EXPLORING NEW INSTRUCTION DELIVERY MODELS USING WEB-BASED TECHNOLOGIES IN A TRADITIONAL LEARNING ENVIRONMENTS

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Acknowledgments

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Introduction

Online learning has become the fastest growing trend in educational industry (Chia-Wen, Pei-Di, & Meng-Chuan, 2011). Technology has always been a part of distance education. Web-based technology in education is gaining popularity in the educational field. Whether it is a face-to-face setting or distance-learning environment, technology has quite an impact on student engagement and learning. Developments in new technologies have a significant impact on education, educators and learners and instructors in all levels of education are employing new ways of teaching by incorporating technology to improve student interest, interaction and learning outcomes (Mai, Ken & Heidi Yeen-Ju, T., 2012).

Student centered approaches in traditional learning environment such as hybrid courses or blended learning, virtual classrooms and flipped- classrooms can be introduced in a traditional learning environment with the use of web-based technologies. Blended learning or hybrid courses combines' face-to-face learning as well as online learning where part of instruction is delivered face-to-face while part is delivered online. In community colleges like Howard Community College, there is a significant increase in number of courses every year (David Buck, personal communication, November 2013). Due to limited classroom availability, lack of teaching personnel and steady increase in enrollments, it is essential to find alternate

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ways to teach face-to-face course. Hybrid courses provide a good solution as the face-to-face class time is reduced and is possible to fit in more number of courses in the same schedule. Flipped classroom is a new concept, where students study the content in advance and the instructor guided assignments, discussions, projects in classrooms (flipped classroom, 2013). The flipped classroom model allows appropriate use of current technology, provides creative and efficient ways to use classroom time, students can achieve better results by learning self-learning and teachers have more flexibility with course syllabus (Herreid & Schiller, 2013). Although flipped classrooms do not reduce class time, it is a new approach; both students and instructors find useful due to its flexible format and personalized learning structure (Nina Frolov and Jackey Jones, personal communication, October 2013).

This paper discusses different ways to use e-learning technology in the classroom to enhance student engagement in community colleges. After a thorough literature review, the analysis and the observations are primarily based on students and instructors from Howard Community College, Columbia, MD. Two flipped classroom courses and one hybrid course are studied for this paper. Both instructors, who have adopted a flipped classroom model, have seen positive results in student learning, engagement and learning outcomes. The instructors who taught using a flipped classroom model found this particular method more effective than the traditional lecture-based class. Within the hybrid course experimentation, students reported satisfaction with the use of technology. In addition, there was a clear advantage at the

institutional level in the effective use of available physical space and reaching wider range of students.

Methodologies

A systematic review of the literature will be used as the main methodology in this research. The main purpose of literature review will be to build a framework using existing knowledge. The data will be gathered from different sources such as scholarly articles from UMUC library, Internet search, and YouTube videos. These resources cover theoretical information such as different modes of learning, instructional design process, various web-based technologies, and current trends in community colleges. Study of past and present research demonstrates the need for instructional design process for converting courses from traditional learning environment into alternate learning environment. This research also employs a review of the case studies and experiences reported online. Different cases that involve hybrid courses and flipped classroom are studied. Finally, the author conducts interviews.

Howard Community College has piloted a program that involves flipped classrooms and hybrid courses. Two instructors from the Business and Computer Division and one instructor from English and World Languages Division are interviewed. An interview with the department chair provides an administrative perspective and offer long-term vision and planning for

alternate modes of education in the future. Findings from the literature review, cases and experiences as well as the interviews will be integrated to form the final research paper.

After the introduction, a literature review is presented, with four main sections, covering topics such as hybrid/ blended learning, flipped classrooms, need for instructional design and technology used for alternate modes of education. In the analysis section, two case studies from Howard Community College are presented: one for flipped classroom and another on a hybrid course. In the recommendations section, some ideas are suggested for Howard Community College. Final remarks and a summary conclude the paper.

Research Goals

The research paper primarily addresses, but is not limited, to community colleges in the process of exploring different modes of learning to expand their outreach and better engage its student body. The main goals are therefore:

- Explore different modes of learning such as hybrid courses, flipped classroom etc. using a diverse set of web-based technologies.

- Identify best practices in converting face-to-face courses into hybrid or, flipped classroom formats.

- Analyze the role of instructional design methodologies in alternate modes of delivery.

- Discuss the effective use of web-based technologies in student engagement.

- Summarize the advantages and disadvantages of a diverse set of alternate modes of learning.

Literature Review

In what follows, the author provides a review of scholarly articles, papers, and journals, web sites, online articles related to the main topic of the paper. The main topics for consideration are hybrid courses or blended learning in community colleges, technologies used in higher education, flipped classroom approach in community colleges, instructional design for alternate modes of teaching, case studies from community colleges etc.

Student-centered approaches in traditional learning environment

A number of educators are introducing alternate teaching methods in traditional environment. Traditional classroom instruction is frequently teacher-centered, through lectures and direct instruction, and it is task-based, often relying on behaviorist learning methods (Boghossian, 2006). Whereas in alternate modes of instruction, considered here, the instructions are student-centered, are based on hand on activities, group work, and are project based. Alternate modes of education often use constructivist and connectivist approaches (Boghossian, 2006).

In the competitive higher education market, community colleges are introducing new ways to attract and maintain part-time and working students. According to Michigan Community College Association (as cited in Gaskell, 2012), enrollment in community colleges

has dropped in 2010 when compared to the enrollments in for-profit colleges. Therefore, community colleges are considering alternate ways of delivering instruction that are flexible and convenient for working and part-time students.

The student-centered approaches presented in this study include blended or hybrid learning, flipped classrooms, fast track or express courses, and online learning (virtual classroom based).

Express/ Fast track courses The fast track or the express courses provide an opportunity for students to complete a regular 14-week course in less time, usually in 4-7 weeks, depending on the course (Howard Community College, fast track, 2013). The classes run more frequently and for longer time and run primarily on weekends, and therefore students can accommodate in their busy work schedule.

Hybrid courses/ blended learning Hybrid courses combine face-to-face instruction and online instruction. Therefore the class time is half that of the traditional face-to-face course (Blended learning, 2013). A detailed section on hybrid courses follows.

Flipped classrooms In flipped classrooms, the students often come prepared to classrooms by studying the lesson plan in advance. The classroom acts as a workshop, where instructor guides students through group activities, assignments, and projects. A detailed section on flipped classrooms follows.

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Virtual Online Learning Online courses are offered via Internet mostly through a learning management system such as Blackboard, Canvas, and D2L etc. In an online class, students and instructors are separated by time, distance, and do not meet face-to-face. Online discussion threads and real-time chats support communication and provide an opportunity to interact and collaborate similarly to f2f environment.

