In the following report, Hanover Research presents innovative strategies used in community college classrooms to improve student success and retention. This report focuses on engaged and active learning strategies such as flipped classrooms, information and lecture capture technologies and hybrid/blended learning.
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EXECUTIVE SUMMARY AND KEY FINDINGS

INTRODUCTION

In the following report, Hanover Research presents innovative strategies used in community college classrooms to improve student success and retention. This report focuses on engaged and active learning strategies such as flipped classrooms, information and lecture capture technologies, and hybrid/blended learning.

As community colleges expand to meet the academic needs of a growing number of students, innovative strategies that improve student success are needed. Research indicates that the predominant trend in student success strategies in community college classrooms center on engaged and active learning. As such, this report presents three innovative strategies that incorporate engaged and active learning strategies to support student success in the classroom: flipped classrooms, information and lecture capture technologies, and hybrid/blended learning. In addition, Section II of this report briefly introduces three additional innovative strategies: Acceleration, learning communities, and classroom design. To support Tarrant County College District’s expansion of innovative student learning strategies, Section III of this report provides the names of potential conference and lecture presenters.

KEY FINDINGS

- Increased access to technology and the development of high-quality online educational resources have prompted many educators to consider “flipping the classroom” or inverting the schedules on which students receive instruction and practice new skills. The flipped classroom, widely-reported on in 2007-2008 by high school chemistry teachers Jonathan Bergmann and Aaron Sams, devotes in-class time exclusively to exercises, projects, and discussion rather than lecture. Instructional content delivery then occurs outside of class through video lectures, podcasts, and reading. One of the great perceived benefits of this arrangement is teachers’ increased opportunity to devote time ordinarily spent on lecturing to the questions and challenges of individual students or groups of students. This flexibility makes the flipped classroom a promising foundation for differentiated instruction by tailoring instructional content and methods to multiple groups within the same classroom.

- Lecture capture is a broad term that refers to technologies that record lectures or other presentations in the classroom to broadcast digitally, and often online. Ranging from audio recordings on iPods to the recording of cursor movement, typing, and other onscreen activity, the use of lecture capture provides three major

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1 Engaged learning, in this report, is used to describe collaborative learning that encourages students to be responsible for their own learning. The term engaged learning, in other contexts, is used to describe learning that encourages students to participate in community events.
benefits: Alternatives to attending class in person, content review, and additional development.

- In light of their popularity, hybrid programs have attracted significant attention from colleges and universities over the past several years. However, little research is available that pertains to the effects of hybrid degree programs on enrollment in traditional academic programs. Hybrid degree programs, also known as blended programs, are courses of study that combine traditional classroom-based instruction with significant amounts of online instruction. There is no standard model for hybrid education.

- Despite the educational benefits of these innovative strategies, there are common critiques of these methods. These critiques include the additional workload that is placed on instructors, the resistance to perceiving online education as beneficial as face-to-face learning, and the lack of internet access, computers, or mobile devices for students to access online information outside of the classroom.

- In addition to the three engaged and active learning strategies presented, this report also introduces the concepts of acceleration, learning communities, and classroom design as innovative strategies that impact student success in community college classrooms. Acceleration encourages the transition to college-level courses by providing students with the opportunity to move through developmental education courses at a faster pace. Learning communities offer social and academic support to students while intentional design of the college classroom can be used to promote student learning.
SECTION I: INNOVATIVE PRACTICES IN GENERAL INSTRUCTION

Community colleges use a variety of methods to infuse new and innovative strategies into their curricula. This section of this report focuses on teaching styles and technologies that can be used in the classroom. Specifically, we address flipped classrooms, information/lecture capture technologies, and hybrid/blended course designs. In the following section, we briefly introduce innovative strategies that impact the classroom, but that are not directly related to changes in teaching.

