Sport Education in the VUCA World

Patricia I. Hogan, Ph.D.[1], James Santomier Jr., Ph.D.[2] & Brian Myers, M.Ed.[3]

Abstract

Exponential advances in information technology have created a world characterized by hyper-connectedness and accelerated change, resulting in **v**olatility, **u**ncertainty, **c**omplexity and **a**mbiguity (VUCA).As such, creativity, tech-savviness, effective thinking, effective problem solving, and adaptability have become desired traits for most careers (Bennett & Lemoine, 2016; Prensky, 2014a). Digital technologies integrated into sports management and physical education necessitates new technology-focused pedagogies to better-fit students for the demands of the VUCA World and its innovation economy. Active learning models involving meaningful activities and capitalizing on learning technologies have demonstrated better learning than has the traditional lecture (Bonwell & Eison, 1991; Freeman et al, 2014; Michael, 2006; Wiemer, 2015). Indeed, both idea innovation and technology innovation in sports management and physical education programs are essential since the traditional pedagogical model prepares students for a bygone world (Prensky, 2014a, 2014b, 2015; Wiley, 2010). In this paper, dispositions and skills required for the VUCA World are identified, active learning models and technologies designed to instill those dispositions and skills are discussed, and suggestions for innovative ways educators can move beyond the traditional lecture and learning management system (LMS) to foster requisite dispositions and skills in students are identified.

Keywords: Sport Management Education, Physical Education, VUCA World, Project Based Learning, Pedagogy, Digigogy, LMS

[1] Professor, School of Health & Human Performance, Coordinator, Management of Health & Fitness, Northern Michigan University, Marquette, MI 49855, Tel: +1 906.227.1138, Email: phogan@nmu.edu
[2] Professor, Department of Marketing and Sport Management, Jack Welch College of Business, Sacred Heart University, Fairfield, CT 06825 , Tel: +1 203.371.7849, Email: santomierj@sacredheart.edu
[3] Assistant Professor, School of Health & Human Performance, Coordinator, Physical Education, Northern Michigan University, Marquette, MI 49855, Tel: +1 906.227.1133, Email: bmyers@nmu.edu

1. Introduction

VUCA is an acronym referring to the **v**olatility, **u**ncertainty, **c**omplexity, and **a**mbiguity present in navigating the professional and personal landscapes of today's rapidly changing, hyper-connected world, a world requiring intellectual agility and constant adaptations (Delms, 2010; Prensky 2014a, 2015). Advances in disruptive technology have ushered in a flattened, globally connected world and are largely responsible for fomenting the VUCA World and its innovation economy, an economy putting a premium on creativity, flexibility, passion, initiative, entrepreneurial mindsets, glocal (i.e., local plus global) attention, networking, leadership, and innovative ways to solve problems, address issues, and find opportunity (Bennett & Lemoine, 2016; Chattopadhyay, 2014; Friedman & Mandelbaum, 2011; Prensky 2014a, 2014b; Riordan, 2013; Wiley, 2010). Table 1 (Chattopadhyay, 2014) displays the tectonic shifts in foundation concepts for the workplace and education in the VUCA World (present/future), including the shifts in valued traits or dispositions for the innovation economy. Sports management and physical educators may want to consider modifying their pedagogical behaviors accordingly to provide more enhanced, relevant, and effective learning environments.

Table 1: Paradigm Shift in Foundation Concepts for Work and Education in the VUCA World Innovation Economy (Chattopadhyay, 2014)

Past	Present/Future
Information scarcity	Information abundance
Stable and predictable work	Changing and unknown work
Valued traits: intellect, diligence, obedience	Valued traits: initiative, creativity, passion
Work tied to location	Work freed of location: anytime, anywhere
First learn, then work	Work is learning; learning is work
Individual, siloed workers & organizations	Ubiquitously connected workers & organizations

According to Kessler (2012) "there is a huge disconnect between what colleges are teaching and what companies want in future hires". Mark Cuban, owner of the Dallas Mavericks, elaborates: "once degreed, the majority of college grads are ill-equipped to handle the current marketplace – they can't find work in a 21st Century economy that's imploding on all sides" (in Slavo, 2014, p.1).

Prensky (2014a, p.1) claims, "education is far less about 'learning subjects'… and far more about people becoming: becoming good, capable, flexible people who can maximize their talents and reach their goals."To better prepare sport management and physical education students for an evolving industry in the VUCA World, educators should be innovating in ways that promote building the desired student dispositions and skills needed for contemporary and future societies.

The purposes of the authors are to: 1) identify needed student and educator dispositions and skills for the VUCA World; 2) identify and discuss new technology-oriented pedagogical models that develop these dispositions and skills; and 3) provide "how-to" suggestions for and examples of innovation in sports management and physical education consistent with developing needed dispositions, skills, and learning environments for the VUCA World.

2. Dispositions and Skills Required for the VUCA World and Innovation Economy

Students and educators are in need of developing new dispositions and skills that represent a good fit with the reality of the demands of the VUCA World (Bennett & Lemoine, 2016; Prensky, 2014a). In addition, educators should possess and model dispositions and skills related to developing effective, innovative learning environments(Bennett & Lemoine, 2016; Chattopadhyay, 2014; Friedman & Mandelbaum, 2011; Prensky 2014a, 2014b; Riordan, 2013; Wiley, 2010). The following review of the literature identifies the key dispositions and skills required of a) students and b) educators.

2.1VUCA World (and Innovation Economy) Dispositions and Skills for Students

Riordan (2013, p. 1) claims innovative changes in education are required and identifies the dispositions/traits students should develop for the VUCA World and its innovation economy: "For the innovation economy, dispositions come into play: readiness to collaborate, attention to multiple perspectives, initiative, persistence, and curiosity. While the content of any learning experience is important, the *particular* content is irrelevant.

What really matters is how students react to it, shape it, or apply it. The purpose of learning in this century is not simply to recite inert knowledge, but, rather, to transform it."

Bates (2014) and Davies et al (2011) identified the dispositions and skills required for the VUCA World as the following: communications skills, self-management, the ability to learn independently and in trans-disciplinary ways, ethics and responsibility, cross-cultural competency, teamwork in real and virtual ways, social intelligence, flexibility, thinking skills (critical thinking, problem-solving, novel and adaptive thinking, originality, design thinking, integrative thinking, strategizing, sense-making, and computational thinking),digital skills including new media literacy, and cognitive load management and knowledge management skills. Geser (2012, p.39) identified the following as essential student skills related to finding, vetting, and transforming data and information irrespective of content area:

- Ability to search, collect and process (create, organize, and distinguish relevant from irrelevant, subjective from objective, real from virtual) electronic information, data and concepts and to use them in a systematic way;

- Ability to use appropriate aids (presentations, graphs/info graphs, charts, maps) to produce, present and understand complex information;

- Ability to access and search a website and to use Internet-based services such as discussion forum and e-mail; and

- Ability to use Information and Communication Technology (ICT) to support critical thinking and creativity/innovation in different contexts (home, work).

Many of the aforementioned dispositions and skills are identified as desired for sports management (Clapp, 2015) or physical education job positions in such documents as the Occupational Outlook Handbook (2014-15 Edition), Salary.com (January, 2014),and other documents available online. For example, "sports management requires a shrewd, pragmatic disposition, good decision-making skills and the ability to adapt quickly to changing conditions… as well as the ability to network" (Sport Management Career & Degree Guide, 2012-2016, p.1).

Specific demands for various positions in sports management can be found in The Complete Guide to Careers in Sports Management (Sports-Management-Degrees.com, 2014).Physical educators should have stable dispositions to motivate their students, adaptability to deal effectively with disruptive tactics of students, and effective routines: "the best physical education teachers are natural managers who lead by example. They are physically fit, talented and highly motivated — with a can-do disposition that prompts students to participate and perform above their own expectation levels" (Gill, 2016, p.1).

With the interactive Web and Open Educational Resources (OER), abundant, easily accessible information changes the role of educators from distributors of information to providers of context and designers of rich learning environments (Educause, 2014). The learning management system (LMS) employed by most universities however, is used by most professors to merely transmit content: "Although the vast majority of faculty use the LMS to conduct or support their teaching activities (85%), the ways in which they typically use the LMS are less about interaction or engagement activities and more about sharing content with students" (Educause, 2014, p.10).

