the end of the class. Signature classes can cost anywhere from \$30.00–\$100.00 per course. Coursera is in discussion with the American Council on Education to initiate a credit equivalent evaluation for MOOC classes. The impact of MOOCs receiving transferrable academic credit must be more fully considered. However, based on the high quality of Koplowitz's *Creating Site Specific Dance and Performance Works I* can imagine the power of MOOCs for dance opening the doors to and providing access to master educators from around the world in all aspects of dance performance, technique, history, and pedagogy lead toward transformation in dance training and university dance programs. The question of certificates, accreditation, commerce, and how universities and accrediting agencies evaluate the effectiveness of the pedagogy is complex and can change the economic fabric of universities.

Online professional development

Unable to find professional development (PD) in their area and accredited online classes for license renewal and career success in dance, the National Dance Education Organization (NDEO) created Online Professional Development Institute (OPDI) offering online courses for dance education specialists who wish to extend their knowledge of dance and to support their teaching practice. Courses are designed for professionals with at least 3 years of teaching experience ranging from dance studio owners, teaching artists, K–12 educators or administrators. OPDI courses are intended to “complement traditional education from higher education institutions, traditional studio training and previous teaching experience” (OPDI website) with engaging course content taught by experienced teachers working in the field. OPDI courses result in NDEO endorsed continuing education credits (CEU) and when students have completed 33 hours of coursework can receive a Certificate in Dance Education (CiDE). The NDEO CiDE does not constitute nor replace state dance certification; however, it does serve a critical role in supporting the wide-ranging needs of dance educators including retaining current K–12 certification with CEUs, attaining high quality teacher (HQT) status, increased earnings, earning endorsement in dance beyond K–12 certified area and the benefits of lifelong learning from professionals in the field.

Online PD in the arts can deepen, extend, and help teachers as they advance their skills in dance and formulate new learning, PD also provides a digital community and place of belonging where teachers can come together to share experiences, socialize, and support one another. For dance professionals who often feel isolated and unaided by state and district sanctioned PD, OPDI and similar arts-centered PD programs are powerful tools to increase teacher awareness on current thinking in the field, present new ideas and teaching strategies based on current pedagogical theory, and to share wisdom of leaders and peers promoting the transference of learning into application in the studio, community center, and stage. The OPDI program began in Spring 2012 and currently offers 19 different courses from kinesiology to assessment in dance education and has more than 514 students enrolled in the program with an 87% completion rates (Melissa Greenblatt, personal communication, February 2, 2015). Select OPDI courses qualify for undergraduate credit from the University of North Carolina Greensboro; additional university fees are required. OPDI provides an opportunity for teachers to improve their instruction in dance nationally and serves as an invaluable resource for K–12 educators that need professional development to

maintain employment while advancing their knowledge and reaching their career goals. Susan McGreevy-Nichols, the executive director of NDEO, describes its importance to the larger dance community, “OPDI participants continue to have an impact on the field of dance education, using what they learn through their courses in their own teaching practices, advocacy efforts, and community outreach. Participants are also seeing benefits in their professional lives, such as pay raises, promotions, and fruitful networking.” (McGreevy-Nichols, personal communication, February 2, 2015) Online professional PD programs are relatively new and additional research is needed to determine the types of content, instructional pedagogy, and technology for teaching that work best in the online environment.

Videoconferencing

Videoconferencing (VC) using Internet2 is quickly becoming a realistic way for universities, and to a lesser degree, K–12 educators, to expand their classrooms to encompass a world of educational resources. Internet2 capitalizes on this enormous potential by providing real-time communication bridging communities and linking individuals with shared interests and expertise. Over the past 6 years there has been rapid growth in data transfer rates and increased quality of bandwidth, latency, and routing. This progress has led to significant innovations in telepresence systems. Internet2 enables real-time, simultaneous, live communication across long distances featuring low latency for video-conferencing technology. This is important because latency in digital audio and video is most noticeable when a moving image is transmitted seamlessly through a video camera and appears without the loss of synchronization, defragmentation, buffering, pixilation, or choppiness. Internet2 national networks offer high-speed data transfer, increased bandwidth, latency reductions to 35 milliseconds that eliminate pixilated, blurry, and frozen video and are perfect for simultaneous, live, video, and audio performances (Fineman, 2010).