A major innovative theme in higher education classrooms is the use of engaged or active learning strategies. As such, each of the strategies that are presented below utilizes the tenets of engaged or active learning. Engaged learning can be defined as a teaching and learning strategies that encourages students to be responsible for their own learning, to be energized by learning, to make strategic choices, and to work in collaborative, social learning environments. Active learning is described as the creation of opportunities for students to act and reflect on the information and ideas presented to them. Common forms of active learning include case studies, simulations, think-pair-share activities, cooperative and collaborative learning, inquiry-guided learning, project-based learning, problem-based learning and team-based learning. Schreiner and Louis find that, “As increasingly diverse types of learners enter higher education, the challenge of engaging those students in their own learning so that they experience success becomes more imperative.”

FLIPPING THE CLASSROOM

Increased access to technology and the development of high-quality online educational resources have prompted many educators to consider “flipping the classroom” or inverting the schedules on which students receive instruction and practice new skills. The flipped classroom, widely-reported on in 2007-2008 by high school chemistry teachers Jonathan Bergmann and Aaron Sams, devotes in-class time exclusively to exercises, projects, and discussion rather than lecture. Instructional content delivery then occurs outside of class through video lectures, podcasts, and reading.

One of the great perceived benefits of this arrangement is teachers’ increased opportunity to devote time ordinarily spent on lecturing to the questions and challenges of individual

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students or groups of students. This flexibility makes the flipped classroom a promising foundation for differentiated instruction, the tailoring of instructional content and methods to multiple groups within the same classroom. In fact, Bergmann and Sams, the pioneers of the flipped classroom, quickly developed their original model into a differentiated “flipped mastery class” in which students could move through course material at a flexible pace with optional material for advanced students.7

**OVERALL DESCRIPTION**

The term *flipping the classroom* refers to a blended learning technique in which instructor-created videos are viewed by students outside of the classroom. During class time, assignments, exercise, projects, and discussions are completed. This design allows for the lecture component of information delivery to be completed outside of the classroom and allows for more interaction between the instructor and students as students work through assignments during class time. In a flipped classroom, the “repurposing of class time into a workshop where students can inquire about lecture content, test their skills in applying knowledge, and interact with one another in hands-on activities” provides interactive opportunities for students that are not present in other classroom models.8

Some of the stated benefits of this learning technique are:

- Gives teachers more time to spend 1:1 helping students
- Builds stronger student/teacher relationships
- Offers a way for teachers to share information with other faculty, substitute teachers, students, parents, and the community easily
- Produces the ability for students to “rewind” lessons and master topics
- Creates a collaborative learning environment in the classroom9

Bergman and Sams, leading adapters of this pedagogical method, identify several key benefits of the flipped classroom model. Specifically, they state that this model “transfers the ownership of the learning to the students,” “personalizes learning for all students,” provides the opportunities for teachers for more deeply explore concepts, **makes learning (not teaching) the center of the classroom,** and best uses the time spent together in the classroom.10

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http://www.districtadministration.com/article/flipping-script-k12
8 “7 Things You Should Know About... Flipped Classrooms.” Educause.  
http://trc.virginia.edu/Flipping%20the%20Classroom.pdf p. 1
The Center for the Integration of Research, Teaching and Learning presents the following visual representation of a flipped classroom model demonstrating when new concepts are introduced.

**Figure 1.2: Traditional Classroom**

![Traditional Classroom Diagram](image)

Source: Center for the Integration of Research, Teaching and Learning

Eric Mazur, a professor at Harvard University, is the leading academic promoting the use of flipped classroom. His lecture titled *Confessions of a Converted Lecturer*, which is available online, demonstrates the value flipped classrooms on student learning. The value to student learning centers on students’ increase problem solving skills, which are developed through the collaborative in-class assignments.

**COMPONENTS**

The term *flipped classroom* refers to a general practice of delivering lectures and other content-heavy information through videos viewed outside of the classroom and class time spent on interactive activities. However, the exact delivery methods within this model may
Below, key components of this model are presented, along with examples within each component.