The broad spectrum of instruction including all the modes described above would look like figure 1. The amount of technology-mediated instruction used increases along the curve from face-to-face courses to virtual classrooms (fully online courses).
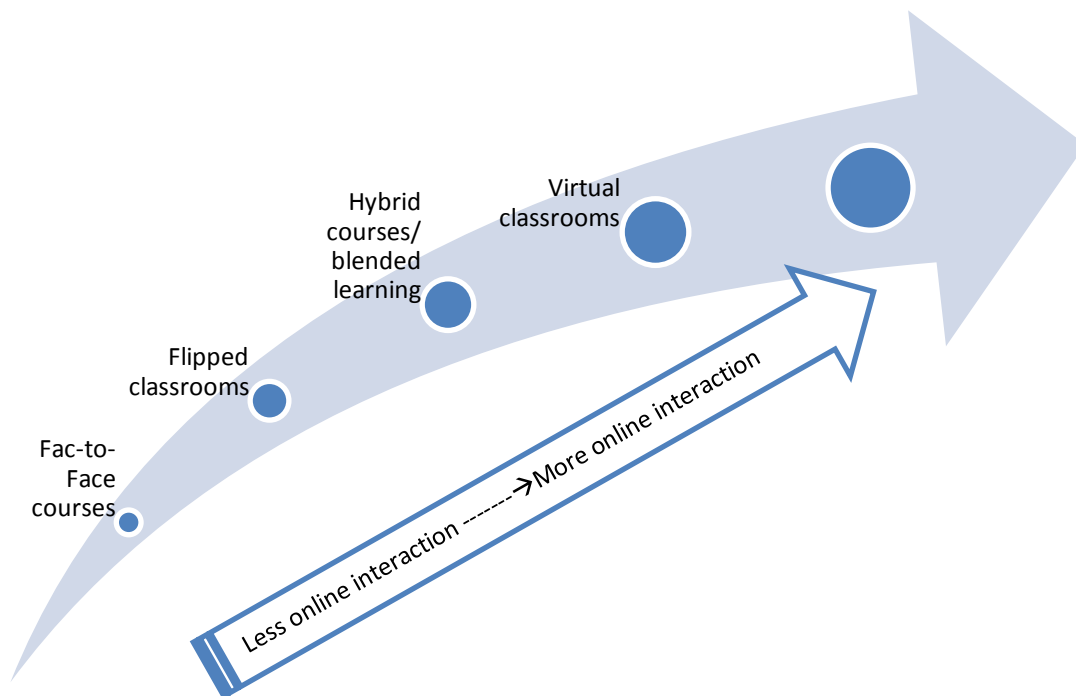

Fig 1: Spectrum of instruction (online interaction as a variable).

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In this paper, we focus our discussion on two of such modes: namely:

1. Hybrid or blended-learning

2. Flipped classrooms

Hybrid or Blended learning

According to the research by the U.S. Department of education, hybrid instruction is the fastest growing enrollment in higher education and the students in these settings score better in tests as compared to those enrolled in face-to-face courses (Poirier, S., 2010). Hybrid courses or blended learning combines face-to-face learning with web-based learning. In a typical hybrid course, traditional classroom lectures, classroom discussions, and group projects are combined with web-based assignments, discussion boards and other web-based tools. The proportion of classroom instructions and web-based activities varies from course to course, depending on subject matter and availability of technology. Although, the classroom instruction time in hybrid learning format is not completely eliminated, it is significantly reduced. It is often mentioned that hybrid courses offer the best of both worlds by combining face-to-face instruction and online instruction.

Why Hybrid courses are becoming a trend in community colleges

The International Technology Council (ITC) conducted a survey on eLearning at community colleges, and the results showed that 63 % community colleges increased the number of hybrid courses in 2013 as compared to 55 % in 2011 (International Technology

Council, 2013). According to the U.S. Department of Education (2009), hybrid courses offer similar or better learning outcomes when compared to face-to-face courses. High dropout rates are common in many fully online courses. Thus, hybrid courses can be a feasible alternative form of education, bridging the gap between fully online and face-to-face instruction (Sorden & Munene , 2013). However, hybrid courses eliminate one dimension of the flexibility when compared to fully online courses. Therefore, they cannot be used when the target population is at a distance, but it serves well as an alternative for a fully face-to face format.

Today's students have grown up in technology driven surroundings and many students utilize technology in learning. Many faculty members believe that "Technology cannot replace the human factor in higher education" (Merisotis & Phipps, 1999, p. 31) and are still reluctant to use the latest technology in classrooms and prefer traditional classroom based instructions This creates a communication and technology gap between students and instructors (Sturgill, R., 2011). A hybrid course combines traditional face-to-face instructions with web-based tools, keeping students up-to date with current knowledge.

. Hybrid courses offer convenience as the instruction time on campus is reduced, which saves time in transition and transportation costs. Many community colleges are considering hybrid format to deal with the lack of physical space due to increase in enrollments. Hybrid course format also helps lagging students. According to Poirier (2010), many introvert or shy students greatly benefit from hybrid courses as half of the work is done out of the classroom settings.

Pedagogy and technology involved in blended learning. Blended learning is not just mere addition of online component to face-to-face courses. It requires a systematic procedure to convert a face-to-face course into a hybrid course. A team of professionals that include subject matter experts, instructional designers, project managers, technical support specialists, librarians, web site designers and e-learning coordinators is necessary for designing a new hybrid course. A well-defined instructional designing model is required to design a hybrid course. Many instructional designing models have been proposed and are in practice. Some of the models are Gagne's nine events of instruction(Gagne's nine events of instruction, 2013), Kemp model(Akbulut, 2007), ADDIE(Fresen & Boyd, 2004) , Bloom's taxonomy (Halawi, McCarthy & Pires, 2009), and Kirkpatrick's four levels of training evaluation (Praslova, 2010). The use of an instructional designing model is necessary to design a hybrid course because the online component has to be planned in advanced. A good model guides through the process of analyzing and modifying the course. A hybrid course requires a different set of course objectives and learning outcomes and a good model is important to recognize them correctly.

ADDIE is the generic instructional designing model and most models are based on ADDIE model (ADDIE Instructional Design Process, n.d.).

ADDIE stands for Analysis, Design, Development, Implementation and Evaluation (Fresen & Boyd, 2004).The ADDIE model can be applied to any course format, whether face-to-face, online or hybrid. A hybrid course needs well planned and solid design, therefore is important to consider an instructional designing model. While designing a hybrid course using

ADDIE model, the following steps should be considered. A hybrid course should be designed keeping in mind the intended audience and the basic pedagogical standards for online component such as good dialogue, appropriate course content and regular assessments should be included (*Analysis*). All the modules in a course should be designed so that a good balance can be maintained between online component and classroom lesson plans. The course design should have standard usability features such as easy navigation, appropriate graphics and media, easily accessible links and overall good presentation. The learning management system used for the hybrid course delivery should be accessible and easy to use for students and instructors (*Development and Design*). Testing of a newly developed hybrid course is essential before it is published (*Implementation*). A regular feedback from students and instructors as formative assessment and a summative evaluation at the end of the course can help improve the quality of the course (Evaluation).

It is very important for faculty to be acquainted with the technology used in hybrid or blended learning. According to 2013 Campus Computing Survey, 79 % respondents indicated that the faculty training for online teaching is very important (Teaching to Teach, 2013). The faculty training can be done online, and the participants can complete the assigned modules at their own pace.

