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Fostering Learning in the 21st Century through Student Engagement

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Higher education institutions today are responsible for producing graduates who will become global citizens with a sense of belonging to the global community. Institutions that are unable to do so may make themselves irrelevant to their respective communities. Students of the 21st century continue to be taught using past century methods or conventional ways of teaching that may motivate but fail to excite or sustain their interest in learning or in their own education. This paper attempts to discuss the education scenario in higher education, the new learning landscape, and the need for educators to re-think and re-design learning with the aim of providing a student-centered learning environment to engage students in order to foster learning that is relevant to current global needs.

Keywords: learning design, student-centered learning, student engagement

Introduction

Amidst a changing landscape led by new, powerful and affordable technologies, higher education institutions have been considered to be somewhat slow in responding to changes in society and, subsequently, in educating students in ways that utilize recent developments, such as social media and mobile devices. As indicated by Davidson (2011), while higher education was restricted to meet the needs of the industrial age 100 years ago, it has changed little since and that another revolution is necessary to modernize universities and to prepare graduates for a 21st century learning environment. Gone are the days when students begged to be taught. Today's students are, at times, bored by lectures in class and tend to prefer to go online to keep themselves "entertained" or go into other more meaningful activities that may or may not be related to the topic being lectured. As Brown (2006) pointed out, today's students engage with the world differently than earlier generations did. Brown added that today's students tend to be intrinsically motivated and try to satisfy their curiosity on their own and in their own ways, digitally, and largely through opportunities both online and offline based on constructivist learning. It is thus clear that educators in the 21st century need to learn how to provide meaningful and relevant learning experiences so as to be effective in engaging today's students in the learning process.

The Scenario in Higher Education

According to the New Media Consortium's New Horizons Report (2015), the trends in higher education over the next five years will be (1) increasing usage of blended learning, (2) frequent redesign of learning spaces, (3) proliferation of Open Educational Resources (OERs), and (4) growing focus on measuring learning.. Out of these four trends, redesign of learning spaces is the newest, while the debate about how student learning is to be measured has already begun in many, if not most, Asian countries. A sampling of activities related to

developing OERs around the world may be seen through the eMundus ATLAS site at http://emundusatlas.org/

UNESCO's recent Global High Level Policy Forum in Paris highlighted that the future of higher education should be "online, open and flexible." The forum with 140 participants from 50 countries also addressed equity, access and quality learning outcomes, especially with respect to the urgent need for greater access to higher education between 2015 and 2030 in anticipation of massive growth in student enrollment. This clearly calls for use of information and communication technologies and the changes that higher education needs to make for its students.

One of the most astounding changes is when we think about how the slate chalkboard has been a useful learning device for over a century after it was invented in 1890. Likewise, the tablet, particularly the iPad, which is about the same size as the slate, has taken the world by storm since its public release in 2010. It has revolutionized society in the way people communicate, research for information, learn, shop, educate, entertain, and so on. These tablet devices coupled with cloud computing technologies and high-speed bandwidths brought changes quicker than previous technologies such as microcomputers and mobile telephones did. And when coupled with developments such as social media, ubiquitous computing is the next best thing. Undoubtedly, the use of multiple mobile or personal devices with online tools, applications, platforms and content will soon further popularize ubiquitous learning or u-learning. It will drive higher education's agenda to transform learning (Cope & Kalantzis, 2009) in the near future.

Massive Open Online Courses (MOOCs) have become immensely popular in recent years. Stanford University's first large scale offering of a MOOC titled "Introduction to Artificial Intelligence" in the fall of 2011 enrolled over 160,000 students from around the world, and 20,000 completed the course, Hundreds of courses have been offered by other universities from around the world to attract potentially thousands of students as well. It is currently possible to access hundreds of university courses from one's personal device such as the tablet or smartphone at any time. All one needs to do is to "tap" on the screen or to "swipe" to turn pages. Among the more popular platforms for MOOCs are: Coursera, Udacity, EdX, Udemy, and Open Learning. Educators may develop courses and offer them to the entire world using any of these platforms. Again, MOOCs are a good example of the possible opportunities of u-learning for both formal and informal courses.

Due to various learning related factors and poor completion rates, perceptions of MOOCs are mixed. Nevertheless, MOOCs have the potential to make a difference in higher education. For example in Indonesia, MOOCs are believed to have the potential to provide opportunity to millions of students who are unable to enter university due to the limited number of places. Only Korea has KMOOCs and Japan has JMOOCs, both made available to students and the general public. In Malaysia, MOOCs have been customized to offer common courses to students in its public higher education institutions as a form of e-learning. It is a primary initiative of the Malaysian government that is funded by the Ministry of Education. The MOOCs in the Asian countries are customized

for the local population by having the courses delivered in the respective local languages.