Educators should support and nurture students as their students "collect, evaluate, and process information into unique learning products" (McCusker, 2014, p.1). And students should move from passive recipients of information to researchers, curators, collaborators and creators or innovators (McCusker, 2014) – those who transform the information to competently and creatively address issues, close gaps, solve problems or find opportunity. Peer and formative evaluation also play much larger roles in new education (McCusker, 2014). Teachermatch (2014) indicates the future belongs to students who are lucky enough to be educated in environments that:

- Place emphasis on building the machines & improved processes of the future through a process of trial/error and creativity requiring human flexibility.

- Encourage entrepreneurship and practice using the multitudes of tools that make it easy to create a new startup with a big idea/innovation that fills a need in the modern economy.

- Build cognitive dexterity, or the ability to adapt to unique and complicated problems as they arise.

- Offer opportunities to specialize in more emotive occupations that are not yet suited to machines.

There needs to be innovation in teaching and learning and a refocus towards preparing students for the VUCA World. Therefore, educators of any content area should be aware of: 1) the dispositions and skill sets required of students 2) the kind of learning environment most likely to develop them, and 3) how to design lessons/learning to develop in students the relevant dispositions and skill sets. As such, educators also need new dispositions and skill sets, particularly skill sets related to pedagogical and technological knowledge versus just content area (e.g., sport sciences or sport business, physical education) knowledge.

2.2 VUCA World and Innovation Economy Dispositions and Skills for Educators

Building on Shulman's (1986) Pedagogical Content Knowledge (PCK) model, which urged education programs to combine two knowledge fields (i.e., content and pedagogy knowledge versus just the traditional content knowledge), Mishra and Koehler (2006) proposed that technological knowledge also be included in educator education programs. This revised model (Koehler & Mishra, 2009) accounts for a number of knowledge areas for contemporary societies: Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK) as well as Technological Pedagogical Knowledge, Technological Content Knowledge and Pedagogical Content Knowledge. [Please see http://tpack.org/ for a description of each knowledge section.]

However, in the VUCA World and innovation economy, knowledge of the changing nature of the environment and its demands for new foci or skills also is important for educators, as is knowledge related to how to encourage creativity and innovation (Teachermatch, 2014). Similarly, some refer to this as a need for educators and students to develop an entrepreneurial mindset (Kirby, 2004).

Kirby (2004, p. 510) argues that the traditional, teacher-focused and discipline content-focused business education "stultifies rather than develops the requisite attributes and skills to produce entrepreneurs" capable of engaging enterprise thinking, and calls for changes in both the content and process of learning. He recommends a shift in mental models from an emphasis on "educating 'about' entrepreneurship to educating 'for' it," and states that "entrepreneurship should not be equated with new venture creation or small business management, but with creativity and change"(p. 510). Similarly, those who teach pre-service physical education students may want to emphasize the concept of the edupreneur, teaching to instill creativity and innovation:"In order to keep creative, courageous, free-thinking, and competent educators within the system there must be an orderly process that allows these professionals to 'do their thing' to make the system better — thus the EDUPRENEUR. We define an edupreneur as, 'a person within the public schools who takes hands on responsibility in creating and developing a program, product, service, and/or technology for the enhancement of learning consistent with the stated goals of and supported by that organization"(Lavaroni & Leisey, n.d., p.1).

The notion of educating for entrepreneurship is compatible with Bouchard's (2009, p.13) contention that "today's workplace is characterized by a growing expectation that employees will learn on their own what they need to learn in order to meet productivity goals," -- so a university education should promote an entrepreneurial skill set. Kirby's (2004) ideas also are consistent with Ratten's (2010, p. 557) concept of developing and teaching for a theory of sports-based entrepreneurship in sport business education. Ratten's theory incorporates different categories of entrepreneurship (social, technological, and international) and can be used as a theoretical framework for pedagogy.

Carson (in Di Meglio, 2011, p.1) states "business schools need to show the relevance of theory to solving problems in the real world context." However, Martin (2004, 2005, 2009, & 2010) cautions that even contemporary theories may be suspect in light of such a rapidly changing world. He suggests that theories and models should be scrutinized to evaluate their goodness-of-fit with novel situations or problems, and that students should be empowered to engage integrative thinking - to play with and recombine models or develop new ones to better solve non-routine problems or to create opportunity.

Martin (2009) suggests including a new mental model -- adductive thinking (i.e., thinking concerning "what might be" or "what could be") in business education as an adaptive effort for the fast-paced, constantly changing world. According to Martin (2009, p.1), new ideas arise when a thinker observes data that doesn't fit with an existing model and seeks to make sense of this fact by making an "inference to the best explanation." The true first step of reasoning, therefore, claims Martin (2009, p.1), is not observation, but wondering, not to declare a conclusion to be true or false, but "to posit what could possibly be true… to infer possible new worlds." What could be?

In order to adapt to the new demands of the environment, Martin (2004, 2009) recommended that business and business education change culture away from that of traditional firms or universities to that of design shops and "design thinking" schools. In such enterprises participants think more like designers or architects (where collaboration, risk taking, a focus on wicked problems and a mindset that views constraints as exciting challenges from the conceptual model) than like engineers. Such a shift in mental models is imperative since new solutions are required for our increasingly complex problems.

Sport educators, in addition to being cognizant of new thinking models (i.e., adductive reasoning, integrative thinking, entrepreneurial thinking, and design thinking), should know, and understand the interaction among sports management or physical education content (subject specific and skill set specific), technology, and pedagogy and how that interaction can be used to appropriately develop students in nurturing learning environments. Most sports management and physical educators have mastered their respective content (e.g., sport marketing, sport psychology, sport sociology, physical education). However, knowledge of pedagogy is rarely included in sports management or physical education curricula to ensure that these future professionals can engage active learning with their students. Therefore, many educators may not have pedagogical knowledge or knowledge of how technology can interact with pedagogical content to promote students developing necessary dispositions and skills for the VUCA World (Hogan et al, 2015a). Tables 2 (Chattopadhyay, 2014) and 3 (Churches, 2011) present new paradigms of foundation concepts for educators relative to designing educational experiences for students in the VUCA World and innovation economy and juxtapose these concepts with those from the past.

The present/future or 21st Century components move to learner-centered vs. educator-centered qualities and move from traditional behaviorist (educator transmitting information to passive recipient students) to constructivist (student actively constructing meaning) and connectives (student actively learning through networks) pedagogical models (see Table 4).

Table 2: The New Paradigm for Designing Educational Experiences (Chattopadhyay, 2014)

Past	Present/Future
Designing courses	Designing the learning experience
Creating formal training programs	Designing the spectrum – formal to informal
Focused on learning objectives	Focused on performance & business outcomes
Content gathering & chunking	Content aggregation and curation
Managing the Learning Management System (LMS)	Facilitating communities and Building personal learning networks (PLNs)

In Table 3 Churches (2011) provides a framework (for the needed change in education) that addresses a number of items of concern such as learning focus, learning relevance, educator approach, and pedagogical methods. Table 3 reflects a call for innovative approaches to teaching and learning, especially approaches that center on active learning models to empower students to learn-to-learn collaboratively and through technology, not just with technology.