Technologies used for blended learning Technology play a major role in blended learning. The use of technology depends from school to school. Different technology tools can

be used, including learning management systems, cloud based applications or web2.0 tools, online resources, e-textbooks, videos, etc.

Learning Management Systems (LMS). A learning management system is a platform by which online instruction is delivered asynchronously and/or synchronously. Some of the most popular learning management systems are Moodle, Blackboard, Canvas, Desire2Learn, Edmodo etc. (http://www.learndash.com/20-most-popular-learning-management-systems-infographic/). Institutions choose an appropriate LMS, depending on cost, usage, ratings, technical support, usability etc. An LMS acts as a virtual classroom for online and hybrid courses. The primary mode of online instructional delivery in hybrid courses is via learning management system. The course material is presented via modules or in conferences. Instructors can use discussion threads for asynchronous communication. Students can submit assignments and have them graded. In addition, announcements and other content can be posted dynamically. Many learning management systems have offer synchronous interaction features, such asa live chat with shared white board.   For assessment, an LMS might offer a built-in quiz creator with grading features that help in online assessment.

Web 2.0 tools or cloud based applications are Internet based applications that help collaborate and share information online. Many Web 2.0 tools are used in education to enhance student learning. Many instructors connect to students via social networking sites such as Twitter, Facebook, and Myspace or through blogs and wikis. Wikis are also used for collaborative or

group work. Media tools such as YouTube are a good source of information in audio-visual format. Video conferencing tools such as Skype, Google hangout can be used for synchronous interaction. An appropriate use of web 2.0 tools in hybrid course may enhance student learning. Most of such applications, as well as several LMS's are cloud based. This means that the institution does not have to be concerned with local storage or computing.. Many cloud applications such as Google drive, Dropbox stores data, files, documents etc. Web-applications such as Weebly help create websites free. There are lot of options with cloud-based applications and web 2.0 tools, and choosing the most appropriate application for a hybrid course can enhance student engagement. They can substitute the use of full LMSs.

Online resources Many educational resources are available on the web. Khan Academy, YouTube, MOOC's, TED talks, MERLOT etc. has a huge database of audios, videos and other instructional resources. Many organizations, such as University of Maryland University College (UMUC) has an online library with huge database. Students can access academic journals, articles, papers, e-books online. Print books and non-available online articles can also be requested through library services (services, 2013).

Instructor created material posted online Instructors can create PowerPoint, lessons, quizzes, assessments, surveys etc. and deliver via a learning management system or emails. Many of these materials can be created and stored using cloud based applications such as Softchalk,

slideshare, Prezi etc. These become as homegrown educational resources that institutions can use.

Digital material Other digital material includes CD's or DVD's that accompany textbooks, streaming videos through the Internet, podcasts, instructor created digital material, or e-textbooks. Many textbooks are now available in digital format, which are often called as e-books or e-Textbooks. Textbook publishers publish digital copies of many textbooks for easy storage, compact nature, easy accessibility, affordability, and easy updates. E-textbooks can be accessed from desktop and laptop computers or via tablets like iPad, Galaxy or smartphones or special e-book readers such as the Amazon Kindle.

Emerging technologies provide many options to mediate the off time of hybrid courses. A careful selection of the most suitable technology is necessary. The technologies used in hybrid courses should facilitate learning processes and should motivate students. Hence, the analysis and design phase from ADDIE model plays a vital role in selecting the right technology for the intended audience.

Blended learning for community colleges. In the past few years, enrollments for distance education, including hybrid courses in community colleges, have increased significantly as compared to four-year colleges (Xu, D., Jaggars, S., & Columbia University, C., 2011). Many community colleges are now offering blended courses in addition to traditional face-to-face and online courses. According to International Technology Council (ITC) survey, 63 % community

colleges offered hybrid courses in fiscal year 2012 , an increase of 8 % as compared to fiscal year 2011 (International Technology Council, April 2013). According to study at Washington State Community Colleges, students who were enrolled in fully online classes had higher dropout or failure rate as compared to those who took face-to-face courses (Xu, Jaggars. & Columbia University, 2011) and according to a survey by Center for Community College Student Engagement, students involved in hybrid instruction were more engaged than those who took exclusive online classes (Thor, 2010). From the information above, it can be said that the students' engagement and success rate is higher in hybrid courses than that of fully online courses. One of the main reasons for lower success rates in a fully online class can be the lack of commitment, ability to self-study and lack of self-motivation. Hybrid courses, on the other hand, also offer a face-to-face component, which may help students finish the course successfully.

Blended learning/ hybrid courses have some advantages and disadvantages. The positives of blended learning include convenience and flexibility to part-time and working students, reduced demand for physical space, and a better alternative to fully online courses for local students. Some of the disadvantages of blended instruction involve the additional cost for course development and technologies, additional training for faculty, and technology support for both faculty and students. Fig 2 shows advantages and drawbacks of blended learning

Advantages
- Can accomodate growing student body
- A better alternative to fully online course
- Creates more physical classroom space
- Convinient learning model for working and part-time students

Drawbacks
- A new course design and development is required
- Requires additional funding
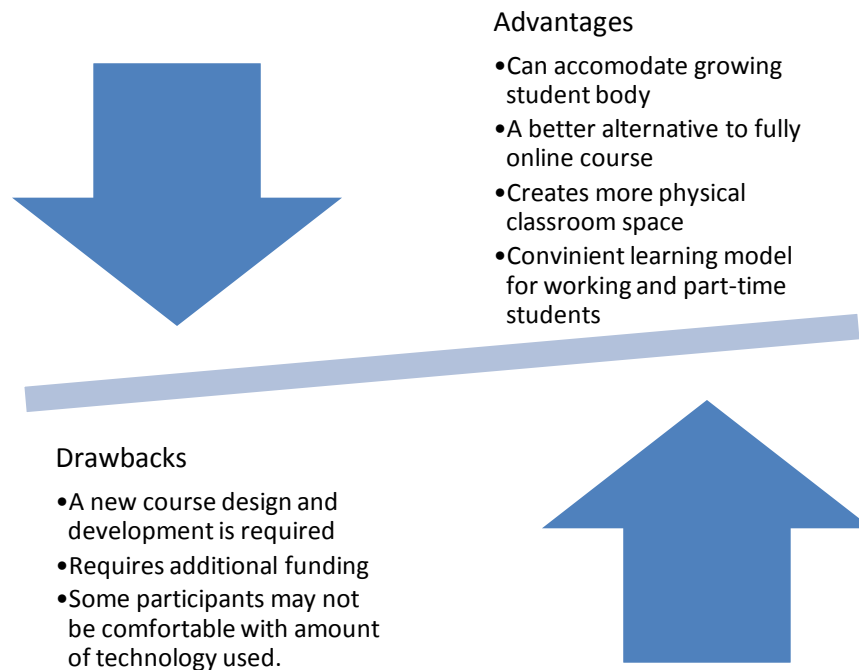- Some participants may not be comfortable with amount of technology used.