The New Learning Landscape

Apart from the recent development of MOOCs, the interest in blended learning has been growing in Asian countries (Latchem & Jung, 2010, Tham & Tham, 2011). It aims, among others, to cater to the needs of students with different learning styles and today especially, to provide learning opportunities to students of the 21st century through a variety of media and various pedagogical approaches in the learning environment (both physical and virtual). It is good to note that the development of OERs in Asia has picked up, slower in some countries but quicker in others.

Other significant developments in higher education include the growth and popularity of flipped learning. One interesting point to note is that the Khan Academy has over 5,000 videos that have the potential to be used in flipped learning. Flipped learning has attracted the interest of some educators and is slowly being adopted in Indonesia (Ulinuha & Pratamana, 2015), Malaysia (Jamaludin & Md Osman, 2014) and Singapore (Mok, 2014).

Since the advent of the Internet, theories of learning have evolved from behaviorist to cognitivist to constructivist and connectivist to reflect the possibilities of how one may learn or teach using some of the latest appropriate learning technologies. While the earlier popularity of behaviorist learning is largely based on the communication or transmission of knowledge in the classroom, the latest development with connectivist learning involves more opportunities online for creation of new knowledge and for collaboration and sharing of ideas, experience and opinions with a view to acquiring new knowledge.

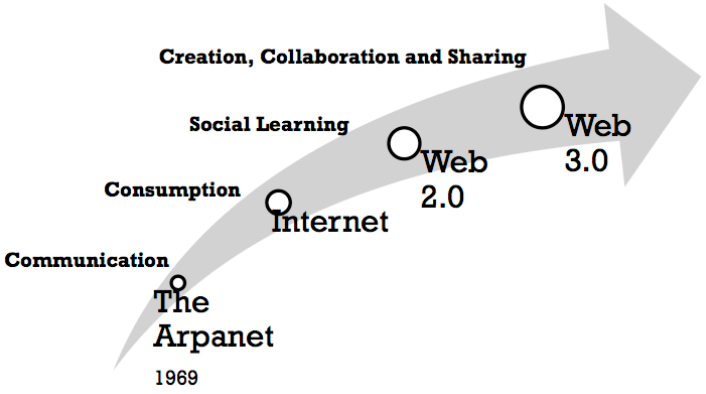

Figure 1. How learning has evolved with Internet development

Originally conceived for the purpose of communication, the Internet became popular and had10 million users in the early 90s and soon after the availability of web browsers such as Mosaic and Netscape, became addicted to consumption of

information in ways such as never before (see Figure 1). The Internet was a treasure trove. Soon after, with the development of social media such as blogs, wikis, Friendster and later on, Facebook and Twitter (Web 2.0 tools), social learning became one of the norms online. Today, Web 3.0 with its use of semantics and artificial intelligence is providing users with a "smarter web" that is, one that knows what content you want to see and how you want to see it and automatically delivering content that is relevant to the user. In also includes the latest developments with the "Internet of things," which among others include wearable computing devices.

In spite of such advanced developments, it has to be remembered, however, that pedagogy should drive how one learns through learning technologies and not the other way around. This is a cautionary statement, which should receive increasing emphasis, lest educators forget as the design and implement technology-based student-centered learning.

Student-centered learning

While not new, student-centered learning is often emphasized as part of the requirement for 21st century learning so as to produce graduates with, among others, critical thinking and problem-solving skills as well as skills for collaboration. Student-centered learning is characterized by the application of constructivist theory of learning (Land & Hannafin, 2012) where learning is constructed via a series of interactions with the teacher and/or fellow students. It is an alternative to traditional learning characterized by the transmission of knowledge from the teacher to the student. In addition, student-centered learning is active and may be "personalized" by addressing learning needs, interests or diverse student backgrounds and it may be competency-based learning where students need to demonstrate that the knowledge and skills learned have reached the desired level or degree based on the learning outcomes specified. It may also mean that students are supported by a variety of learning materials and approaches to match the varied learning styles among students. Some of the approaches to create a student-centered learning environment include: flipped learning, blended learning, personalized learning, social collaborative learning, and the use of learning analytics.