Table 3: Items of Concern in the Paradigm Shift from the 20th to the 21st Century (Churches, 2011) augmented by authors to accommodate concepts from Table 4

Item of Concern	Twentieth Century Paradigm	Twenty-first Century Paradigm[VUCA World and Innovation Economy]
Interaction	Mainly Individual-Some Collaboration	Mainly Networked [Connectivist]
Assessment	Primarily Summative	Primarily Formative
Centricity	Teacher-centric [Behaviorist]	Student-centric [Constructivist]
Learning Focus	Content (some process) [Behaviorist or Instructivist]	Predominantly Process (content embedded) [Constructivist]
Teaching Approach	Just in case learning.	Just in time learning.
Learning Relevance	Low relevance, low currency, lack of context.	High relevance, topical, high context
Application Model (Daggett)	Low: Content often relevant only to current unit of course.	Applicable across areas of learning
Thinking Skills	Low Order (remember, understand, apply)	Higher Order (analyze, synthesize, create)
Technology Use	Literacy(learning Augmentative (learning with technology)	Transformative (learning through technology) [Networked; Connectivist]
Teaching Methods	Stand & Deliver; [Instructor Centered]	Project & Problem Based: [Learning Centered]
Student Involvement	Student given content and told process. [Behaviorist or Instructivist]	Students construct content; develop and evaluate processes.[Constructivist]
Feedback	Limited; usually just from teacher [Traditional Evaluation; objective test]	Multiple sources: Self, peer, teacher, and mentor. [Authentic Evaluation]

Active learning models (such as project based learning) that capitalize on learning technologies have been shown to enhance learning versus traditional lecture (Freeman et al, 2014; Michael, 2006; Wiemer, 2015). Active learning also better helps students identify and apply information to address real world problems.

Active learning promotes higher order thinking skills in students (i.e., analyzing, synthesizing, evaluating, and creating) and involves students in problem solving (Buck Institute for Education, n.d.). Project based learning (PBL) is a form of active learning (Bonwell and Eison, 1991; U of Michigan, 2016).It is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge (Buck Institute for Education, n.d.). PBL involves students' choice and voice around a meaningful problem to solve or a question to answer, at the appropriate level of challenge. Students also make their work public (Buck Institute for Education, n.d). Therefore, PBL is more in line with developing VUCA skills and dispositions in students than is traditional education. Project Based Learning can be used in constructivist or connectivist learning theory models (see Table 4).

Given new information technology, and given our ability to interact with the Web and to create learning networks on the Web (via social media), a new learning theory or pedagogical model, connectivism, was proposed by Siemens (2004, 2005). Connectivism, based on network theory, "is the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks" (Downes, 2012, p. 9). Personalized learning networks become important parts of personalized learning or knowledge management systems for students in a connectivist-oriented pedagogy. Table 4 (Ireland, 2007) identifies the tenets of the major learning theories and includes this newest theory, connectivism.

Table 4: Connectivism as a Learning Theory (Ireland, 2007)

Questions	Behaviorism	Cognitivism	Constructivism	Connectivism
How does learning occur?	Black box - observable behavior main focus	Structured, computational	Social, meaning created by each learner (personal)	Distributed within a network, social, technologically enhanced, recognizing and interpreting patterns
What factors influence learning?	Nature of reward, punishment, stimuli	Existing schema, previous experiences	Engagement, participation, social, cultural	Diversity of network
What is the role of memory?	Memory is hardwiring of repeated experiences - where reward and punishment are most influential	Encoding, storage, retrieval	Prior knowledge remixed to current context	Adaptive patterns, representative of current state, existing in networks
How does transfer occur?	Stimulus, response	Duplicating knowledge constructs of "knower"	Socialization	Connecting to (adding nodes)
What types of learning are best explained by this theory?	Task-based learning	Reasoning, clear objectives, problem solving	Social, vague ("ill defined")	Complex learning, rapid changing core, diverse knowledge sources

The learning theories presented in Table 4 are not specific to a discipline or content area, but represent pedagogies that can be designed to interact with technology and any content knowledge areas, including sports management and physical education. Educators can function as edupreneurs –education entrepreneurs, to transform the sector by engaging innovative ways to promote VUCA World and innovation economy dispositions and skill development in students.

Digigogy is a pedagogy at the intersection of content (e.g., sport management, physical education), new pedagogical models (e.g., constructivism, connectivism), active learning/learner-centered approaches (e.g., Project Based Learning), and new technologies (e.g., Google+, Wix, Weebly, QR Code) (Hogan et al, 2015a; Fisher, 2013).There has been a shift from an analogue teaching world to a digital (digigocial) one. Table 5 (Wiley, 2010) compares the analogue to the digital education worlds.

Table 5: Analogue vs. Digital Education (Adapted from Wiley, 2010)

Old World and TraditionalEducation	New World and Needed Education
Analogue	Digital
Tethered	Mobile
Isolated	Networked [Connected-Connectivism]
Student is Consumer	Student is [Prosumer] Co-Creating
Closed	Open
Local	Glocal (local plus global)

In order to promote learner-centeredness and needed dispositions and skills including entrepreneurial thinking in students, constructivism and connectivism are the more appropriate learning models to combine with the digital world. Constructivism, although it traditionally focuses on individual learning only (as does behaviorism and cognitivism), may be employed to develop VUCA World skills and dispositions, especially if one employs social constructivism to allow students to learn collaboratively to identify and solve issues/problems in sport business or physical education in learner-centered ways. However, it appears that connectivism holds the most promise as it accommodates for the power of learning through networks and for adaptive learning in a rapidly changing environment.

Sport and physical educators should understand the pedagogical models concerning (social) constructivism and connectivism and their relationship to digigogy in order to have relevant frameworks for quality and innovation relative to fitting students to VUCA World demands. In addition, given the new technologies available, student behavior is changing, and educators should plan contexts for courses and learning sessions accordingly. According to Chattopadhyay (2014, p. 1) emerging student behaviors of which educators should be aware include:

- A preference to view a short 2-minute video (over reading a 2-page PDF) to know about something.

- A predilection for images over text - with a smartphone at their fingertips, today's users prefer to share experiences via real-time video and images rather than long descriptive texts. Apps such as Whats App or Slack make it seamless to share.

- An inclination towards accessing one's network for answers to queries over taking a formal course

- A just-in-time, "let's get the problem solved attitude" over "let's learn in case we need it"

- An expectation of finding courses, programs and access to their learning communities on their personal devices

Also, students have an ability and preference to interact via Web 2.0 which morphs students from consumers of content to prosumers (simultaneous producers and consumers) of content (Santomier & Hogan, 2011; Hogan et al, 2013). This is a powerful contributor to learning and to collaborative problem solving.

In addition to modifying their approaches and pedagogies, educators should consider transforming assignments for students. Assignments should go beyond traditional assessment (TA) and its objective testing to authentic assessment (AA). Authentic assessment is "a form of assessment in which students is asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills" (Mueller, 2014, p. 1). In AA students tackle "engaging and worthy problems or questions of importance, and … must use knowledge to fashion performances effectively and creatively. The tasks are either replicas of or analogous to the kinds of problems faced by … consumers or professionals in the field" (Wiggins in Mueller, 2014). Table 6 (Mueller, 2016) portrays the differences between traditional and authentic assessment as opposite ends of a continuum.

Table 6: From Traditional to Authentic Assessment (Mueller, 2016)

Traditional -- Authentic

Selecting a Response ------------------------------------ Performing a Task
Contrived -- Real-life
Recall/Recognition ------------------------------- Construction/Application
Teacher-structured -- Student-structured
Indirect Evidence -- Direct Evidence

In addition, AA typically involves rubrics and much formative assessment (by peers, professionals, educators) before summative assessment occurs. Feedback is constantly given to students or student groups to inform them as to how well they are "forming" before a grade is given. Students are given a chance to improve, to fit their product better to the superior performance standards outlined in the rubric (Mueller, 2014, 2016). [The Buck Institute of Education has an excellent generic design rubric for project evaluation http://www.bie.org/object/document/project_design_rubric.] Traditional Assessment (TA), however, is typically all summative (graded with little feedback or opportunity improve).

3. Developing Requisite Dispositions and Skill Sets Using Authentic Assessment (AA) and New Educational Models (Digigogy)

To develop requisite dispositions and skill sets, Reeves et al (2002) recommend Authentic Assessment (AA) – that is, having meaningful assignments. The 10 criteria Reeves et al (2002) recommend to consider in the AA projects selected to promote a learning-centered approach for students are (p. 562):

- Authentic activities have real-world relevance: Activities match as nearly as possible the real-world tasks of professionals in practice rather than decontextualized or classroom-based tasks.

- Authentic activities are ill defined, requiring students to define the tasks and sub-tasks needed to complete the activity.

Problems inherent in the activities are ill defined and open to multiple interpretations rather than easily solved by the application of existing algorithms. Learners must identify their own unique tasks and sub-tasks in order to complete the major task.