Fig. 2: Comparison of blended learning/hybrid courses

Flipped classrooms

In 2007, two teachers, Jonathan Bergman and Aaron Sams from Woodland Park, CO introduced the concept of flipped classroom (http://www.knewton.com/flipped-classroom/). They recorded their classroom lessons on MS PowerPoint for the students who had missed the class. The concept became popular as more students could make up for missed lectures by studying online via recorded material. According to flippedlearning.org, the definition for a *flipped classroom* is "Flipped Learning occurs when direct instruction is moved from the group teaching space to the individual learning environment. Class time is then used for higher order, active problem solving by students and one-to-one or small group interactions with the teacher

(http://www.flippedlearning.org)." Flipped classrooms are therefore twisted version of traditional classrooms. In flipped classrooms, lectures are delivered via technology, through Internet, PowerPoint, voice recordings etc. outside the classroom. Digital media simulations provide many benefits to students such as engaging students in student-centered studies, multiple modalities, virtual internships etc. (Beckem & Watkins, 2012). Presenting the subject matter in different ways using technologies may help students' participation. Students can watch the lecture on their own time at home or at school. Classroom time is reserved for collaborative work, assignments, queries, and homework.

Why flipped classrooms are becoming popular? The Flipped classroom environment is growing in interest and demand based on several open learning initiatives such as the KHAN academy (https://www.khanacademy.org/), TED talks(http://www.ted.com/talks) and Massive Open Online Course (MOOC) (Cormier, 2010) providers, like Coursera (https://www.coursera.org/) and EdX (https://www.edx.org/). A vast number of students are exploring these open learning environments as thousands of them flock to hundreds of courses available online in a variety of courses such as mathematics, physics, geography etc., mostly at no cost on their own time**.** An Increasing number of the instructors from community colleges and higher education institutions are introducing flipped classrooms (Bart, 2013).There is data showing that **s**tudents from flipped classroom experiments score better in the same test as compared to the students in a conventional class (Satullo, 2013).

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KHAN Academy Khan Academy is an initiative started by Salman Khan to educate his cousin through video lectures. The idea was then developed on a larger basis. Today, Khan academy is a non-profit website which has hundreds of micro lectures on different subjects ranging from Physics, mathematics, health sciences, history and many more. These micro video lectures are recorded and delivered via YouTube. The Khan Academy website also has over 300 million lesson plans in different subjects. (http://en.wikipedia.org/wiki/Khan_Academy) The updated Khan Academy website has many new features such as practice exercise libraries, dashboards for students and teachers, progress reports, opportunity for students to earn badges etc. (www.khanacademy.org) Students can access and solve practice exercises. A progress report is generated for each student, which goes into respective teacher's dashboards. The Khan academy, the Bill Gates foundation, and Google Inc. are jointly supporting Khan Academy since 2009. Today, many schools, and higher education institutes worldwide use Khan Academy videos, with around 10,000 schools nationwide (http://thejournal.com/Articles/2012/04/05/Khan-Academy-Talks-Analytics-OER-and-iPads.aspx?Page=1). Nashua Community College started a boot camp for Math and introduced Khan Academy videos. The math instructors at Nashua Community College saw a positive success rate with the students (http://www.nashuatelegraph.com/news/1011301-469/nashua-community-college-to-host-math-boot.html). In Hawaii Community College's math boot camp, the students not only increased their math placement scores but also saved tuition money by

watching the free videos by Khan Academy (https://www.khanacademy.org/coach-res/case-studies/case-studies-higher-ed/a/hawaii-community-college-math-refresher).

Open Educational Resources (OER) OER are freely available web resources which can be used for learning, teaching, academic purposes, research and assessments (http://en.wikipedia.org/wiki/Open_educational_resources). Types of OER include lesson plans, modules, short courses, full courses, open textbooks, openly licensed videos, podcasts, exams, software, slideshows and other tools that support resources. OER has a great relevance in flipped classrooms. Students are required to study outside classroom and may need additional help. OER can provide a solution with a huge database of open resources freely available on the web. Many teachers also prefer using OER when practicing flipped classroom approach to enhance students' learning.

MOOC's. MOOC stands for massive open online courses. MOOC's originated from Open Educational resources (OER). MOOC provides online learning opportunities and has a huge database for variety of subjects and has teaching material in form of videos and readings, online collaborations, and quizzes (http://en.wikipedia.org/wiki/Massive_open_online_course). The basic pedagogy for MOOC is based on connectivist theory. Many commercial and non-profit providers support MOOCs. Course providers like Udacity (http://www.udacity.com) charge for their online courses while EdX (https://www.edx.org/), Coursera (https://www.coursera.org/) offer the courses free. In 2001, Massachusetts Institute of

Technology (MIT) started offering free courses online with 50 initial courses, which were called Open Courseware. By 2012 the number of courses published online were 2150, with 125 million visitors to date (Our history, 2013). Now, MIT has collaborated with Harvard University and together they offer free courses via EdX.

Pedagogy and technology involved a flipped classroom

Flipped classroom is a new concept in higher education and uses an active learning strategy the pedagogy of a flipped classroom is comprised of individual learning styles, peer assisted learning, cooperative learning, problem-based learning and active learning (Bishop, & Verleger, 2013). . Students are expected to study the lesson plan in advance. The lesson plan is delivered through textbooks, videos, podcasts, or websites. The individual learning style and active learning theories are therefore applicable outside of classroom. An instructor acts as a facilitator in classroom. Assignments, homework, and group work is done in classroom with instructor's help, which favors collaborative learning, peer assisted and problem based learning theories. Some of the advantages of a flipped classroom include; students can customize the lessons at their own pace, classroom time can be utilized to focus on students' difficulties, and classroom time can be used in more creative and constructive ways. Instructors can customize syllabus and lesson plans according to students' need and therefore can practice a differentiated instruction (Hanover research, 2012).

Students' interest levels are seen to be increased when the latest technology is appropriately used (Herreid & Schiller, 2013). Technology used in flipped classrooms vary from instructor to instructor. Many instructors rely on assigned textbooks only and believe that studying the lesson is sufficient. Some instructors use the technology to supplement the reading material and textbooks. The audio/ video recordings provided by instructors help students go deeper in the subject area. Podcasts, instructor created videos, online videos such as TED talks, online lesson plans can assist in student learning.