The wide range of benefits in education include: improvement of communication and motivation (Austin, Abbott, Mulkeen, & Metcalfe, 2003; Eyrich, Padman, & Sweetser, 2008); augmentation of learning effectiveness (Leask & Pachler, 2013; Beldarrain, 2006); an emphasis on the professional use of technology (Eyrich et al., 2008); increased problem-solving skills (Cornelli, 2004; Rummel & Spada, 2005); more independent learning (Belderrain, 2006); and heightened responsibility in students regarding their education and community (Hauber, Regenbrecht, Hills, Cockburn, & Billinghurst,

2005; Parrish, 2008). Dance scholars have established that VC-based instruction can support not only the technical and creative instruction, but also decrease participants' sense of isolation (Martin, 2005; Parrish, 2008). For the past decade educators has been investigating the potential of VC in curricula design, assessment and evaluation, practicum placement for preservice teacher education (Johnson, Levine, Smith, & Smythe, 2009; Lehman & Richardson, 2007; Parrish, 2009). VC can also provide access to dance for students in urban and rural communities where access to quality dance instruction is not feasible due to reduction in arts funding and district budgets (Parrish, 2009).

Using Internet2 dancers can effectively perform simultaneously and remotely. Research into VC in rural communities led to increased personal connection to the teacher, access to resources, and reduced sense of isolation (Parrish, 2009). Additionally VC is effective as a practicum opportunity for preservice dance students for content skills assessment, collaborative problem solving, and reflective practice and dance making (Parrish, 2008). Current research suggests that in dance, where the body is the vehicle for expression, Internet2 may be capable of capturing human movement (Fineman, 2010). Still it is believed that the three dimensional body movements—spinning and leaping and the nuanced expressions of the face—will challenge the capacity of Internet2.

By removing geographical obstacles, students are exposed to a world of dance (technique, creative practice, and performance) expanding their awareness of the field to include a varied dance community (Conte, 2001; Parrish, 2006; 2009; Yang, Yu, Wu, Diankov, & Bajscy, 2006). In 1997, the National Center for Educational Statistics—National Report Card stated that 57% of American children receive no training in dance education and of the remaining 43% who do receive some form of dance in school, 36% receive instruction from physical education (PE) teachers, coaches, generalist teachers, volunteers, parents, or artists in schools. Only 7% of schools across the nation have a certified dance educator. By eliminating the financial and geographical boundaries video conferenced instruction provides access to high quality dance instruction for students currently not being served.

Over the last 10 years dance has experienced significant mainstream popularity from commercially successful reality TV programs such as *So You Think You Can Dance*, *Dancing with the Stars*, and to a lesser degree, *Dance Moms*. Yet, it is the development of personalized and distributed video, multimedia applications, social media, and massive video storage matched with rapidly evolving handheld devices that has been a game changer, providing powerful shared access to choreography and

instructional resources transforming dance education pedagogy.

Tools for dance education

Technologic resources have transformed the landscape for dance education, instruction, teacher training, and access. I will elaborate on a few important considerations for dance education including software applications for movement documentation, creation and assessment, multimedia devices, and data storage systems.

Apps for dance

There are hundreds of apps for smartphones, computers, and handhelds that are available for use in the education, the arts, physical health, music, and dance. There are apps that teach you how to perfect your pirouette, bust out a new Hip-Hop move, teach tempo and rhythm, analyze choreography, and even assist with attaining breath support as you move. Many apps are web, android, and iOS compatible and come at no cost to the user, at least initially. Software companies offer free use for a limited time or restricted output type and charge for “professional use” in order to download larger file size or to grant access to premium features. However, when students and teachers are not satisfied with the free options and the packaging of their work, who will cover the cost of technology upgrades? Highly rated educational apps can assist students with collaboration, artistry, content organization, project planning, note taking, and presentation of ideas. Educators need to be aware of ease of use, multiplatform fluency, and an app's ability to evolve as a student capacity for use expands. Popular educational apps are aligned with 21st-Century Goals, and Common Core and National Standards. Dancers use technology daily in the recording and editing of music and video. Apple's suite of user-friendly software for audio and video is popular in K–12 and universities and includes iMovie, iDVD, and Garageband while PC users preferred video and audio editing packages include Movie Maker and Audacity. University programs that offer courses in video dance and dance documentation often use Adobe Final Cut Pro for video editing. Below are a few quality apps and how they may assist dance educators.