- Authentic activities comprise complex tasks to be investigated by students over a sustained period of time. Activities are completed in days, weeks and months rather than minutes or hours. They require significant investment of time and intellectual resources.

- Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources. The task affords learners the opportunity to examine the problem from a variety of theoretical and practical perspectives, rather than allowing a single perspective that learners must imitate to be successful. The use of a variety of resources rather than a limited number of preselected references requires students to detect relevant from irrelevant information.

- Authentic activities provide the opportunity to collaborate. Collaboration is integral to the task, both within the course and within the real world, rather than achievable by an individual learner.

- Authentic activities provide the opportunity to reflect. Activities need to enable learners to make choices and reflect on their learning both individually and socially.

- Authentic activities can be integrated and applied across different subject areas and lead beyond domain-specific outcomes. Activities encourage interdisciplinary perspectives and enable diverse roles and expertise rather than a single well-defined field or domain.

- Authentic activities are seamlessly integrated with assessment. Assessment of activities is seamlessly integrated with the major task in a manner that reflects real world assessment, rather than separate artificial assessment removed from the nature of the task.

- Authentic activities create polished products valuable in their own right rather than as preparation for something else. Activities culminate in the creation of a whole product rather than an exercise or sub-step in preparation for something else.

- Authentic activities allow competing solutions and diversity of outcome. Activities allow a range and diversity of outcomes open to multiple solutions of an original nature, rather than a single correct response obtained by the application of rules and procedures.

Sport and physical educators can engage digogogy (new learning theories including constructivism and connectives, learning-centered models such as project based learning, and use of new information technology) with authentic assessment (AA) and its rubrics, to provide contexts for students to engage sport management-related and physical education-related content to develop student dispositions and skills needed for the VUCA World and innovation economy. The following project based learning examples represent (social) constructivist and connectives learning theory approaches using new social media technologies (Web, YouTube, Wix, Weebly, Wiki, Google Plus, Twitter, Square space, Info graphs, cMOOCs, mendeley, Quick Response or QR Codes, etc.**)**. These examples are designed to leverage the interaction among content, technology, and pedagogy to place demands on students to develop desired dispositions and skills through authentic assessment assignments.

3.1 "How-to" Ideas and Examples for Pedagogical Innovation using Information Technology with Sport Business and Physical Education Content

Innovation in education requires more than just changing a lesson or two; it involves changing a mindset (Bates, 2014); i.e., changing to the new foundation concepts/models identified in the Tables above and giving oneself permission to function like an edupreneur – to be creative. It also entails trusting students and providing environments that empower them. The VUCA World necessitates engagement in much trial and error and feedback from all stakeholders. New models of education and assessment (see above) promote learning sport and physical education content in context, in real-world situations that require students to actively work to understand the context and to identify and address issues, problems or opportunities (entrepreneurial mindset).

Within the context of the sport or education profession and technology is replete in the context of sport business and education. Such learning (along with its authentic assessment) allows students to become active learners and to engage collaborating, networking, research, digital media(including social media), innovation/creativity, and thinking dispositions and strategies to identify and address sport management and physical education related issues, problems and opportunities. Students can then publish and display their work in portfolios and/or publish their work on the Web, or go on to invent new processes and technologies (i.e., become entrepreneurs or edupreneurs). The following examples represent suggestions (with supporting materials) sports management and physical educators could use to design learning experiences that engage new learning theories (constructivism and connectives), project based learning, information technology (e.g., Web, YouTube, Wix, Weebly, Wiki, Google Plus, Twitter, Square space, Info graphs, cMOOCs, mendeley, QR Codes, etc.), and AA to promote the development of needed dispositions/skills in students. These suggestions involve:

1) Moving beyond Learning Management Systems and traditional texts to the open Web and students co-creating the class and texts;
2) Using MOOCs to augment course content, promote entrepreneurial thinking, and to personalize instruction;
3) Using online sport-related databases to identify issues, problems and/or opportunities and present student work in innovative ways;
4) Engaging the outside local and global environment to develop professional and cultural competence;
5) Developing a meta-team of students responsible for capturing and telling the story of the class in high-tech ways;
6) Educators considering welcoming students as co-learners and co-creators of course content and trusting them to do excellent work; and
 7) Having students capture their project based learning work using QR codes.

3.2   Educators should consider moving beyond the Learning Management System (LMS) and traditional texts as the foundation of course content. Using open educational resources in lieu of (or in addition to) LMS and texts are steps to promoting open educational practices, engaging real world problems, and promoting desired VUCA dispositions and skills.

Some educators may feel as if they are technologically up-to-date if they operate their sport management or physical education course from a Learning Management System (LMS). A LMS is a software application for the administration, documentation, tracking, reporting, and delivery of electronic educational technology (e.g., Course Management System or CMS) (Ellis, 2009). Examples of LMS are Moodle and Blackboard. LMS are ubiquitous in educational settings and likely to be used by many sports management and physical education students and professionals.

However, even though such systems can be thought of as technologically advanced (because they involve educators and students using the Web for content delivery –where content is usually based on course text chapters), Mott and Wiley (2009, p.3) contend that the cook-book approach of LMS/CMS "reinforces the status quo and hinders substantial teaching and learning innovation in higher education, because learning environments in colleges and universities are constrained today by learning management systems that were not designed for broad integration, flexibility, or personalization."

LMS/CMS limit by "imposing artificial time limits on learner access to course content and to other learners, privileging the role of the instructor at the expense of the learner, and by limiting the power of the network effect in the learning process."(Mott and Wiley, 2009, p. 3). Brown, Dehoney and Millichap (2015 p.1) argue that "learning environments in colleges and universities are constrained today by learning management systems that were not designed for broad integration, flexibility, or personalization."

In traditional LMS/CMS, students are typically passive recipients of information that is now online (Educause, 2014; Feldstein, 2016). In other words, students remain in the traditional education model of educators transmitting information (i.e., behaviorist or instructivist pedagogical model) – it is just done using more advanced technology than the traditional chalk boards or overhead projectors. Students and educators are simply doing old things in new ways in a LMS/CMS, and students are not any more active in their learning (Feldstein, 2016; Wiley, 2010). For the VUCA World and innovation economy, students and educators should do new things in new ways (Wiley, 2010).

In addition, beyond the costs of traditional texts, texts typically do not force students to find, evaluate, and apply information to address issues, solve problems, create opportunity, or produce new artifacts. Texts typically provide material for students and rarely request that students actively engage to identify and address learning needs, or high fidelity issues in a field, or to look for entrepreneurial opportunity in a field. In addition, most, if not all, the information available in texts is available on the Web, or updated versions are available on the Web.

Web 2.0 tools and Open Educational Resources (OER) may be preferable to LMS/CMS relative to: promoting student access to up-to-date materials and varied perspectives, engaging student learning through networking, promoting peer evaluation, and promoting student and educator innovation (University Dublin, n.d.). According to Geser (2012, p. 37) "priority must be given to open educational practices that involve students in active, constructive engagement with content, tools and services in the learning process, and that promote learners' self-management, creativity and working in teams."

Educators promoting students' engaging the power of actual and virtual collaboration and networking to identify and address real problems or real opportunities is essential for preparing sport and physical education students for the VUCA World and innovation economy. Such practices would place demands on students in the directions of developing desired dispositions and skills.

The following is an example of how to use the open Web in efforts to promote requisite student dispositions and skills (Hogan et al, 2015b). The example uses sport content interacted with constructivist and connectivist learning theories, technology, and active learning (project based learning). " Project-based learning offers students real-world opportunities to research issues, think critically, gain new perspectives, solve problems, and develop written and oral communication skills all within the framework of a team environment and guided by engaged and involved faculty" (Center for Project-Based Learning, 2016, p.1). Students used a Weebly (http://www.weebly.com/) to house their project focused on the role of sport in addressing international health issues. Wix or Foursquare or other website building platforms would work as well.