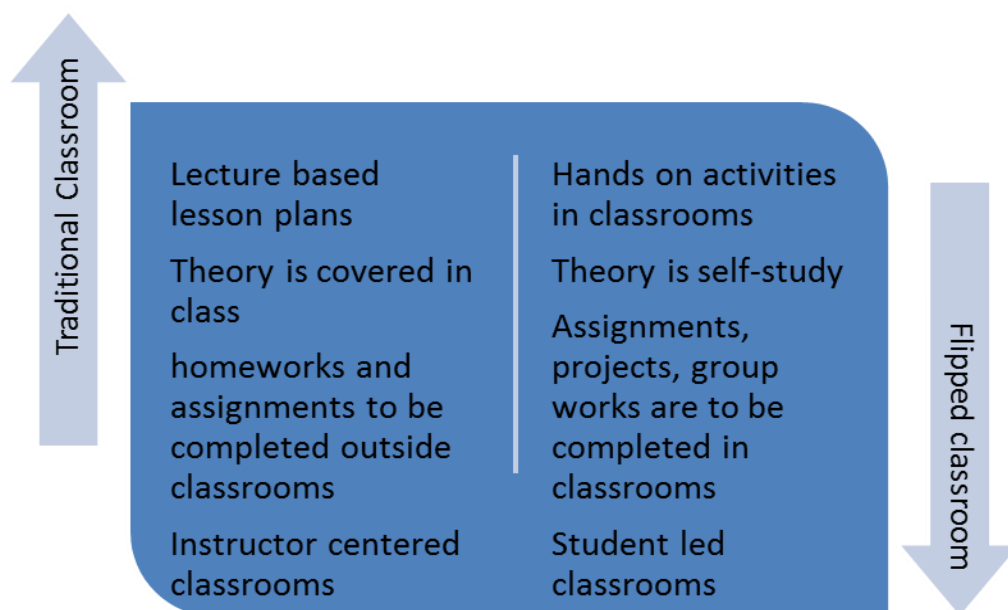Fig. 3 compares traditional course setting and a flipped classroom

Fig. 3: Comparison of traditional classroom and flipped classroom

Analysis

Howard Community College (HCC) is located in Columbia, Maryland. It has over 10,000 students' turnover each year. HCC offers a wide variety of credit and non-credit courses in many disciplinary areas, including but not limited to, science, mathematics, social studies, business and computers, languages, arts, humanities etc. The primary delivery method of most of the courses is on campus, face-to-face. In the past few years, HCC has reported a steady growth in both credit and non-credit enrollments. The credit enrollments rose by 20 % in the last five years and are expected to inflate by approximately 2 % in 2014 (Howard Community College, 2013). To accommodate growing students' body, and to incorporate technology dependent student population, offering student-centered courses is considered. At present, HCC offers over 45 hybrid courses in different instructional areas such as business, computers, mathematics, health sciences, languages, arts and humanities etc. (Howard Community College, a, 2013). In hybrid courses, the amount of meeting time on campus is cut in half. Students can use on site facilities such as computer labs and library to complete online component of hybrid courses.

The report submitted to Howard Community College's Board of Trustees shows the steady growth in online and hybrid course enrollments. Fig. 4 and Fig. 5 shows 81.4 % increase in Fall semesters from 2009 to 2012 and 82.3 % increase in Spring semesters from 2010-2013.

Fig. 4 : *Note*: From *III Information session:Overview of e-learning opportunities, May 2013*
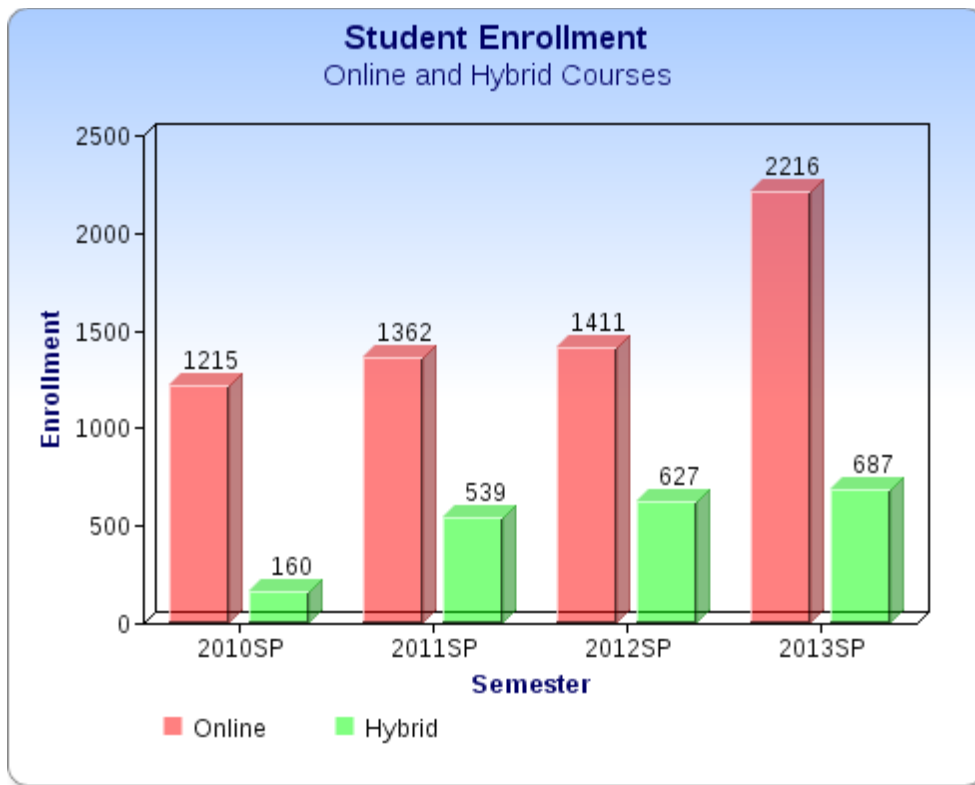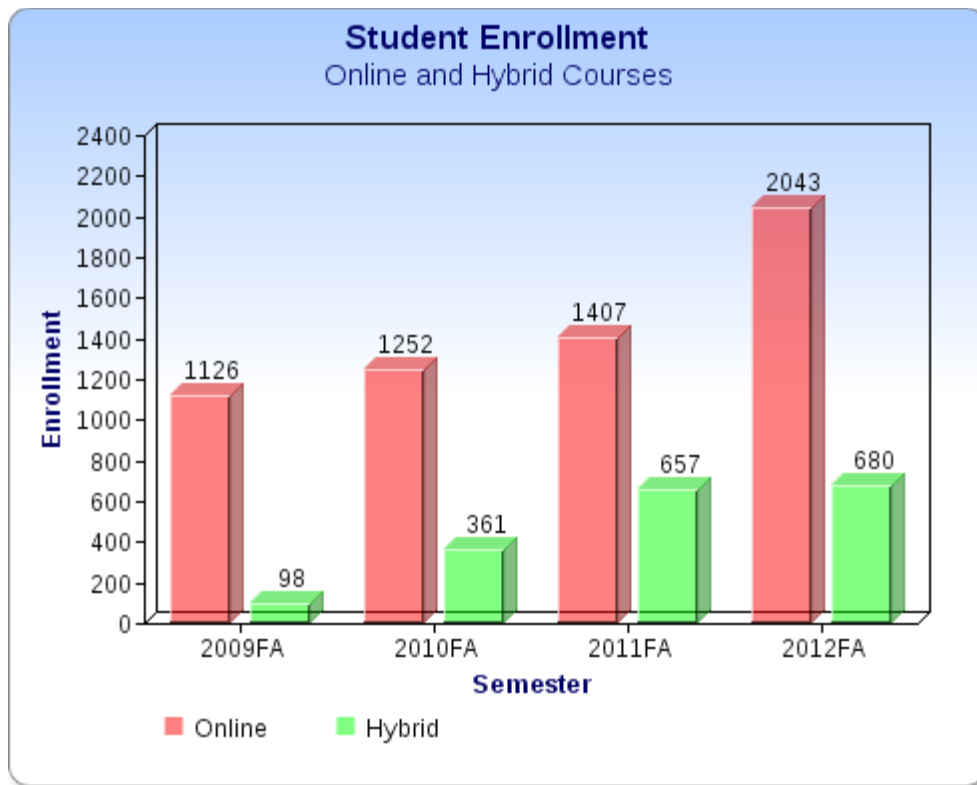
Howard Community College.