**Recording lectures:** In flipped classrooms teaching, students view a recorded lecture outside of the classroom. A key benefit of recorded lectures are that students are able to pause and rewind the lecture to ensure comprehension. While during a live lecture students are following along with the presenter and must observe the presenter’s timing of the delivery of the information, when a student is watching a recorded lecture, students may alter the timing of the information. This allows students to be more active and engaged to ensure comprehensive during this somewhat passive learning activity. This component is useful to all students; however, it may be particularly useful to students learning a topic for the first time, students with accessibility concerns, and students for whom English is not their first language.13

**More interactions between teachers and students:** During these increased classroom interactions, teachers may be able to correct students’ erroneous thinking, which will lead to increased comprehension by students.14 This instant feedback received from students will ensure that their learning stays on track and that they are not derailed until a future class by not fully understanding a concept.15

**More Collaborative Projects:** Encouraging social interaction between students, the flipped classroom models encourages the use of more collaborative projects as students are together in a classroom as they work on exercises and projects.

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Within this model, instructors are able to adapt the percentage of correct answers needed. As the authors found little research on this instructional delivery method in community colleges, this research compares the implementation of a peer instruction class at Harvard University in the fall of 1991 with the first peer instruction class taught at John Abbot College, a public two-year college in Montreal, in the fall of 2005. The authors intentionally compared the first offering of this type of model “as the effectiveness of any reformed instruction progresses as one gains familiarity with the approach and tailors materials to the specific student population.” Students at John Abbot College were randomly assigned to one of three sections of an introductory physics class- two of the sections were peer instruction classes and the third utilized a traditional classroom model. The authors found that students in the peer instruction classes at both John Abbot College and Harvard University performed higher on the final exam than students in the traditional classroom.

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17 Ibid., p. 3
The researchers also examined the effect that peer instruction had on student retention. They found that at both John Abbot College and Harvard University, students enrolled in peer instruction courses completed the courses at much higher rates than students enrolled in traditional classes. The following figure presents the results of the 2005 offerings at John Abbot College and the 1990 traditional course and the 1991-1994 peer instruction classes at Harvard University. At John Abbot, while less than five percent of students enrolled in peer instruction classes did not take the final exam, 20.5 percent of the students in the traditional classroom did not take the final. At Harvard, between zero and 4.9 percent of students enrolled in peer instruction classes did not take the final exam, while 11.6 percent of the students in the traditional classroom did not take the final.

Figure 1.5: Student Retention in Traditional and Peer Instruction Classes at John Abbot College and Harvard University

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18 Ibid.
Although this research uses very small sample sizes, it is useful to examine based on the rigor of the study and the setting in a community college.

**CRITIQUES OF THIS METHOD**

Educause finds that “the flipped classroom is an easy model to get wrong” for both teachers and students.\(^{20}\) Specifically for teachers, the high level of preparation needed to prepare and integrate the recorded videos as well as the classroom activities often includes significant additional work when introducing the new model. There are three major challenges to students in this model. First, if videos are available on publically accessed websites, students may question the educational value of the course and the return on tuition investment by “wondering what their tuition brings them that they could not have gotten by surfing the web.”\(^{21}\) Secondly, if students assume that the lectures are the significant value of the class, they may choose to skip class and only watch the videos. These students would then miss one of the key values of flipped classrooms- the interactive classroom assignments. A third challenge to this educational model is the potential challenges to accessing the recording videos. Students need a computer or access to a computer as well as an internet connection to watch the videos.\(^{22}\)

**IMPLEMENTING A FLIPPED CLASSROOM**

Hanover Research has developed a checklist and questions to guide the use of flipped classrooms. The following checklist is presented as a general model to demonstrate the issues that will need to be addressed in implementing this delivery model.