3.3 Weebly and Open Web to Explore How Sport can be used to Address International Health Issues

The following example represents moving beyond the LMS to use the open Web to have students work in small teams to identify a problem, research it, identify ways to solve the problem, and curate the information using technology (Weebly or Wix). As part of an International Health course, for their major project a group of mostly undergraduate physical education students elected to research the role of sport in promoting life skills in children in Rwanda. They explored the role sport interventions related to addressing problems for children in Rwanda. Sport can act as a unifying agent (aftermath of Rwandan conflict and genocide) and can be used to develop life skills. Students analyzed the interventions and curated the information on a Weebly (http://helpingthroughsport.weebly.com/health-interventions.html).This course was a learner-centered, hybrid course where students entered into small teams to create curated, web-based, multi-media websites based on a health issue of their choice. In this authentic assessment project, students, around their interest areas, identified, researched, creatively curated, presented, and evaluated a real-world problem of their interest and used social media to curate and present data concerning the problem.

In addition to Weebly (see http://www.weebly.com/) or Wix (see http://www.wix.com), students today could chose Squarespace (see http://www.squarespace.com/#stlucia, a content management system composed of a website builder, blogging platform and hosting service) to create and maintain websites and blogs. Mendeley (see http://www.mendeley.com/) could also be used as a free reference manager and academic social network where students create their own fully-searchable library in seconds, can cite as they write, and read and annotate PDFs on any device. And Google+ (see https://plus.google.com/) would be a good social networking site for virtual collaboration of the students, as would Facebook (see www.facebook.com).

Bates' (2014) (see http://opentextbc.ca/teachinginadigitalage/) online text "Teaching in a digital age: Open textbook project" is recommended for additional ideas on how to teach in the digital age. He (2016) also has a web page on online learning for beginners many may find useful.

3.4   Educators should consider using MOOCS to augment their courses, promote entrepreneurial thinking, promote project based learning, and to personalize instruction.

MOOCS, or Massive Open Online Courses, use technology to promote content. Depending on the pedagogical model, however, they may not be relevant for promoting and developing VUCA World and innovation economy dispositions and skills. There are many sport-related MOOCS (see https://www.mooc-list.com/tags/sports and http://www.coursetalk.com/courses/sports-and-fitness#q=&page=1) including an IOC Athlete MOOC (see http://onlinecourse.olympic.org/).

All of these MOOCS interact sport content with technology. However, most of them, if not all, are xMOOCs vs. cMOOCs. xMOOCS have a traditional content distribution pedagogical model (behaviorist) not designed to promote and develop VUCA World and innovation economy dispositions and skill sets. If we use new technology only to do old things (behaviorist model of content distribution), we keep students in the realm of mostly passive recipient of information. However, most xMOOCs have content that can be used by educators and students to augment an existing course.

Aldridge (2013) differentiates xMOOCs (such as most of those offered from edx, Coursera, Udacity, etc.) from cMOOCs or connectives MOOCs (the original MOOC offered by Canadian scholars Downes and Siemens in 2008), and argues that cMOOCs are much more in line with developing requisite dispositions and skill sets in students. cMOOCs, although smaller in size than xMOOCs, "are designed to inspire self-directed learning communities, fueled by the desire to co-create and freely exchange knowledge on any number of topics… and are, by design, interactive and learner-centered where the ultimate goal is to create social capital, by building knowledge networks of value for those who take part in them" (Aldridge 2013, para 5). As cMOOCS have an open curriculum, there are opportunities for students to both consume and produce information. "In addition, cMOOC learners master and demonstrate their competencies by actively creating web-based learning artifacts, such as blogs, wikis, and podcasts" (Aldridge 2013, para 6).

Educators who develop cMOOCS (social constructivist or connectivist MOOCS) for Sport Management would be promoting more innovation and developing requisite skills and dispositions in their students. In 2016, Coursera has just begun offering project-based cMOOCs, as they claim "research shows that we learn best by applying new skills to a real-world project. Now, you can build, design, or write your way to success in a project-based course on Coursera." For example: https://www.coursera.org/learn/business-model-canvas .

Educators and students may want to use MOOC ds106 http://ds106.us/about/, an open story telling MOOC (with no instructor), that could be employed in sport education. It would allow educators and students to use technology and sport content to construct and publish their own stories to whatever ends deemed appropriate. In addition, The Developing Innovative Ideas: The First Step in an Entrepreneurship Coursera MOOC

(see http://blog.coursera.org/post/104696446187/have-a-business-idea-get-funded-with-coursera) allows users to pitch and accelerate their business ideas.

Developing innovative ideas in sport content areas and using the MOOC could be part of a course or independent study. An example of an innovative idea that could have used the MOOC and that educators could tout as an example idea, is that of Brendan Reilly (28 year-old CEO of Eon Sports and relative football novice) who is pitching an idea of NFL quarterbacks donning "a headset and running through the game plan against a holographic defense that looks, moves and thinks like the upcoming opponent" (Pelissero, 2014, p. C-1).Most career preparation is interested in the fit between "what is" and "what should be" according to tradition. To promote entrepreneurial mindsets, students should ask themselves "what could be" (i.e., Martin's example of adductive reasoning) and feel free to speculate.

To personalize the curriculum, sport educators could use already existing MOOCs (see link above) for their content or could allow students in their curriculum to take an existing MOOC from Courser a, etc., and then assign credit for completing the MOOC if the students apply what they learned to a local, global or global issue in sport and developed a paper, e-book, info graph or multi-media site about the problem.

Educators could also develop their own MOOCs by using a MOOC building platform such as Course Builder by Google, Open MOOC, Mirada (Spanish), Future Learn, or Learn Dash (Ferriman, n.d.).

3.4 Educators should consider having students use online sport-related databases to identify issues, problems, and/or opportunities and innovatively present their work.

Authentic, real-world, real-time, and contextually specific assignments representing issues, problems or opportunities in sports management could be constructed that have students (in constructivist, social constructivist or connectives fashion) use a sport-related database (e.g., SPORT Discuss, AUSPORT, Sport Business Research Network – SBRnet, Catalyst, Access Sport Media, Canvas.net, etc.) to find and evaluate data to address an issue, problem or opportunity. Although such databases are not usually open educational resources, they usually provide very up-to-date and relevant data that may not be readily available in traditional texts. Students could be asked to visit and peruse a site, and then explore an issue of interest to them and then to present the issue or data in a unique way.

Alternatively, educators could be more directives in the problem-solving endeavor. For example, while incorporating SBR net's Fan Market data into an assignment, an educator could present the following scenario. Data from the 2013 Pearson Student Mobile Device survey indicates:

- Among college students, tablet ownership, including both full-size and small tablets, has increased only modestly from 2012. Nearly four in ten students (38%) now own a tablet compared to one-third (33%) a year ago.

- Similar to 2012, one-quarter own a full-size tablet (26% vs. 25% in 2012) and one in six own a small tablet (18% vs. 17% in 2012).

- In 2012, one in ten tablet owners (9%) owned both a full-size and a small tablet. In 2013, this number has decreased to 6%. Instead, slightly more people now own only a full-size tablet (20% vs. 16% in 2012) or only a small tablet (11% vs. 8% in 2012).

- One-third of college students (33%) intend to purchase a tablet within the next 6 months, on par with a year ago (36%). Two in ten (22%) want to purchase a full-size tablet and one in six (16%) want to buy a small tablet.

- Current tablet owners also are looking to purchase a new tablet soon, with four in ten owners (43%) saying they are planning to purchase a tablet within the next 6 months.

- Ownership of smartphones is prevalent among college students, with seven in ten (72%) owning a smartphone. As with tablets, one-third of college students (35%) plan to purchase a smartphone in the next 6 months.

TASK: You are currently responsible for creating new sponsorship opportunities for a major mobile network operator. You are tasked with identifying one or more sport properties that will help your company to gain additional college student subscribers. Using the data available in the SBRnet.com Fan Market Study and considering the Pearson Student Mobile Device Survey (2013), and the potential cost of the sponsorships across sport categories, determines what sports offer the best opportunity for your company. Justify your answer with data and present your results using at least two methods (e.g., info graph (see http://visual.ly/sports-infographics) , slide share, Venngage, Infogram, YouTube presentation, Prezi, or other) incorporating graphs and charts to support your argument. (For tips on making graphs/charts please, see the following site from the University of Leicester: http://www2.le.ac.uk/offices/ld/resources/numeracy/numerical-data.)