Fig. 5: Note: From *III Information session: Overview of e-learning opportunities, May 2013*,

Howard Community College

According to David Buck, Director of e Learning, Howard Community College, (personal

communication, November 20, 2013), the withdrawal rate for online courses is higher as

compared to hybrid courses. In fiscal year 2012, the withdrawal rate for online courses was

12.1 % and for hybrid courses, it was 10.3% (Buck, D., 2013). Mr. Buck has also observed that

the success rate for hybrid courses has improved over the years. Fig. 6 shows the success rate

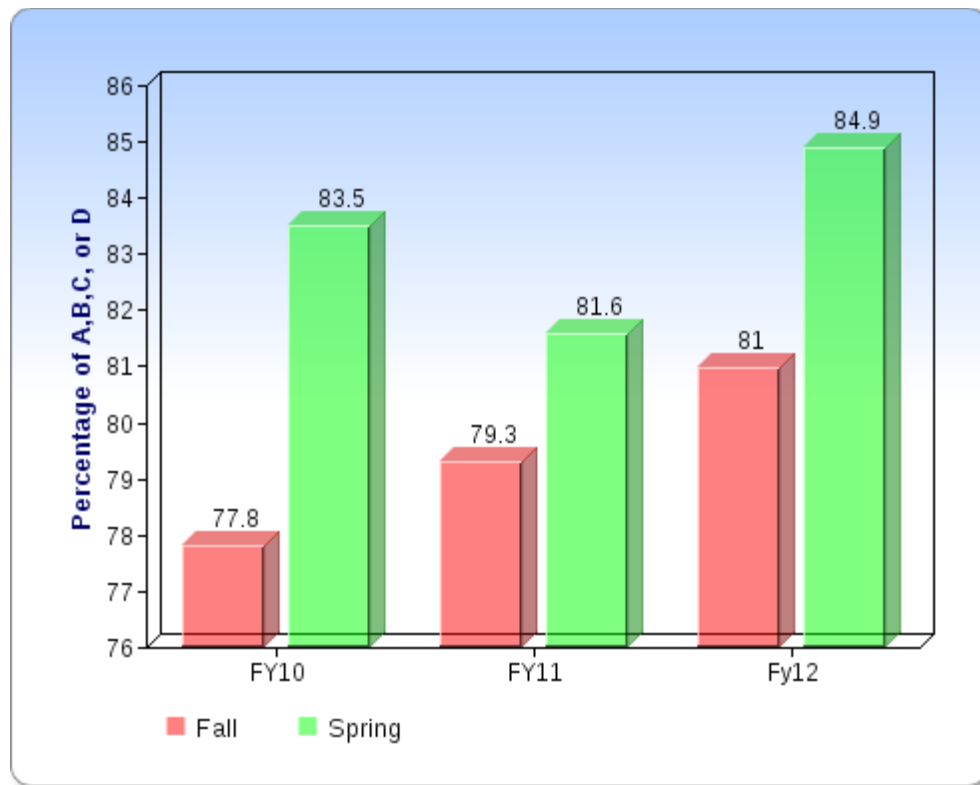of hybrid courses for three consecutive years.

Fig. 6: Note: From III Information session: Overview of e-learning opportunities, May 2013, Howard Community College

Case studies at Howard Community College

The case studies that involve student-centered learning approach are described in the section below. The case studies involve hybrid course format, flipped classrooms format, and the department chair's view on student-centered learning.

Hybrid Courses. Dr. Rahim Salih is an Arabic professor at Howard Community College. He has piloted a hybrid course in the World Languages Department. Currently, advanced level Arabic courses are offered as hybrid format and beginner level courses have been planned for near

future. During the interview (personal communication, November 4, 2013) Dr. Salih mentioned the need for hybrid courses at Howard Community College due to the following reasons.

- To keep up with the exponential growth in enrollments and the lack of physical space, an alternate way of instruction delivery is essential.

- The students are tech smart, have easy access to smartphones, laptops, and tablets, and therefore can easily accommodate technology in learning. The students have access to the computer and language labs and the library for computer use. The World Languages Department also loans out laptops to students.

- Most students are comfortable with the technology and need little or no help.

- The great advantage of a hybrid course is that any technology difficulty can be addressed and solved when students meet face-to-face in classroom.

- Hybrid courses not only cut the classroom time in half but also frees up parking space, library and computer lab traffic and even the cafeteria crowd

However, designing a hybrid course takes lots of efforts, careful consideration, and a traditional face-to-face cannot be simply taught in a blended format, explained Dr. Salih. The e-learning director at HCC, David Buck said that approximately 100 hours' worth of work is required to develop a hybrid course (personal communication, November 20, 2013). The course objectives and the goals have to be modified, and the online component should complement the face-to-face syllabus. After carefully designing the syllabus, Dr. Salih creates online modules

on HCC's learning management system, Canvas. Each module aligns with his weekly lesson plan and includes quizzes and homework. The students cannot proceed to the next module unless the previous module is complete. The locking features of the module helps keep all the students on the same learning curve, said Dr. Salih. According to Dr. Salih, it is very important to test the modules before they are released to students.

In spite of time-consuming efforts as mentioned above, Dr. Salih recommends hybrid courses as a way to incorporate student-centered learning approach.

Flipped classrooms Two instructors at Howard Community College, Prof. Jackey Jones and Prof. Nina Frolov have tried the flipped classroom approach for the first time this year. Both the instructors teach computer-programming courses: Introduction to MS Word and MS Excel (CMSY 101 and CMSY 102).

Prof. Nina Frolov (personal communication, October 22, 2013) highly recommended using flipped classrooms for student centered learning. Her observations and experiences are listed below.

- Prof. Frolov introduced flipped classroom because many students did not have access to the software. Students were required to buy software in addition to the assigned textbook. Therefore, she asked the students to study the theory part at home and do the practical work in classroom. Since the textbook assigned for this course is very self-explanatory, students were easily able to get the concepts clearly. The students were more attentive in classroom and were more competitive due to peer pressure.

- Prof. Frolov got very positive results using flipped classroom approach. Students' theory scores as well as practical scores were noticeably increased.