Student engagement

Although not a new concept, Gibbs (2014) commented that "student engagement" is the latest buzzword in higher education. It, in fact, has been found to predict learning gains. Gibbs also reported that students who are more engaged with their studies are also more engaged with their institution's governance, with volunteering, with student activities, and so on. Krause (2005) refers to engagement as "the time, energy and resources students devote to activities designed to enhance learning at university." It ranges from a simple measure of time spent on campus or studying to meaningful in- or out-of-class learning experiences. Student engagement has been well studied and it has been found that "engagement" is positively related to desired outcomes such as high grades and student satisfaction (Chen, Gonyea and Kuh, 2008).

When discussing the art and practice of pedagogies of engagement, Christensen, Garvin and Sweet (1991) highlighted, "to teach is to engage students in learning." Smith, Sheppard, Johnson and Johnson (2005) further supported that the essence of pedagogies of engagement is that the teacher becomes less an imparter of knowledge and more a designer and facilitator of learning experiences and opportunities. "The real challenge in college teaching is not covering the material for the students: it's uncovering the material with the students (p.2)." They proposed the importance of active learning such as cooperative and problem-based learning as ways to encourage the application of their students' knowledge that would benefit engineering students. They also pointed out the importance of student-faculty interaction where faculty serve as role models and mentors and provide meaningful learning to their students.

Duffy, Korkmas, Dennis, Bichelmeyer, Bunnage, Cakir and Oncu (2005) reported that students learn more when they are engaged. According to Ruey (2010) student engagement is important because students who are engaged in the learning process will do well. Trowler (2010) added that when students are engaged, they take ownership of their own learning. Hunt and Chalmers (2012) explained that student engagement is about providing a learning-centered approach where the facilitator provides an effective way to learn using innovative approaches that are meaningful and fun to the students. More importantly, Beer, Clark and Jones (2012) believe that student engagement has become synonymous with the measurement of teaching and learning quality at universities. Based on the ACER (2001) report, both institutions and staff have important roles to play in student engagement. The staff is responsible to generate conditions that stimulate and encourage student involvement while the students need to be given opportunities to construct their own knowledge.

When students were asked about what it meant to be "engaged in learning," it was found that responses from students were similar to those reported in the literature (Abas, 2012, p.6). Their responses were:

> "To be self-motivated to learn"
> "A situation where the instructor encourages learners to take an active role in their own learning by giving the practical tasks that will promote information processing and understanding of concepts."
> "For the learner to be actively involved in all learning activities through interacting with instructor, peers, web and learning material."
> "Involves learners in authentic tasks."

In addition, engagement is emerging as a key focus in higher education with it being increasingly understood as a prerequisite for effective learning (Pittaway, 2012). Student engagement can be achieved through active learning, which results in the learner experiencing meaningful learning during which students are involved in the learning as they pose questions and search for answers to those questions. They may work together to solve problems or are taken through inquiry-based learning involving cooperative and collaborative learning. As part of the initiative to provide a practical understanding of student and staff engagement, Pittaway suggests an Engagement Framework that may be applied to any discipline, year level or course. The framework comprises five non-

hierarchical elements: Personal Engagement, Academic Engagement, Intellectual Engagement, Social Engagement, and Professional Engagement.

A very popular framework to ensure engagement particularly in online forums is the Collaborative Online Inquiry framework that have continued to evolve (see Figure 2) from the original model by Garrison, Anderson and Archer (2000). Although originally proposed as a model to promote the quality of the learning experience in online communities such as in online discussion forums, the author believes that this model can be applied in any medium, physical or virtual, involving a blend of pedagogies that support student-centered learning. The primary aim is to provide an educational experience that students find rewarding following the engagement with the goals and direction of the course, the content of the course and with other students in the course. When considering the design of the educational experience, three elements are important: teacher presence, cognitive presence and social presence. Each presence plays a definite role and the intersections between any two or all of the presences as shown in Figure 2 will result in setting the climate, supporting the discourse and regulating the learning in order to achieve a positive educational experience.