**Figure 1.6: Hanover Research Flipped Classroom Checklist**

- Students come to class having viewed the assigned video(s)
- Students come to class with prepared notes and questions
- Students engage each other in discussion of the topics/materials
- Students share their questions with teachers and other students with the purpose of clarifying misconceptions
- Students ask questions that apply or extend rather than confirm the material
- Teacher provides an entrance exercise or “warm-up” to introduce the topic
- Teacher engages students in an extended discussion of the digital material
- Teacher clarifies and follows up on student questions and misconceptions
- Teacher engages students in group/small group activities
- Teacher engages students one-on-one/individually
- Teacher differentiates learning for students at different levels of mastery

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19 Ibid.
20 “7 Things You Should Know About... Flipped Classrooms.” Op. cit., p. 2
21 Ibid., p. 2
22 Ibid.
Teacher modifies planned class activities to account for student learning needs
Teacher uses hands-on or creative projects to engage students in the materials
Teacher refers to learning objectives of the course/program/institution
Teacher refers to their video lectures in reviewing the material during class time
Teacher identifies the next topic and related assignment(s)

**FUTURE IMPLICATIONS**

The recent interest in flipped classrooms is driven by several trends:

- Technological innovations
- Understanding better the learning that is occurring in colleges
- While the lecture model is economically advantageous for institutions rather than small classes, this model allows institutions to have large class sizes while also providing significant opportunities for active learning.\(^{23}\)

Several implications for education surround the continued development of the use of flipped classrooms. These include the development of new technological tools to access information outside of the classroom (including both devices and applications for devices) and potential changes needed for higher education classrooms to meet the needs of the active learning activities that occur during class time in a flipped class model. Additionally, this model “puts more of the responsibility for learning on the shoulders of students while giving them greater impetus to experiment” during class time.\(^{24}\)

**INFORMATION/ LECTURE CAPTURE**

Lecture capture is a broad term that refers to “any technology that allows instructors to record what happens in their classrooms and make it available digitally.”\(^{25}\) Ranging from audio recordings on iPods to the recording of cursor movement, typing, and other onscreen activity, the use of lecture capture provides three major benefits, as defined by Educause.

- An alternative when students miss class
- An opportunity for content review, particularly when abstruse topics are introduced or detailed procedures are performed
- Content for online course development\(^{26}\)

The growth in lecture capture software in recent years in many ways demonstrates its appeal and usefulness in higher education classrooms. Benefits of this growth are “a shift

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\(^{24}\) “7 Things You Should Know About... Flipped Classrooms.” Op. cit., p. 2


\(^{26}\) Bullet Points Taken Verbatim From: Ibid., p. 1
away from the aging click-and-talk paradigm toward a model that is platform-independent, open to multiple contributors, and stored for public use.”

Providing students with the ability to watch and re-watch classroom lectures or discussions provides additional flexibility for students. Zhu and Bergom, in an article describing lecture capture and its benefits, cite multiple research studies that find that lecture capture:

- Provides additional resources for students: archived lectures, tutorials for lab work, demonstrations of difficult concepts and complex procedures like printmaking or CPR, and presentations by guest speakers
- Allows students to review material at their own pace and convenience (Coghlan et al., 2007)
- Offers students more flexibility in note-taking
- Makes time for active learning during class by having the lecture available for viewing before the class meetings (Lund, 2008)
- Allows students to catch up with a missed lecture
- Offers another tool for student learning projects (e.g., student-generated podcasts for interviewing locals and sharing with peers in a study-abroad program)

Additionally, Zhu and Bergom identify research that finds benefits of the use of lecture capture on student success in the classroom. They find:

- No noticeable impact on students’ class attendance. Despite a common fear among instructors that students will stop coming to class if they have access to a lecture recording, surveys at various institutions in the US and the UK have indicated that access to lecture podcasts generally does not impact students’ decision to attend class (Bongey, Cizadlo, & Kalnbach, 2006; Brotherton & Abowd, 2004; Dale, 2007; Harrity & Ricci, n.d.). In one study, students explained that they continue to attend lecture because it offers opportunities for interaction in a structured learning environment (Copley, 2007).
- Potential benefits for student learning and grades. Offering podcasts of lectures has the potential to improve students' mastery of course material. In surveys, students report gaining a better understanding of class material in courses that used the technology (Brotherton & Abowd, 2004). At U-M, undergraduates in Engineering and graduate students in Dentistry who listened to or viewed recorded lectures overwhelmingly believed that their use of the media had a positive effect on their exam grades (Pinder-Grover, Millunchick, & Bierwert, 2008; Brittain, Glowacki, Van Ittersum, & Johnson, 2006). In particular, U-M students in one study indicated that

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screencasts are helpful in clarifying misunderstandings, supplementing lecture material, and reviewing for exams (Pinder-Grover, et al., 2008).