- The only issue Prof. Frolov facing is about the time management. Students are learning at home and doing only the assignments and lab work on campus, the classroom time is reduced by almost 50 percent. According to Prof. Frolov, in future, the course can be offered once a week instead of twice a week or two courses can be offered back to back in one semester. Thus, flipped classroom can be used to manage increasing enrollments and overloads on classrooms.

Prof. Jackey Jones (personal interview, October 23, 2013) loves the idea of flipping her classroom.

- Prof. Jones noticed that students learn better with this approach.

- Prof. Jones also observed that the students are required to do the lab work and the homework in classroom, hence they come well prepared. Further, by asking questions in classroom, the students get in-depth grasp of the concept.

- In addition to the assigned textbook, Prof. Jones supplements her course with online videos such as Ted Talks.

Administrative viewpoint on student-centered learning. Dr.Vinnie Rege is the Chair of the center for Hospitality and Culinary studies of Howard Community College. His department has 18 courses in Hospitality and Culinary studies combined, 37 different sections, and on average

325 students per semester. His views on student-centered learning, faculty training, and support and outlook on present and future courses in his department are summarized as below (personal communication, November 8, 2013).

- Strategic planning is required to accommodate growing student body and by incorporating different measures, more courses can be offered.

- The courses of Culinary and Hospitality programs are evaluated for flexibility, student retention, student progression, and success rates. More courses are being planned for the future. Some of them will be offered as express courses while some will be offered online or in hybrid format.

- Dr. Rege informed that the entire full-time faculty and many adjunct faculties from his department are certified to teach online and hybrid courses. All the instructors who develop a hybrid or an online course are paid to develop a new course.

- The hospitality and culinary department collaborates with e- learning as   nd audio/ visual department to create online components of hybrid courses such as learning management system, videos etc.

- The Casino Management Certificate Program is offered face-to-face at present and according to Dr. Rege, some of the courses from this program would be offered online.

- Howard Community College is supportive of student-centered learning such as hybrid courses and express courses due to space crunch and increasing demand.

Exploring new instruction delivery models using web-based technologies in a traditional learning environments

Ruddhi Wadadekar

Technology availability and support at Howard Community College

The faculty at Howard Community College has access to different technologies using which they can create lesson plans, modules, surveys, quizzes, assessments, audio / video recording, and podcasts (http://hccfacultysupport.wikispaces.com/). The software include Audacity, Clickers (Turning Point), Jing, Net Support and Microsoft Office 2010. The instructors can create teaching material or assessments using these software. All the faculty computers and the computers in adjunct rooms are equipped with a web camera, headphone and microphone. Instructors can use these equipment to produce audio/ videos or podcasts to supplement teaching. HCC also has subscriptions to Adobe Connect (http://www.adobe.com/products/adobeconnect.html), Google apps for faculty, Softchalk cloud (https://www.softchalkcloud.com/) and Instructure Canvas (http://www.instructure.com/). In addition, faculty computers are also equipped with Adobe creative suites (http://www.adobe.com/products/cs6.html).

The popularity of e learning is increasing among the students. The blended learning and the flipped classrooms, both involve the use of technology and the digital generation of students are easily adapting to it. The observations from the interviews show that students' involvement is higher when technology is included in learning. Due to space limitations, increasing demands for education and innovation in technology, many institutions are adopting alternate modes of education. Many instructors apply different pedagogy such as flipped classrooms to enhance students' learning and participation. The downside of alternate mode of

education involves additional efforts and time by faculty and instructional designers to develop

a course, additional funding, and resources by institutions, and additional technical support

needed.

Recommendations

Based on the observations and analysis, the following recommendations are made to

Howard Community College.

- Howard Community College's e-learning division manages online and hybrid courses,

  which are beneficial to working, part-time students or students with special needs. The

  analysis shows the steady increase in enrollment for online and hybrid classes. The

  survey results for Maryland online institutions show a 17 % increase in HCC's e-learning

  courses (Appendix C). More than 14,000 credit- students have enrolled in fiscal year

  2013 and the number is steadily growing every year. To accommodate a wide range of

  students from different disciplines, a larger number of courses should be offered. Hybrid

  course format is a good option and HCC should offer more hybrid courses in different

  disciplines. The physical campus overload not only includes classrooms capacity but also

  comprise of parking, cafeteria, and library and labs population. Hybrid courses will help

  reduce the physical overload on campus by cutting the classroom time.

- The Casino Management Certificate Program is one the new programs in Hospitality and

  Culinary department. Many students for this certificate program are working

professionals. The full-time students are also required to complete a 240-hour internship. Blended learning is a good recommendation for this program since some of the course content will be offered online and the students will have time flexibility. Some of the theory based face-to-face courses like Introduction to Travel and Tourism (HMGT-160), Casino Organization and Culture (HMGT-116), Casino Marketing (HMGT-235) can be offered in hybrid format.

- The analysis shows that the success rates in hybrid courses are higher than that of fully online courses. Hence, to keep the high outcomes, HCC should consider hybrid courses over fully online courses.

- Hybrid course format is not only useful in academic courses but can also be used effectively for professional development. In Howard Community College's Report of the Commission on the Future (Report, 2013) there are recommendations for different task force groups that involve the use of technology for instruction; promotion, advertising, and some recommendations advocate e -learning through hybrid and online courses (Report, 2013). Many faculty members cannot attend face-to-face professional training sessions due to time constraints, and different class schedules. The training sessions can be offered part online and part face-to-face, so that the faculty members will have saved half of the face-to-face training time.

- Student-centered instructions like flipped classrooms are instructor's preference. Overall, the flipped classroom approach has showed positive results in students'

outcomes. At present, flipped classroom model is practiced in two courses in Business and Computers Department and can be expanded to different courses in different academic areas.

- Faculty training workshops on how to use flipped classrooms can be offered as part of professional development. Open educational resources are cost saving alternatives to increasing material costs. By carefully choosing the appropriate material, instructors can enhance student learning. By introducing more technology based, student-centered learning courses like flipped classrooms, HCC can benefit students learning.