3.5 Educators should consider engaging the outside environment in their classes to bring professionals in the field into their classes to interact with students to address real world problems. This strategy can also be used to explore international and cultural differences in approaches to solving problems.

For example, sport educators could use a real-time case (RTC) method combined with a Wiki, Google+, YouTube, or other social media (see Qualman, 2012). The RTC method uses the Internet to bring profession-relate) reality to profession-related courses and to facilitate communication among faculty, students, and the case company (Theroux, 2009).

An example of a RTC method for fitness trainers and strength and conditioning coachescan be found at this site: https://wiki.acs.nmu.edu/hl368/index.php/Main_Page (Hogan & Coleman, 2012). The class partnered with a personal training/strength and conditioning (athletes') club in the local, rural area. The owner of the club would identify a situation related to a problem the club was facing and students would research the issues and provide potential solutions to the club in strategy form.

For example, the owner may disclose that the club needed to increase its client base, and was interested in finding the most effective strategies to market to its sport-oriented target market. After students shared the information and best practices, including practices using social media and crowd sharing, the owner would disclose how the club had planned to address the issue and would take into consideration the way the students had proposed solving the problem and their research and adjust accordingly. Overall, five disclosures were made –disclosures related to the overall objectives of the class and to the needed professional dispositions/skills of students.

3.6 Educators should consider developing a meta-team of students who are responsible for telling the story of the course, including its use of social media and results of its projects, documenting it, and curating the story of the sport or physical education related-course to make it available beyond the course's end.

Once a course is finished, students usually do not have access to artifacts related to the sport/physical education course. Have students create the story of the course, including organizing and keeping access to all tweets, projects, videos, journals, content, etc., related to the course. Readers are referred to Campbell's 2012 keynote address at the Open Ed Conference in Vancouver, Canada for his method of developing a meta-team and for an example of the work of the meta-team.

3.7 Sport management and physical education teachers should consider welcoming students to the course as co-learners and co-creators, trusting them to identify and develop meaningful projects and learning experiences replete with technologies identified by the students to use.

Sport and physical educators could take time in the first meeting of the course to show students the dispositions and mindsets needed for the VUCA World and innovation economy, show the various models identified in this paper and ask students to brain-storm to create meaningful, holistic, rigorous assignments for themselves that integrate the sport or physical education content with new pedagogies and technologies. This is similar to the concept of the self-organizing learning environment or SOLE, which is a form of inquiry-based learning. The SOLE was popularized by Sugata Mitra (n.d., p.1) (http://www.ted.com/prize/sole_toolkit). To prepare for the realities of the future workplace and the rapidly changing technological landscape, it is critical for educators to invite students to get good at asking big questions that lead them on intellectual journeys to pursue answers, rather than only memorizing facts.

3.8 Sport and physical educators should consider having students, use Quick Response (QR) Codes to publish their project based work online.

Quick Response Codes, commonly known as QR Codes, are two-dimensional (2D) codes that can be read with a code reader. These code readers can be downloaded on multiple mobile electronic devices as a free application, and grants the user instant access to a variety of information, such as web addresses, email addresses, phone numbers, or videos.

These QR codes can be used in sport management, physical education, and coaching to actively engage students through use of technology. They are most commonly used to link students to instructional videos demonstrating proper use of equipment, fundamental technique, or proper learning progressions of multi-skill activities. In addition, the teacher/coach can flip the learning process by having students watch and learn skill acquisition techniques prior to class, which helps to maximize motor appropriate physical activity within the classroom. For this assignment, physical education students were asked to create a minimum of three QR codes with each one taking the user to a video link posted on their personal YouTube video channel. The video series could be a choice of three separate videos of one skill showcasing the various phases of a specific movement (i.e.: preparatory phase, action phase, finishing phase) or it could be three completely separate skills in which the student demonstrates proper mechanics, verbal cues, and modeling techniques in each.

Although the videos are short, they require the physical education student to use technology to capture, edit, and publish three video QR code links. This assignment is used as a pre-requisite learning activity to a much more in-depth and longer video project, the Digital Video assignment. In this first video assignment, students are gaining confidence in using video capturing/editing technology, as well as demonstrating prior knowledge of modeling simple skill acquisition techniques.

3.8.1 The following are a few examples of the QR Code assignments that physical education students submitted:

3.8.2   Basketball Circuit (from the "Physical Best Book")

Overhead jumps- the focus of this station the biomechanical work of a rebound without hoops. Students work in pairs and while one student throws the basketball above his or her partner's head the partner must jump to catch the ball using both hands and landing on the balls of the feet with knees bent and elbows out. This allows the student to practice the essence of a strong rebound in order to pass to the outlet person.

Layups- the focus of this station is isolated layups. Practicing isolated layups is an opportunity for students to understand the mechanics of a layup. The student should start at a slow pace focusing on the four verbal cues, dribble, plant, knee, and finish. The student should pick up the pace gradually to simulate a game-like situation of dribbling hard to the basket.

Shooting drill- the focus of this station is to practice an isolated jump shot from different location son the court. One student rebounds first and then they switch. The student begins from one side of the court and moves around the court (close, medium, or far). Students should focus on getting their feet set and squared to the basket.

3.8.3   Gymnastics

How to perform a forward roll (gymnastics)
Middle/high school (depending on amount of experience)

How to perform a cartwheel (gymnastics)
Middle/high school PE (depending on amount of experience)

How to perform a back walkover (gymnastics)
Middle/high school PE (depending on amount of experience)

4. Conclusion

This article has advocated for necessary changes in sports management and physical education pedagogy due to the current misfit between traditional education (behaviorism or instructivism), and the world (i.e., VUCA World) for which education is supposed to prepare students.

The purposes of the authors were to: 1) identify new student and educator dispositions and skills for the VUCA World and its innovation economy; 2) identify and discuss new active learning theory models (constructivism, connectivism) and techniques (project based learning; incorporating technology/social media into learning), and digigogy as better instructional frameworks for the disposition and skill demands of the VUCA World; and 3) provide "how-to" suggestions for and examples of digigogical innovation (using project based learning) in sport management and physical education consistent with developing needed VUCA World dispositions, skills, and learning environments. It is hoped that sports management teachers and physical educators can use the project based learning models identified above, and modify them to include their sport disciplinary content, so that sport and physical education students can go beyond (traditionally) passively learning information to wielding information to solve problems (knowledge) in sport business and education. With a move toward digigogy, perhaps, per Sheerer (2010), sport and physical education students can shift the meanings of the acronym, VUCA, from… to:

From:	To:
Volatility	***V**ision*
Uncertainty	***U**nderstanding*
Complexity	***C**larity*
Ambiguity	***A**gility*

References

Aldridge, S. (2013). MOOC-tastic or MOOC-trocious. Retrieved January 20, 2016, fromhttp://www.drsusanaldridge.com/keynote-by-dr-susan-aldridge exploring-the-academic-value-of-higher-educations-latest-trend/.

Bates, A. (2014). Teaching in a digital age: Open textbook project. Press Books. Retrieved January 20, 2016, from:http://opentextbc.ca/teachinginadigitalage/.

Bates, A. (2016). Online learning for beginners. Retrieved September 17, 2016, from: http://www.tonybates.ca/2016/07/15/online-learning-for-beginners-1-what-is-online-learning/

Bennett, N. and Lemoine, J. (2016). Viewpoint: The essential leadership challenge for 2016 is overcoming VUCA. Bizjournals.com. Retrieved April 23, 2016 from http://www.bizjournals.com/atlanta/news/2016/01/05/viewpoint-the-essential-leadership challenge-for.html.

Bonwell, C. and Eison, J. (1991). Active learning: Creating excitement in the classroom. Retrieved January 30, 2016, from: https://www.everettcc.edu/files/administration/institutionaleffectiveness/institutional-research/outcomeassess-active-learning.pdf.

Bouchard, P. (2009) Pedagogy without a teacher: What are the limits? International Journal of Self Directed Learning, 6(2). Retrieved February 21, 2016, from http://sdlglobal.com/IJSDL/IJSDL6.2-2009.pdf.