Flexible thinking

Presentation and interactive multimedia applications are popular technologies in the classrooms. PowerPoint and Keynote applications are widely used in K–12. Prezi is a web-based software, which brings animations and interactivity into content presentation. Nonlinear mobility supported interface serves to catch viewers' attention

longer and allow for sharing and co-editing creations in real-time. Engaging lecture slides help content stay focused with “zooming presentation capabilities” allowing the presenter to see both the big picture and the detail in their relational sets and subsets in a visually stimulating spatial relationships (Watrall, 2009). One of the most interesting Prezi’s presentations I have seen demonstrated the historical and ethnographic relationships placing the student training in dance and their personal aesthetic in relationship to other contemporary artists and dance pioneers. The interface supports meta-cognitive mashing up of ideas, visual literacy, and flexible thinking similar to choreographing a dance (Teacher Tech, 2009).

Social curation

Social curation sites like Pinterest and Storify have made an impact on both marketing and education as they change the way we construct and consume information. Using Storify students are able to group, create and publish professional looking stories quickly. Largely an organizing and storytelling tool, the content for stories comes from students ideas combined with the stories of others including news feed, Twitter posts, Instagram content, and YouTube videos to build stories. Storify recalls the original source code and digital address so students and teachers are able to retrace the location of information and illuminate the complexities of authorship and intellectual property. In dance, Storify is being used to organize research and create interactive stories about artists, systematize layered sources of choreographic inspiration, investigate complex issues such as eating disorders and their long-term effects on a dancer’s health from multiple perspectives and provide an interactive, composite picture of the investigation. Schools and university programs can create media rich stories for both departmental marketing and concert promotion linking dance works to choreographers and painting a programmatic picture of the upcoming events.

Assessment

Dance educators use filmed movement practicum exams and choreographic projects in combination with written assessment when evaluating student performance. Often assessment comments seem disconnected to the actual experience of the performer, and a student may not know exactly where her alignment is off, or when she is losing turnout in her legs, or where performance or choreographic work needs development. Providing clear visual feedback is needed. Technological use for assessment in dance is still relatively new, yet there is much potential to support the practice, monitoring, feedback, and analysis of assessment data in the dance classroom. Application that supports dance

analysis include Ubersence and Acclaim. These video assessment tools give educators the ability to moderate class conversation and discussions around video content. For example, a teacher can upload video to a secure server and can highlight areas of the video for illumination employing a time coded annotated comments function. Acclaim allows groups to meet and watch one another’s works and collaboratively give feedback. The program is particularly useful for the assessment of movement (Harris & Gungor, 2014).

Illuminating best practice in dance Acclaim supports the analysis of creative work, collaborative evaluation, the quality of feedback and model a summative or formative assessment tool. Feedback comments can be restricted between student and teacher or between peers or open to the whole class serving to create a constructive exchange of ideas. A dynamic user-friendly interface heightens student’s self-awareness and quickly and efficiently helps faculty zero in on what is happening at a specific point in time (Harris, 2014). In dance, where traditional paper and pencil assessment modalities cannot address the complexity of motion, technical training, and creative practice of the dancer Acclaim assessment may be a solution. In dance technique, choreography, and dance education class teachers already use video for critique and documentation of student work; however, the ability to use a time code marker for specific and detailed feedback can give students and teachers a way to document, examine, discuss, evaluate, and share work.

Popular apps like iMovie, Acclaim, Storify, and others support creative problem solving, save time, deepen recall, increase student responsibility and can even make assessment fun. When used correctly, these tools have incredible potential and can expand the classroom by engaging, educating and empowering students. If teachers can learn to promote such applications as a means of improving students’ creative and physical activity outside of school, the effect will be tremendous. Certainly there is misuse of cellphones and handhelds in schools and administrators must view these resources with concern. That said, I would encourage administrators and dance teachers to embrace handheld devices and cellphones to expand the classroom, while establishing clear technology policies aligned to best practice standards for dance and new media standards to meet, the students’ needs.

Devices, warehouses, and apps for dance education

Devices

Smartphones, tablets, and other handhelds are powerful resources granting immediate access to vast content serving to engage, connect, and participate. It seems incomprehensible that the average smartphone has more processing power, improved Internet connectivity,

advanced multimedia capabilities, and capacity than the technology used on the spacecraft that propelled the first man to the moon (Kaku, 2014; Nielsen, 2012). The capability of smartphones is particularly pertinent to teenagers and college students since their lives seem to literally run on them. The use of smartphones in the United States is growing rapidly. Statistics from Nielsen Research Group identified that as of July 2012, 58% of American children ages 13 to 17 own a smartphone, and 64% of university students own a smartphone, a 60% growth from 2011. Pew Research Center's Internet & American Life Project (2012) identified that the most popular ways students use cellphones are taking and sending photos; playing music, games, and videos; Internet searching; and accessing social network sites. Harris Interactive reported that in 2008, half of all teens send over 50 text messages a day and one third of these teens send over 75 messages a day (Harris Interactive, 2008). As the complexity of smartphones has changed and the number of social media applications has grown, students are checking Facebook, Instagram, tweeting, and to a lesser degree, sending texts at astonishing rates.