- **Deeper engagement with course material.** Undergraduate students have reported in focus groups and surveys that podcasts helped them stay focused on the course, made learning more fun and informal, supported independent learning, and enabled deep engagement with course material (Edirisingha & Salmon, 2007; Duke University, 2005). Improved learning may also be a result of changes in students' note-taking practices. Some students have reported that, because they had access to this learning tool outside of class, they took fewer notes during class and were able to pay closer attention to the lecture (Brotherton & Abowd, 2004).²⁹

A wide variety of tools exist to assist with online education. These range from full-service learning management systems to software products that perform more specific functions. As MacEwan University notes, infrastructure decisions, such as which software to use, can have a significant effect on the learning environment:

> Teaching online requires a significant investment in infrastructure to be successful and to promote productive use of teaching and learning time. An inadequate infrastructure will result in dissatisfaction on the part of the learner and educator no matter how good the learning practices are. The learner needs to know the technology (hardware, software, and connectivity) standards as well as the course design and navigation. Knowing these things upfront can increase the success of the course or program.³⁰

A variety of software tools likely to be useful for online education and lecture capture are described below. The list is divided into two sections determined by the number of functions the software application can conceivably perform in an online course environment. We follow the list with a discussion of how to evaluate software for use in online education.

**GENERAL PLATFORMS**

**Echo 360** — Echo 360 is a comprehensive lecture capture and LMS software product that touts ease of use for both educators and students. It not only captures content presented in class and makes it available online for students on any internet device, it also includes a variety of standard features to promote online learning. It is able to integrate with other common LMS products like Blackboard and Moodle. For more information, visit www.echo360.com.

**Adobe Connect** — Adobe Connect is an all-purpose web conferencing software product that works effectively as an e-learning solution. The software permits users to participate on virtually any device, and allows moderators to record and distribute the meeting or event.

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²⁹ Bullet Points Taken Verbatim From: Ibid.
The software allows presenters to direct interaction, either through live polls and surveys or through discussion/chat features. More information can be found at www.adobe.com/products/adobeconnect.html.

**Ning** – Ning is an online service that allows the user to easily design a website and host content with built-in social functions. The service includes data analytics, mobile accessibility, and a wide variety of features that would enable an educator to effectively manage their online course. More information is available at www.ning.com.

**Wikispaces** – Wikispaces enables users to create full-service wikis, including discussion features, commenting features, and control of user groups. Educators can use the service for free. More information is available at www.wikispaces.com.

**TED-Ed** – TED-Ed is a beta service that helps “create lessons worth sharing.” In the company’s own words, “this platform...allows users to take any useful educational video, not just TED’s, and easily create a customized lesson around the video. Users can distribute the lessons, publically or privately, and track their impact.” More information is available at www.ed.ted.com.

**Auxiliary**

**Impatica for PowerPoint** – Impatica is a simple program that converts PowerPoint files—including their animations and accompanying sound tracks—into HTML or Flash for increased accessibility for those without PowerPoint software or those using mobile devices. More information is available at www.impatica.com.

**Camtasia** – Camtasia records on-screen activity into a video file and allows the user to edit and distribute it. More information is available at www.techsmith.com/camtasia.html.

**SurveyMonkey** – SurveyMonkey is a user-friendly, web-based software application that enables the user to create, distribute, and analyze survey or poll results—especially useful for soliciting and receiving feedback from students prior to, during, or after a course. The program has a tiered pricing structure and scalable features. The most basic plan is free and provides sufficient features for use in most courses. More information is available at www.surveymonkey.com.

**Panopto** – Panopto’s software packages enable users to record, edit, distribute, and manage videos and presentations, and integrate with popular LMS software. For more information, visit www.panopto.com.

**Audacity** – Audacity is a free software product that allows users to record and edit audio files. More information can be found at www.audacity.sourceforge.net.