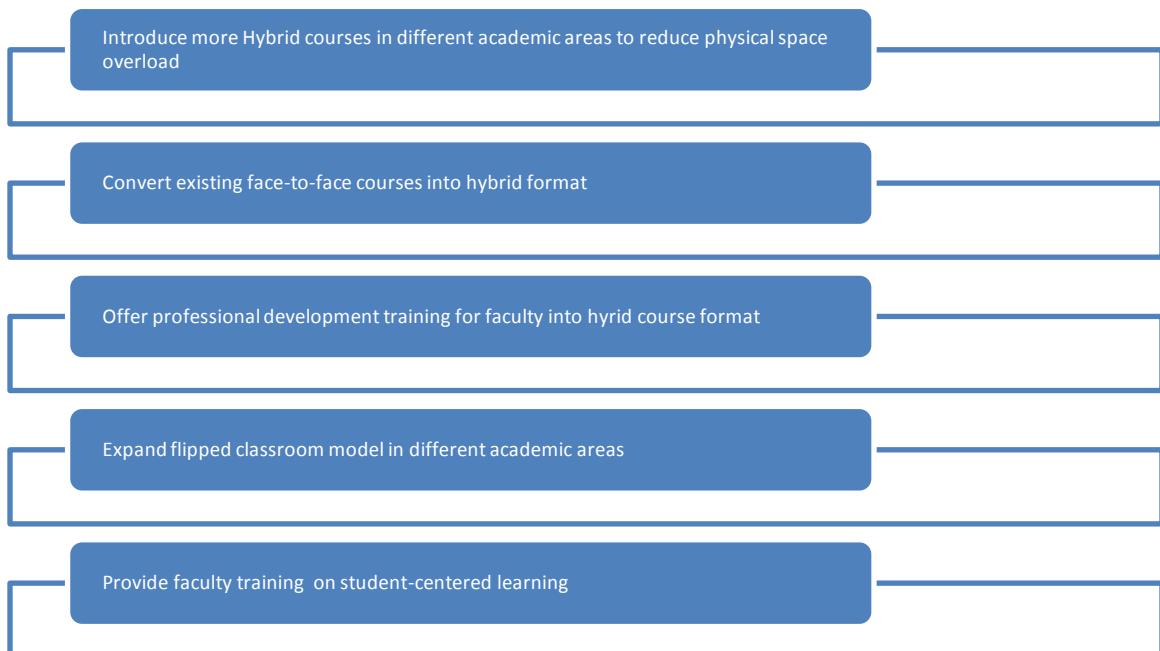Fig. 7 shows a summary of recommendations for Howard Community College

Introduce more Hybrid courses in different academic areas to reduce physical space overload

Convert existing face-to-face courses into hybrid format

Offer professional development training for faculty into hyrid course format

Expand flipped classroom model in different academic areas

Provide faculty training on student-centered learning

Fig. 7: Recommendations for Howard Community College

Conclusion

The methods of teaching and learning have gone through many changes throughout the history. The pedagogy has evolved over time to accommodate students' needs and learning objectives. Different teaching styles have been practiced to enhance students' success. Research and development in technology field has greatly benefited educational industry and many new techniques are being incorporated to enhance student learning and participation. Technology can be effectively used in traditional classroom settings to successfully engage students and to boost positive learning outcomes. Hybrid courses or blended earning combine face-to-face portion with an online component. Hybrid courses can reduce the physical load on classrooms, and can be somewhat flexible to students. Hybrid courses can also be a better option to a wide variety of students, including part-time students, working adults and the students with disabilities. It may be time consuming for faculty to develop a hybrid course and the institutions may require allocating additional resources for blended learning, but more and more higher education institutions are incorporating hybrid courses due to demand and requirement. Flipped classroom is a twist to the traditional classroom teaching, where the roles of classroom lectures and homework are reversed .Students take charge of self-learning outside of classroom and deepen the knowledge with help of instructor in classroom through assignments, projects and collaborative work. Free online educational resources such as Khan Academy and MOOC's provide plentiful of material to students. Practicing a flipped classroom method is instructor's individual choice, it does require alterations in syllabus and teaching

methodology, and instructors have seen positive outcomes in student learning, engagement and learning. Different teaching methods in traditional classroom settings can be practiced with the help of existing and emerging technologies to improve student learning, student participation, and positive learning outcomes.

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Appendix A

Interview questions (for hybrid courses and flipped classrooms)

1. Why did you use flipped classroom approach?

2. How did students react to it?

3. Did you see any difference in the grades? How?

4. Was it easy, hard to exercise the flipped classroom model?

5. Did you change the syllabus?

6. Did you create any material?

7. How the technology was useful with this model?

8. How as a teacher you find this model useful?

9. Do students benefit from this model? How?

10. Would you recommend the flipped classroom setting to other courses?

Interview questions (Chair of the Center for Culinary and Hospitality studies)

1. As per your outlook, how many courses do you think you will develop?

2. Do you have any alternate modes of instruction? What?

3. Do you offer any hybrid or online courses?

4. How many courses are hybrid/ online?

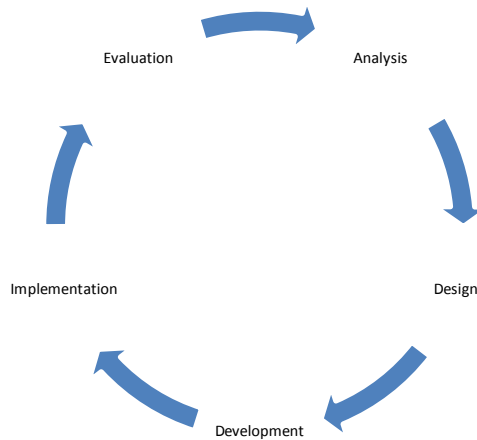5. What is the average age group of your students?

6. How many full-time and part-time faculty teach online/ hybrid courses? Are they certified to teach online?

7. Do you/ your instructors seek assistance from e-learning department to develop a hybrid course?

8. Have you done assessments for face-to-face and hybrid courses? Did you find any difference in students' success rates, retention?

9. Do you think the students benefit from blended learning? Why? Why not?

10. Do you have to make changes in budget?

11. How easy it is to get the resources?

12. Do you collaborate with other departments for example the Teaching and Learning Institute or e-learning department?

13. Do you consult an instructional designer when designing a hybrid course?

14. How do you deal with technical difficulties?

15. Did you have to buy any special software for hybrid courses?

Appendix B

ADDIE model

Analysis	-Needs assessment -Measures performance gap -systematic study of the course to be developed
Design	-course design by subject matter expert and instructional designers
Development	-Course development using online resources such as websites, learning management systems, and other digital material - other non- digital resources, library services
Implementation	-release and test of developed project
Evaluation	-Assessments

Appendix C

MOL Institution	Total FY11	Total FY12	Percent Change from FY11 to FY12
Allegany College of MD	3,440	3,329	-3%
Anne Arundel CC	24,315	25,514	5%
Baltimore City CC	8,981	9,243	3%
Carroll CC	3,049	2,910	-5%
Cecil CC	2,572	2,699	5%
Chesapeake College	3,262	3,203	-2%
College of Southern MD	17,544	18,708	7%
CC Baltimore County	21,682	23,807	10%
Frederick CC	4,783	4,708	-2%
Garrett CC	731	1,056	44%
Hagerstown CC	3,807	4,615	21%
Harford CC	239	254	6%
Howard CC	5,816	6,790	17%
Montgomery College	15,891	17,623	11%
Morgan State University	1,498	1,591	6%
Prince George's CC	13,542	14,405	6%
Stevenson University	4,325	0	
University of Baltimore	7,012	6,719	-4%
UMUC (Stateside Only)	173,656	204,192	18%
Wor-Wic CC	2,912	2,988	3%
Total	319,057	354,354	11%

Notes:
1. The data are course enrollments, not unduplicated headcount.
2. Institutions were asked to report courses conducted in an Internet-based vs. distributed classroom format. Most courses are asynchronous.
3. A few institutions reported online enrollments in a winter term; these enrollments were added to the spring enrollments.

Source: Hilke, Jurgen. "A „W" Study." MarylandOnline, 2010. Web. 1 May 2013.