Educational technologist, Larry Rosen, speaks to the impact of cellphone use on individuals' (born 1990 to today) identity as being, "defined by their technology and media use, their love of electronic communication, and their need to multitask" (Rosen, 2011). As a result there are untapped opportunities to engage, educate, and empower students using smart technologies. This is due in part to the remarkably efficient playback speeds and students' keen attachment to their device. Maintaining connectivity with the volumes of friends can cause students stress and anxiety. Social status is reflected by the type and model of cellphone, such influence is second only to style and brand of clothing they wear (Harris Interactive, 2008).

Excluding bandwidth and Internet connectivity issues, smartphones provide 24–7 access to a plethora of resources including research and applications supporting students' connection to global communities which support dance training, aesthetic awareness, exposure to vast choreographic and historical databases, and education and healthy living.

It is important to consider that the majority of individual use on smartphones, tablets, and computers is a seated, unaccompanied, passive activity. The Kaiser Family Foundation (2010) identified those children ages 8–18 spend over 7 hours a day in front of a screen totaling 53 hours a week of screen time. In 2014, university students spent an estimated 56–70 hours a weekly screen time use (Roethel, 2014) and a research study from Baylor University identified that university students spend half of their waking day on their smartphones (Roberts, Yaya, &

Manolis, 2014). With the sheer number of hours students are spending with their mobile devices, administrators and dance specialists need to know how to integrate cellphone use into their departments, performance calendar, and classroom in order to promote dance awareness. Some examples of smartphone use to enhance teaching and learning in dance include: (a) interactive concert and live feed video events (additionally, live video posting allows ailing students to stay abreast of class assignments. Parents, donors, and potential students can log in and experience the documentation of "A day in the life of a university dance student"); (b) Twitter and blog posts for class assignments and concert advertising; (c) ongoing video documentation and analysis of students' ongoing technical skill development and creative work; (d) interactive departmental blogs that are aligned with programmatic mission and goals; and (e) initiating department-wide activities (scavenger hunts and in-class dance data searches). Practical concerns for smartphone use in classrooms with students' personal devices include data overages and roaming charges when no Wi-Fi is available (many schools still have blocked areas near the theater and dance room). With all the time spent talking with their thumbs, it is more and more significant that students put these devices down and express themselves physically in dance.

Digital video

Digital video has had a remarkable transformative impact on the teaching and learning of dance. Researchers identified that video integration in authentic learning experiences encouraged academic rigor (Nugent et al., 2008), increased student interest and retention of information (Passey, 2006), increased scores on tests (Kaufman & Mohan, 2009), increased communication, collaboration, and teamwork skills (Willmot, Bramhall, & Radley, 2012), enhanced learner autonomy (Willmot et al., 2012) and has the potential for deeper learning on the given subject. When watching digital videos either during or after class the student has autonomy and holds the power to advance slowly and analyze the content, skim forward, stop, and replay. Video is a powerful difference maker in the classroom (Parrish, 2006). As online and hybrid teacher education programs continue to increase in number, many research questions continue to emerge. For instance, how might preservice teachers' instructional and choreographic works be documented on video? How might the use of handheld video influence instruction, feedback procedures, and social interaction? How might small thumbnail video interface impact student engagement and academic success? How might face-to-face video sessions be blended with supplemental video self-assessment programs to modernize

practicum experiences? As high quality easily transmitted video tools continue to grow in popularity they also provide new opportunities for further investigation in best practices for dance education.

Warehouses: YouTube and video hosting

For dance educators and students of dance, access to YouTube, the world's largest video hosting service, has changed the landscape of access and sharing of dance. The massive global media platform YouTube is a site of collective expression, collaboration, learning and discussion. From a novice to a professional, individuals are eager to share, create, watch, and comment on videos hosted by the website. YouTube and similar site Vimeo form a global community of participatory culture and serve an important purpose in the development of dance awareness. A veritable digital video supermarket with seemingly limitless access to resources for dance. This abundance of resources and access can be both inspiring and over stimulating to students. However, because YouTube does not sensor content, individuals may post inappropriate content for younger audiences. As a result, school districts around the United States have locked YouTube from their servers and now use SchoolTube. SchoolTube is the largest K-12 moderated video sharing site. In the United States SchoolTube is in 50,000 schools where students and teachers upload over 1,000 videos a day. Using SchoolTube teachers are able to share classroom projects, presentations, and student assignments with students and teachers throughout the world. In dance, SchoolTube provides a safe way to share progress reports, video assessments, and rehearsal footage and performance video with students.