Brown, M., Dehoney, J., and Millichap, N. (April 2015). The next generation of digital learning: A research report. Educause Learning Initiative. Retrieved March 20, 2016, from http://net.educause.edu/ir/library/pdf/eli3035.pdf.

Buck Institute for Education. (n.d.). What is project-based learning? Retrieved March 20, 2016, from: http://bie.org/about/what_pbl.

Buck Institute for Education (n.d.). Project design rubric. Retrieved September 12, 2016, from http://www.bie.org/object/document/project_design_rubric

Campbell, G. (October 16, 2012).Ecologies of learning. Keynote address at Open Ed Conference12, Vancouver, B.C. Retrieved January 12, 2016 from https://www.youtube.com/watch?v=kIzA4ItynYw.

Canvas.net. (2015). Sport Informatics and Analytics. University of Canberra. Retrieved March 11, 2016, from https://www.canvas.net/browse/ucanberra/courses/sport-informatics-and-analytics.

Catalyst. (2014). 2014 fan engagement study. Retrieved January 28, 2016, from http://www.catalystimg.com/fan-engagement-study/.

Center for Project-Based Learning. (2016). 2016 Institute on project-based learning. Worcester Polytech Institute. Retrieved April 23, 2016 from http://wp.wpi.edu/projectbasedlearning/2016-institute/.

Chattopadhyay, S. (December 6, 2014). Instructional design in the VUCA world. ID and Other Reflections: Blog about Learning and Learning Organizations. Retrieved January 30, 2016, from: http://idreflections.blogspot.ca/2014/12/instructional-design-in-vuca world.html.

Churches, A. (2011). Comparing 20th& 21st century education. Retrieved January 22, 2016,from: http://edorigami.wikispaces.com/Comparing+20th+%26+21st+Century+Education.

Clapp, B. (2015). Sports marketing jobs: Do you have what it takes? workinsports.com. Retrieved April 23, 2016 from https://www.workinsports.com/blog/sports-marketing-jobs-do-you-have-what-it-takes/.

Coursera. (2014). Developing innovative ideas: The first step in entrepreneurship MOOC. Retrieved February 12, 2016, from http://blog.coursera.org/post/104696446187/have-a-business-idea-get-funded-with-coursera.

Coursera. (2015a). Representing the Professional Athlete MOOC. Case Western Reserve University. Retrieved March 11, 2016 from https://www.coursera.org/course/sportsagentsand course Facebook page at https://www.facebook.com/SportsAgentMOOC.

Coursera. (2015b). The Global Business of Sport MOOC. Wharton School of Business. Retrieved March 11, 2016, from https://www.coursera.org/course/globalsportsbusiness.

Davies, A., Fidler, D., and Gorbis, M. (2011). Future work skills 2020 (SR-1382A). Palo Alto, California, Institute for the Future for Apollo Research Institute. Retrieved January18, 2016, from http://issuu.com/gfbertini/docs/future_work_skills_2020.

Delms, J. (May 27, 2010). VUCA-What does this leadership acronym have to do with our unchanging natural laws. Ezine. Retrieved January 30, 2016, from http://EzineArticles.com/4369220.

Di Meglio, F. (2011). Business school resolutions for 2011. Business Week, B-School NewsJanuary 3. Retrieved March 22, 2016 from http://www.businessweek.com/bschools/content/dec2010/bs20101230_746 585.htm?cam.

Downes, S. (2012) Connectivism and connective knowledge. Retrieved March 9, 2016, from http://www.downes.ca/files/books/Connective_Knowledge-19May2012.pdf.

Downes, S. and Siemens, G. (2008). The MOOC guide. Retrieved March 20, 2016, from https://sites.google.com/site/themoocguide/3-cck08---the-distributed-course.

ds106. (2012).What is the digital storytelling MOOC? Retrieved March 19, 2016, from http://ds106.us/about/.

EducauseCenter for Analysis and Research (2014). The current ecosystem of Learning Management Systems in Higher Education. Retrieved April 23, 2016 from https://library.educause.edu/resources/2014/9/next-generation-digital-learning-environmentinitiativehttps://library.educause.edu/~/media/files/library/201 4/9/ers1414-pdf.

Ellis, R. (2009). Field guide to learning management systems. American Society for Training &Development (ASTD) Learning Circuits. Retrieved March 30, 2016, from: https://www.td.org/~/media/Files/Publications/LMS_fieldguide_20091.

Feldstein, M. (March, 2016). What's really to blame for the failure of our learning management systems? The Chronicle of Higher Education online. Retrieved April 23, 2016, fromhttp://chronicle.com/article/What-s-Really-to-Blame-for/235620/.

Ferriman, J. (2013). 5 MOOC building platforms. Retrieved February 13, 2016 from http://www.learndash.com/5-mooc-building-platforms/.

Fisher, M., (2013). The digigogy collaborative. Retrieved March 20, 2016, from http://www.digigogy.com/.

Freeman, S., Eddy, S., McDonough, M., Smith, M., Okorafor, N., Jordt, H., and Wenderoth, M.(2014) Active Learning increases student performance in science, engineering and math. Proceedings of the National Academy of Sciences, 11(23), 8410-8415. Retrieved March 20, 2016, from http://www.pnas.org/content/111/23/8410.full.pdf.

Friedman, T. And Mandelbaum, M. (2011). That used to be us: How America fell behind in the world it invented and how we can come back. Farrar, Straus, and Giroux Publisher. NY, NY.

Geser, G.(2012).Open educational practices and resources. OLCOS Roadmap 2012, p. 1-150. Retrieved February 22, 2016, from http://www.olcos.org/cms/upload/docs/olcos_roadmap.pdf.

Gill, E. (2016). Physical Education Teacher: Job and Salary Information. Concordia Online Education. Retrieved April 23, 2016 from http://education.cu-portland.edu/blog/teaching careers/physical-education-teacher/#sum2.

Hogan, P., Santomier, J. and Stuart, J. (2015a). Increasing sport management student engagement through technology: Toward digigogy. COSMA Conference Presentation, February 12-13, 2015, Philadelphia, PA.

Hogan, P., Carlson, B. and Kirk, C. (2015b). Showcasing: Open educational practices models using open education resources. Open Educational Global Conference, April 22-24, Banff, Alberta, Canada

Hogan, P., Kirk, C., Carlson, B. and Pendleton, G. (2013). Prosumerism: Students as co-creators of text and content. In The Online University: Building Viable Learning Experiences for Higher Education. Editor: R. Kesner. Publisher: World Universities Forum.

Hogan, P. and Coleman, B. (2012). Integrating community based with web based learning for mission central learning. Michigan Campus Compact Service Learning and Civic Engagement Institute –Invited presentation, January 29-31, 2012, Michigan State University, Lansing, MI.

Ireland, T. (2007). Situating Connectivism. Retrieved February 24, 2016, from http://etec.ctlt.ubc.ca/510wiki/Situating_Connectivism.

Kessler, A. (2012). Weekly Standard: Our 19th Century Curriculum. Retrieved March 3, 2016 from http://www.andykessler.com/andy_kessler/2012/10/weekly-standard-our-19th-century-curriculum.html.

Kirby, D. (2004). Entrepreneurship education: Can business schools meet the challenge? Education + Training, 46(8/9), 510 – 519. Retrieved February 28, 2016,http://www.emeraldinsight.com/journals.htm?articleid=1501869&show=html.

Koehler, M.J. and Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK) Contemporary Issues in Technology and Teacher Education, 9(1), 60-70.

Lavaroni, C. and Leisey, D. (n.d.). Bringing the excitement of entrepreneurism to the public schools. The edupreneur. International Academy for Educational Entrepreneurship. Retrieved April 23, 2016 from http://www.edentrepreneurs.org/edupreneur.php.

Martin, R. (2010). Design thinking at Rotman. Bloomberg Business week. Video retrieved   January 22, 2016, from http://feedroom.businessweek.com/index.jsp?fr_story=61d4d953876d380a39f018b85cedc3d5c3f8a8ac.

Martin, R. (2009). The design of business: Why design thinking is the next competitive advantage. Harvard Business Press: Boston, MA.