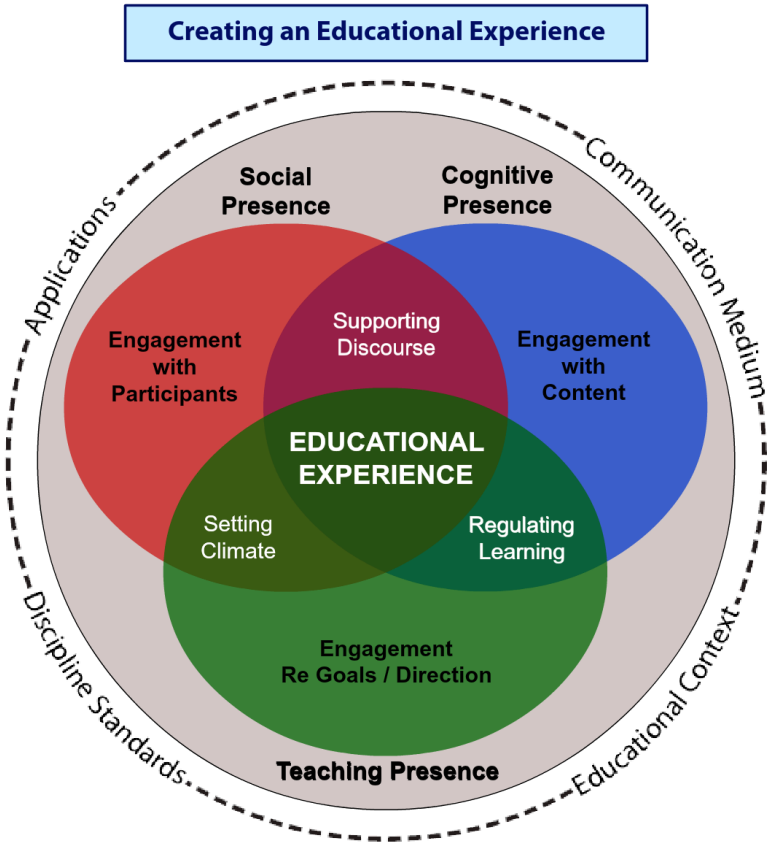

Figure 2. Community of Inquiry Model
Source: https://coi.athabascau.ca/wp-content/uploads/2014/07/COI-ANIM.swf

In view of the above discussion this paper would like to propose the following TSCS Engagement Framework to foster learning (see Figure 3). The framework

considers two main partners in the learning equation, the teacher and the student. Firstly, the teacher needs to have the passion to produce the learning in the student when designing the learning experience and being the facilitator to guide, motivate the student and to sustain the student's interest in a variety of ways in both the physical and virtual environment through activities and learning resources that would be relevant and meaningful to the student to achieve engagement at the cognitive level. The learning experience should be based on active learning, applying the constructivist principles of learning to develop higher order thinking skills and to promote communication skills, cooperating and collaborating with other learners as part of the knowledge construction. As Coates (2005) stated, "the concept of student engagement is based on the constructivist assumption that learning is influenced by how an individual participates in educationally purposeful activities (p. 26)." The student should be encouraged to share their thoughts and opinions based on scenarios or issues, as provided by the course facilitator. It is expected that each student will be able to contribute to a rich discussion based on their respective backgrounds and previous knowledge. During the discourse, students will be encouraged to explore and share resources that will further their understanding, hence supporting the concept of "just-in-time" learning using some of the more current resources online.

Secondly, the student is taken through a learning experience that they will find motivating and exciting as the variety of learning activities are clearly explained and are interesting and enjoyable for all types of learners. Together with learning resources that cater to a variety of learning styles, students will experience learning new and real knowledge together with their fellow course-mates and course facilitator. There are two other elements that will contribute to student engagement and these are: social and cognitive engagement. Social engagement is necessary to ensure that students feel safe, secure and comfortable in the learning spaces used. Only then will students interact freely and without prejudice or fear of being disrespected. Of course, adhering to rules of social netiquette would be the order of the day. Engagement at the cognitive level will be achieved when students are given academically challenging tasks and interactions as well as provided with opportunities to partake in active/authentic and experiential learning activities.