Our culture is informing and being informed by YouTube. One of the first YouTube videos that went viral was Judson Laipply's 2006 video "Evolution of Dance," celebrating 60 years of dance history. As of December 2014, "Evolution of Dance" has had 289,389,981 views. Dance professional, dance enthusiast, and layperson alike are forming new connections to the field as a result of YouTube. YouTube has remarkable search capabilities and content database. As of December 2014, over 300 hours of video are uploaded every minute (Marshall, 2014). For dance educators YouTube, and to a lesser degree Vimeo, provide a way for teachers, scholars, artists, and educators to acquire, store, catalog, share, and distribute information. These include how-to videos, training and tutorials, documentaries, and personal and historical dance archives. Teachers go to YouTube to find inspiration, discover what their students are watching, find new sources for classes, and learn new instructional techniques. While some teachers may use

YouTube videos as a reward for good behavior, YouTube's strength is student integration of learning communities, limitless resources, and access to resources on dance and personal play videos. YouTube can be used as a project prompt, a way to recap class content, to extend and to expand learning and to increase independent learning. Teachers can showcase specific videos and resources, introduce new topics and deepen learning. In-depth analysis and inquiry can be situated within the context of multiple disciplines thereby guiding and extending student access to essential dance content in personal ways. An exciting example of using media channels for dance analysis and self-assessment occurred in a middle school with the dance educator posting students ongoing performance assessments from the beginning, middle and end of the term. Students were able to view their growth from multiple contexts (warm-ups, across the floor, improvisations, and technical combinations) and conduct a detailed self-assessment describing and expounding upon specific objectives and goals. Assessment of this kind is both arduous and highly effective as video can be analyzed repeatedly and offer insights into timing, musicality, nuance, and special relationships often left out of traditional performance assessments. All of which can support metacognitive connections, needs of diverse and visual learners, hone listening skills and grow their knowledge in dance.

Conclusion

Ten years ago a student living in rural South Carolina interested in Hip-Hop dance had limited access to classes as instruction was based on dance styles taught at their local dance studio. Depending on the size of the city and diverse dance offerings the student would have to take what was available or leave dance altogether. Today, when a student discovers an interest in Hip-Hop dance he goes online to YouTube (created in 2005). Through YouTube a student can access teachers, how-to videos which clearly articulate the steps, view inspiring performances, learn about dance companies, local workshops and conferences, listen to a collections of music, and make friends. The student can also join communities of similarly minded individuals at no charge. In pursuit of information, students not only bypass parents, eliminate the cost of classes, and remove any geographical limitations, but also go on a journey, a bit like a scavenger hunt, and discover resources on their own. The student might find others interested in Hip-Hop dance and form a group or "crew" and exchange ideas, choreography, music and dance together.

Access to technology opened doors where there were none, and fostered the student's self-discovered passion for dance. In 2011, while leading a Hip-Hop workshop at the University of South Carolina, I met a high school dance crew of nine boys who had met online, learned dances from YouTube, and practiced in their bedrooms and basements. They had acquired and refined their skills through YouTube, and up until that day none of the boys had ever entered a dance studio. The next steps for training in Hip-Hop dance were to find a community of dancers and teachers in studios to help them answer questions about dance training, alignment and kinesiology, creative practice, performance, and choreography. Online instruction, whether video based, synchronous, and/or asynchronous, brought worlds together linking common interest and giving these young men the opportunity to dance.

Online instruction and interactive technologies for dance seem to harmonize well with current dance standards, and policy about educational practice. Online instruction presents both advantages and challenges to the teaching and learning of dance. Pedagogy that supports both students formation of community and fluidly, and uses new media to promote metacognition is the most successful combination. When technology pedagogy is carefully considered students learn how to differentiate the value of forming, analyzing and creating dance knowledge as well as how it differs from the sharing ideas and making friends.