Martin, R. (2005). Creativity that goes deep. Bloomberg Business week. Retrieved January 22, 2016 from at www.businessweek.com/innovate/content/aug2005/di20050803_823317.htm.

Martin, R. (2004). The design of business. Rotman Management, Winter, 1-10. Retrieved January 22, 2016, http://www.rotman.utoronto.ca/rogermartin/DesignofBusiness.pdf.

Micheal, J. (2006). Where's the evidence that active learning works? American Physiological Society Journal. Vol. 30 no. 4, 159-167 DOI: 10.1152/advan.00053.2006

Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. The Teachers College Record, 108(6), 1017-1054.

Mitra, S. (n.d.). Sole: How to bring self-organizing learning environments to your community. TED Prize. Retrieved January 19, 2016, from http://www.ted.com/prize/sole_toolkit.

Mott, J. and Wiley, D. (2009) Open for learning: The CMS and the open learning network.in education, 15(2) fall 2009, p. 3-23. Retrieved January 23, 2016, from http://ineducation.ca/ineducation/article/view/53/530.

Mueller, J. (2014). Authentic Assessment Toolbox. Retrieved, March 21, 2016, from http://jfmueller.faculty.noctrl.edu/toolbox/.

Mueller, J. (2016). What is authentic assessment? Retrieved September 12, 2016, from http://jfmueller.faculty.noctrl.edu/toolbox/whatisit.htm.

McCusker, S. (2014).Teachers' most powerful role? Providing context. Mind shift. Retrieved January 23, 2016, from http://blogs.kqed.org/mindshift/2014/04/teachers-most-powerful-role-adding-context/.

Pearson. (2013). Pearson student mobile device survey 2013. Retrieved March 10, 2016, from http://www.pearsoned.com/wp-content/uploads/Pearson-Student-Mobile-Device-Survey-2013-National-Report-on-College-Students-public-release.pdf.

Pelissero, T. (December 12, 2014). Virtual training a game-changer. USA Today Sports Friday December 12, 2014, p. C-1. Retrieved March 14, 2016, from http://www.usatoday.com/story/sports/nfl/2014/12/12/virtual-training-reality-practice-eon-sports-brendan-reilly/20284053/.

Prensky, M. (2014a). Variability, uncertainty, complexity & ambiguity (VUCA). EducationWeek Blog. Retrieved April 23, 2016 from http://blogs.edweek.org/edweek/provocative-ed-tech thinking/2014/09/Post_0006variability_uncertainty_complexity_ambiguity_vuca.html.

Prensky, M. (2014b). The world needs a new curriculum. Retrieved April 23, 2016 from http://marcprensky.com/wp-content/uploads/2013/05/Prensky-5-The-World_Needs_a_New_Curriculum.pdf.

Prensky, M. (2015). Achievement vs. accomplishment: An important distinction in education. Retrieved April 23, 2016 from http://marcprensky.com/wp-content/uploads/2013/04/Prensky-Achievement-vs-Accomplishment-FINAL.pdf.

Qualman, D. (May 22, 2012). Social media tools list: +100 social media tools. Retrieved March 30, 2016, from http://www.socialnomics.net/2012/05/22/social-media-tools-list-100-social-media-tools/.

Ratten, V. (2010). Developing a theory of sport-based entrepreneurship. Journal of Management Organization, 16(4), 557-565. Retrieved March 1, 2016, http://jmo.e- contentmanagement.com/archives/vol/16/issue/4/.

Reeves, T., Herrington, J., and Oliver, R. (2002). Authentic activities and online learning. HERDSA, 562-567. Retrieved March 20, 2016 from http://www.coulthard.com/library/Files/reeves_2002_authenticactivitiesonlinelearning.pdf.

Riordan, R. (January 17, 2013). Change the subject: Making the case for project-based learning. Edutopia: Education Trends. Retrieved February 2, 2016, from http://www.edutopia.org/blog/21st-century-skills-changing-subjects-larry-rosenstock-rob-riordan.

Santomier, J. and Hogan, P. (2011). Toward a learning culture in sport business education. Paperpresented at the 11th European Association of Management (EURAM) Conference, Tallinn, Estonia, June 1-4, 2011.

Sbrnet.com. Fan Market Study. Retrieved April 23, 2016 from:
        http://www.sbrnetportal.com/Home.aspx
Sheerer, L. (2010). VUCA to VUCA. Knowledgeworks. Retrieved April 23, 2016
        from: http://knowledgeworks.org/worldoflearning/vuca-to-vuca/.
Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching.
        Educational Researcher, 15(2), 4- 31.
Siemens, G. (2004). Connectivism: A theory for the digital age. Elearnspace. Retrieved
        December 4, 2015, from
        http://www.elearnspace.org/Articles/connectivism.htm
Siemens, G (2005). Connectivism: Learning as network creation. Elearnspace.
        Retrieved December 4, 2015 from
        http://www.elearnspace.org/Articles/networks.htm.
SIRC-Sport Research Intelligence. (2015). Retrieved March 11, 2016 from
        http://sirc.ca/.
Slavo, M. (December 28, 2014). Billionaire Mark Cuban warns of massive crash that
        will wipe out America's colleges. D.C. Clothesline. Retrieved March 30, 2016,
        fromhttp://www.dcclothesline.com/2014/12/28/billionaire-mark-cuban-
        warns-massive-crash-will-wipe-americas-colleges-youre-going-see-repeat-saw-
        housing-market/.
Sport Business Research Network. (n.d.).Market analytics for sport business.
        RetrievedJanuary 28, 2016, from: www.sbrnet.com.
SPORTDiscus. (n.d.). Full text resource for sport studies research. Retrieved March
        11, 2016, from http://www.ebscohost.com/academic/sportdiscus-with-full-text.
Sports-Management-Degrees.com. (2014). The Complete Guide to Sport
        Management Degrees. Retrieved April 23, 2016 from http://www.sports-
        management-degrees.com/business-careers/.
Sports Management Salary Career & Degree Guide. (2012-2016). All Business Schools
        RetrievedMarch30, 2016, fromhttp://www.allbusinessschools.com/business-
        careers/sports-management/salary/.
Teachermatch. (March 7, 2014). Impact of today's technology on tomorrow's jobs
        and what teachers should do about it. Retrieved March 30, 2016, from
        https://www.teachermatch.org/blog/todays-technology-tomorrows-jobs-
        educational-leaders/.
Theraux, J. (2009). Real time case method: Analysis of a second implementation.
        Journal ofEducation for Business, v84 n6 p367-373 Jul-Aug 2009. Retrieved
        January 30, 2016, from http://eric.ed.gov/?id=EJ844512.
University College Dublin Open Educational Resources of UCD Teaching and
        Learning, Educational theory: constructivism and social constructivism. (n.d.).
        Retrieved March 10, 2016 from
        http://www.ucdoer.ie/index.php/Education_Theory/Constructivism   and
        Social Constructivism.

University of Leicester Webpage. (n.d.). Student learning development: Presenting numerical data. Retrieved March 20, 2016, from http://www2.le.ac.uk/offices/ld/resources/numeracy/numerical-data .

University of Michigan (2016). Active learning. Center for Research on Learning and Teaching. Retrieved March 20, 2016, from http://www.crlt.umich.edu/tstrategies/tsal.

University of Salford. (2014). Sport Business Introduction: How Marketing and Social Media Help Sport Business MOOC. Retrieved March 11, 2016, from http://blogs.salford.ac.uk/business-school/sports-business-social-media-marketing/.

U.S. Bureau of Labor Statistics Occupational Outlook Handbook, 2014-15 Edition. Retrieved February 30, 2016, from http://www.bls.gov/ooh/entertainment-and-sports/coaches-and-scouts.htm.

Wiemer, M. (2015). More evidence that active learning trumps lecturing. Faculty Focus: Higher Ed Strategies from Magna Publications. Retrieved February 28, 2016 from http://www.facultyfocus.com/articles/teaching-professor-blog/more-evidence-that-active-learning-trumps-lecturing/.

Wiley, D. (2010).Openness and the disaggregated future of education. Slideshare. Retrieved March 11, 2016 from http://www.slideshare.net/opencontent/openness-and-the-disaggregated-future-of-higher-education-presentation.