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SmoothDraw – SmoothDraw is a free software program that was originally designed for artists. Khan Academy uses it on their Microsoft operating system for their educational presentations, and more information about the software can be found at www.smoothdraw.com.32

Screen Video Recorder – Khan Academy also uses Screen Video Recorder, a simple software program that runs in Microsoft operating systems and enables users to record and save video of their screen for presentations. More information can be found at www.wordaddin.com/screenvcr/.33

ScreenFlow – ScreenFlow is a screen capture software program that works on Mac Operating Systems. In addition to recording the user’s screen, it also can record from the computer’s video camera, microphone, and computer audio simultaneously. It costs $99 but can be tried for free. More information can be found at http://www.telestream.net/screen-flow/overview.htm.

ProfCast – ProfCast is another screen capture software program, but it works on both Mac and Microsoft Operating Systems. The program has a 15 day free trial, but costs $59.95 at the end of the trial. More information can be found at http://www.profcast.com/public/index.php.

Cueprompter.com – Cueprompter.com is a free teleprompter service. It works in the user’s browser and does not require them to download a software program. More information can be found at www.cueprompted.com.

Freeprompter.com – Freeprompter.com is another free, online, teleprompter service. More information can be found at www.freeprompter.com.

edX – edX is a non-profit online education enterprise founded by MIT and Harvard University. Its primary goals are to “improve teaching and learning on campus by experimenting with blended models of learning and by supporting faculty in conducting significant research on how students learn.” The platform for course delivery being constructed by the venture will eventually be open-source and will include features like “self-paced learning, online discussion groups, wiki-based collaborative learning, assessment of learning as a student progresses through a course, and online laboratories and other interactive learning tools.”34 More information can be found at www edx org.

32 “What software program/equipment is used to make Khan Academy videos?” Khan Academy FAQ. http://khanacademy.desk.com/customer/portal/articles/329318-what-software-program-equipment-is-used-to-make-khan-academy-videos-
33 Ibid.
34 “FAQ.” edX. https://www.edx.org/faq#technology-platform
**RECOMMENDATIONS & CONSIDERATIONS**

Zhu and Bergom developed a list of recommendations to be considered before and during the adoption of lecture capture techniques.

- Before you start, make sure that you have clear goals for podcasting lectures and the time to prepare them consistently throughout the entire semester, you have adequate and continuing technology support and podcast hosting if you don't teach in a room with an automated lecture capture system/service, and you attend to the relevant copyright policies regarding podcasts (e.g., acquiring copyright clearance for materials and release forms from students if their questions and answers will be recorded and the podcasts will be shared beyond the current semester's classroom).

- Once you decide to podcast, make time to experiment with recording quality. Poor sound quality may prevent students from using the resource.

- Make podcasts available as soon as possible after a lecture, since most students download podcasts within a few days of a given lecture, as well as right before an exam.

- If you require students to listen to podcasts before lecture, provide them with content-related questions or other learning activities.

- When podcasts are assigned in advance of a class meeting, use class time for interactive discussion, student-centered learning activities, or demonstrations to complement and build on podcast content.

- Before making podcasts available, be sure that all of your students have access to and are comfortable using devices to download and play podcasts.

- When appropriate, make reference to podcasts during lectures or when responding to students' questions so that students will be more likely to use them.

- Make accessing and using podcasts easy and fast by providing detailed instructions for downloading and ensuring that the file format is compatible with common media-playing devices (e.g., MP3 players and iPods).

- Provide students with a clear explanation of instructional goals and technical requirements if podcasts are used for student projects or assignments.

- Draft an evaluation plan for your lecture capture project to investigate what did and didn't work for you and your students.35

Despite the growth and accolades that surrounds the use of lecture capture software, several downsides of the use of this type of learning platform should be considered. Educause finds that “whirling canvases zooms, pans, and excessive animation in general have the potential to district viewers, and because these tools facilitate such maneuvers, the end product might in some cases be more disorienting than illustrative.”36 Additionally, the following concerns should be considered:

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Internet browsers may not support the functionality of web-based software equally.