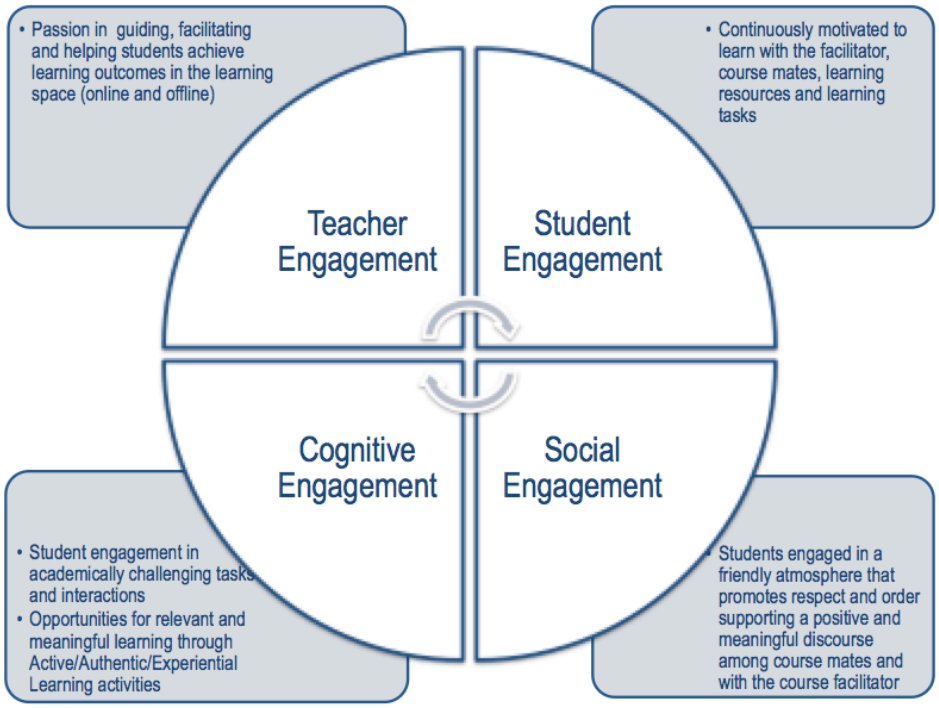

Figure 3. The TSCS engagement framework to foster learning

Pedagogies versus learning technologies

Pedagogy must precede and encompass use of technology. Classroom innovations may be "hi-tech" but that must also be "hi-touch," achieved through good learning design. Educators need to know about good pedagogical practices and how to design good learning, and to know which pedagogical techniques will help students learn. The pedagogy will be what will attract them to the subject matter, motivate them to learn the subject matter and sustain their interest to learn the subject matter as well as they can. Helping students to learn, complete, and do well in the course is most important. Thus, one of the key elements is course design and implementation whereby the instructor succeeds in engaging the students. In the 21st century, it is mostly about engaging the students through blended learning methods with some of the blend taking place online such as on Learning Management Systems or social media and involving online materials such as videos, posters, web sites, open educational resources, and so on. It is about how to engage students in learning, not necessarily achieved through technology or learning technologies by themselves.

Considering the fact that a majority of students have access to the internet and have at least a laptop computer or a personal device (e.g. smartphone, tablet), it is imperative that educators consider the online tools and resources that students frequently access. As Brown (2006) described, educators should be learning how to teach digital natives. They need to explore how they learn. While it used to be the transmission of knowledge that worked in the 20th century, a different approach called a "demand-pull" is more appropriate today. The "supply-push" approach of yesteryears focused on learning about, more suitable when students

were expected to be able to use one set of skills throughout life. It is no longer so today as students need to continuously learn and re-learn sets of skills or be continuously updated with what is more relevant for current times. The "demand-pull" learning allows students to decide, in a timely manner, on what learning strategies or resources are preferred to help them learn. Figure 4 shows an example of what "demand-pull" learning is for a learning space that could be both physical and virtual.