When teaching at a distance, educators must be more attentive to student needs, provide increased communication, feedback, and engaging personally meaningful activities. Simple response posting is meaningless and ineffective. For dance educators thoughtful integration of technology requires first-rate tools, outstanding pedagogy and training, done preferably during their preservice programs of study. Teachers working in the schools encounter various challenges including school and district limitations such as antiquated media sharing policy or no new media policy, firewalls, and limited to non-existent hardware and software for dance. Schools districts should provide financial incentives for teachers to invest their time to learn new media technology systems and make creating integrated technology curricula worthwhile. University faculty teaching online courses may lose interest in teaching and developing online classes if they do not receive adequate professional support and recognition for their work in promotion and tenure review.

I recognize that the depth of communication and quality of work from my online students could not be achieved in a traditional classroom. Indeed many students prefer online learning to traditional classroom

instruction, because they have the time to formulate a thoughtful response to discussion, peer feedback, and collaborative projects. Within online, text-based and social media-based interfaces, students control the pace of the conversation and are more confident in expressing their ideas and opinions. On the other hand, some students prefer face-to-face, voice-to-voice communication using interactive videoconferencing tools, such as Google talk, Skype, and Facetime. Balancing interactive tools with dance content, course objectives and goals, and assessment methods is vital.

Online and technology supported instruction provides an exciting approach to dance training. Practical considerations when determining the best practice for technology pedagogy for dance include:

1. *Dance content delivery*: Students demonstrate comprehension and proficiency in dance content knowledge using multiple methods. Methods may take the form of layered interactive multimedia using Prezi or Storify, analyzing technical movement or choreographic works using Acclaim video feedback software, creating websites for program notes and evaluations, or producing video dances drawing connections to dance history and culture. Students may reach across the world to study dance technique from master teachers using videoconferencing, or producing live interactive video in performances, or they may use tweeted data as choreographic evaluation and self-reflection. VC-based instruction can support not only the technical skill development and creative instruction but also decrease students' sense of isolation. No matter what form the technology takes, the field of dance content delivery is evolving; teachers once restricted by time and place now reach students around the globe.
2. *Engaging personally meaningful connections*: When used intentionally technology extends, expands and deepens student's experiences in dance. Technology integration takes thoughtful curricular planning, troubleshooting and time spent in the process of creation. Easily graded, word count response to peer assignments, often used in online instruction, require nominal examination and discernment. Best practice pedagogy focuses on creating challenging and engaging assignments when the technologies used match the pedagogical approach. With the wide variety of interactive tools and approaches available to teachers, the challenge is finding the correct approach that has the most meaningful learning outcome. Student-controlled handheld and cell-phone applications provide multiple modes of

interactive and layered representation of learning. When thoughtfully considered, the technology is able to help students ask powerful, complex “messy” questions, encourage personal connection, and wrestle with their opinions and ideas about dance.

3. *Interactivity and distance communities*: Instruction does not need to be face-to-face to express artistic ideas and be meaningful for students. Using online and VC-based instruction students can fluidly and naturally share their knowledge and ideas, and increase communication between teaching and learning communities, which break down the barriers of inequity and open up access to resources, teachers, and collaborative training in dance. Online dance degree programs and PD programs are reaching interested teachers and increasing access to and the quality of dance education in the schools. Online instruction is reaching a new audience of dancers and breaking down cultural and disciplinary barriers, which is bringing together students from different professional experiences, backgrounds, and teaching experiences to engage one another and advance the field of dance.

The rapid growth of online university degree programs, PD programs, and MOOCs make the case for universities and state education leaders’ development of systematic approaches to online instruction and longitudinal assessment procedures to determine the effectiveness of online instruction. There is uncertainty about the future of online instruction in higher education as a result of challenges posed in this article including the impact of for-profit online universities, free and low cost MOOCs, and a primary reliance of adjunct faculty teaching online classes. However, technology and social media allow individuals to greatly expand their social networks and build communities of learning where they share success stories and issues, offer feedback, mentorship, and guidance. An interactive community of support is ideal for preservice and novice teachers as well as teachers reentering the workforce. MOOCs attract thousands of students from all corners of the world to study and perform site-specific dance technology, and is creating communities of collaborators in the arts.

Online PD programs help build, develop, and sustain expertise in the field of dance. Programs like OPDI have the potential to transform dance educators, and to bring educators together to construct and transfer learning. Online and digital technology is changing the lives of vast numbers of dancers, like my friends, the South Carolina Hip-Hop crew. Technology is producing independent self-directed journeys of learning, granting

access to teachers, mentors and friends, and furthering students’ commitment to training in dance.

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