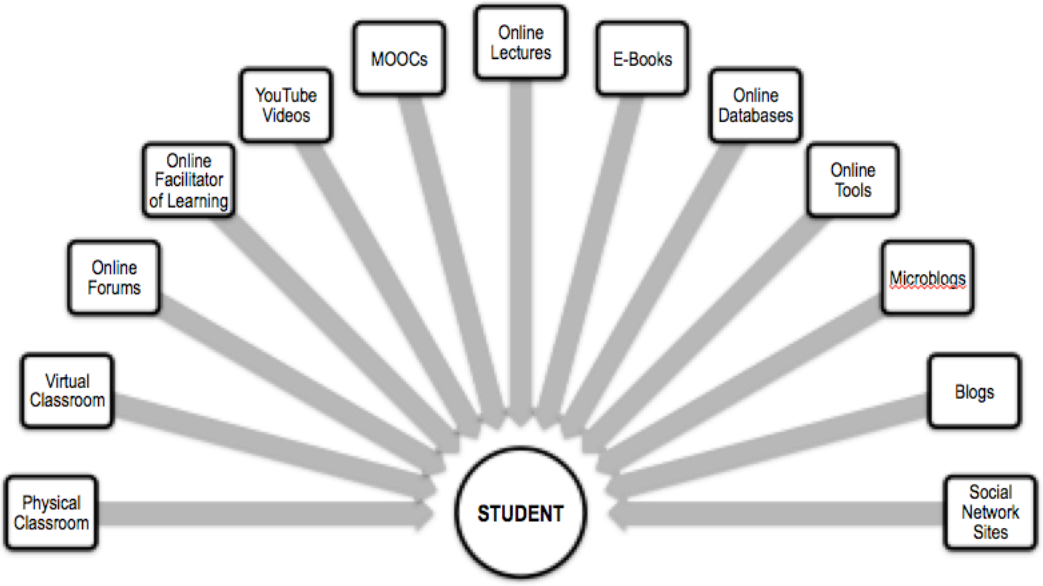

Figure 4. Demand-pull learning in the learning space

Re-designing Learning

The need to teach differently in today's world is often highlighted and debated. Higher education institutions need to produce graduates with 21st century skills including: communication, problem-solving, analytical and critical thinking, teamwork, cooperation, and collaboration. Educators need to transform from being teacher-centric to student-centric. We need to provide student-centered learning, most of which involves significant amounts of active, experiential, and authentic learning to make the learning relevant and meaningful for students. Educators need to re-design learning so as to engage them and as has been highlighted earlier, student engagement is a predictor of student success. Those who become engaged, succeed in the course they enroll in and hence, successfully complete the requirements of the study program (Figure 5).

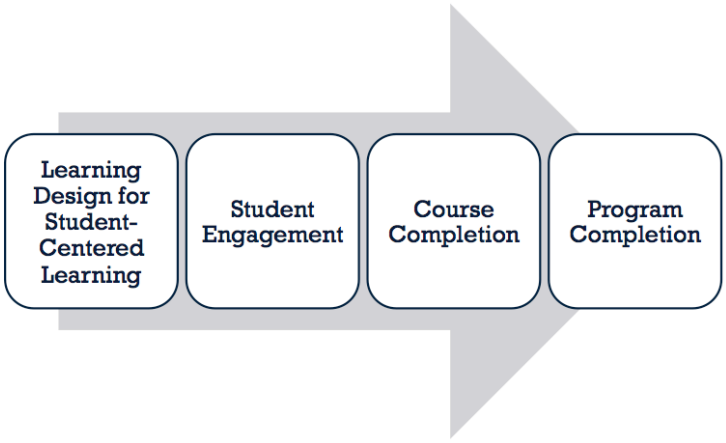

Figure 5. Relationship between learning design and program completion

Taking the example of the pedagogical practices of MOOCs, Toven-Lindsey, Rhoads and Lozano (2015) examined the pedagogical practices used in 24 MOOCs in their extent to which the course provided students. Their findings suggest a tendency for pedagogical practices used in many MOOCs to incorporate objective-individual approaches; although, some incorporate constructivist and group-oriented approaches. The latter are more appropriate pedagogical practices for learning in the 21st century. Hence, the degree to which MOOCs are actually revolutionizing higher education is of concern.

Nevertheless, for most educators today, it would be good practice to move away from the context of the physical classroom to the context of a learning space where involves blended learning to engage students. Blended learning refers to a combination of modes of web-based technologies (e.g. streaming video, audio, text and online discussions) or a combination of pedagogical approaches encompassing the main theories of learning (behaviorist, cognitivist, constructivism and connectivism) or a combination of the virtual and physical classroom.

In Conclusion

Higher education in the 21st century is undergoing transformation around the world. From educating the elite few, universities today are educating for the masses so as to create a more educated society that will contribute to nation building and its economic development, both locally and globally. It has also been often reported in the mass media that employers in general are concerned that local graduates in particular are falling below their expectations and are lacking in soft skills, which sometimes renders them unemployable. Hence, employers have called for universities to produce graduates who are not merely employable but are able to meet the demands of a knowledge society and to function in a globalized economy.

It is expected that universities today must not only deliver a relevant curriculum but to deliver it well so as to equip their graduates with not only the knowledge, but more than that, the skills expected of a 21st century knowledge worker. A

good teacher or lecturer not only teaches, but educates. Taking the cue from "to teach is to engage students in learning," educators must think of ways of fostering learning by engaging them in purposeful activities and relevant resources. The TSCS engagement framework (Figure 3) created by the author may be applied to foster learning and coupled with the shift towards a demand-pull learning approach (Figure 4), it is believed that the educator who uses both will, potentially, provide students with a more interesting and engaging learning environment. In addition, with a plethora of personal devices and learning technologies widely accessible to students, it is imperative that educators today leverage on these to further engage their students and to create a more active learning community both face-to-face and online.

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