The visual representation of information may be uncomfortable or undesirable to instructors and students accustomed to traditional lecture formats.

Many of these tools require internet access, which all instructors and students may not have continuous access to.

The features of some programs are not as developed or user-friendly as more established, non-web-based programs.

Some programs host information on publically accessible sites, which may conflict with college policies, copyright policies, and conform levels of both instructors and students.

**HYBRID CLASSROOMS**

While Tarrant County College District currently offers select hybrid classes, we present information below on hybrid/blended learning courses to demonstrate their growing use in higher education. The terms “blended learning” and “hybrid learning” refer to program delivery that combines features of both online and face-to-face instruction, which may appeal to degree-seeking students who require greater curricular flexibility. A 2008 Sloan Survey describes “prototypical course classifications” while still acknowledging the tremendous “diversity among course delivery methods used by individual instructors.”

These descriptions are provided below. This table is helpful because it provides fairly rigid definitions of web-assisted course configurations. Further, the table makes clear distinctions between the ways in which internet technology is being used and the extent to which the technology affects face time.

<table>
<thead>
<tr>
<th>PROPORTION OF COURSE DELIVERED ONLINE</th>
<th>TYPE OF COURSE</th>
<th>TYPICAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>Traditional</td>
<td>Course with no online technology used—content is delivered in writing or orally.</td>
</tr>
<tr>
<td>1-29%</td>
<td>Web-Facilitated</td>
<td>Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a course management system (CMS) or web pages to post the syllabus and assignments.</td>
</tr>
<tr>
<td>30-79%</td>
<td>Blended/Hybrid</td>
<td>Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.</td>
</tr>
<tr>
<td>80-100%</td>
<td>Online</td>
<td>A course where most or all of the content is delivered online. Typically have no face-to-face meetings.</td>
</tr>
</tbody>
</table>

Source: Sloan

In light of their popularity, hybrid programs have attracted significant attention from colleges and universities over the past several years. However, little research is available.

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38 Ibid., p. 4
that pertains to the effects of hybrid degree programs on enrollment in traditional academic programs. Hybrid degree programs, also known as blended programs, are courses of study that combine traditional classroom-based instruction with significant amounts of online instruction. There is no standard model for hybrid education. Some programs may have students split their time evenly between online and on-campus instruction; some may have students complete the majority of their work online with occasional intensive weekends of on-campus activity; and some require students to enroll in a combination of traditional classes as well as strictly online classes.

Hybrid programs offer many potential benefits to universities. For one, they allow institutions to use classroom space more effectively. Hosting only a portion of instructional activities on-site gives institutions the opportunity to accommodate more courses or more sections of a single course. As a result, they can reduce strain on class schedules and potentially enroll a greater number of students. Consolidated use of classroom facilities also has the potential to decrease a university’s operating costs significantly long term.

With each passing semester, hybrid degree programs become increasingly popular for students and universities alike. Such courses allow students to reduce time-consuming trips to campus while still benefiting from face-to-face instruction. Meanwhile, they allow colleges and universities to more effectively use classroom space and to reduce costs. For these reasons alone, hybrid courses are often praised as “the best of both worlds.”

Students speak highly of hybrid programs for the flexibility that they provide. Long commutes as well as work or family responsibilities prevent many people from pursuing higher education. Hybrid programs allow students to obtain degrees as their schedules permit, much like online programs. However, they also allow students to have face-to-face instruction, with less frequent visits to campus. Another benefit of hybrid programs is that they include a variety of teaching methods and tools. Consequently, professors report that students are often more engaged with the materials in hybrid courses because they can interact with information in the ways that best align with their learning styles. This in turn leads to increased comprehension of class materials. It also leads to greater interaction between students and professors. In an online setting, students do not face the pressures of formulating their thoughts in front of an audience as they speak. Instead, they can reflect on questions and deliberately craft answers that more clearly express their ideas. One of the striking features of hybrid programs is that, despite the physical distances between students, they often foster stronger learning communities than traditional programs because students interact with each other more frequently.

Hybrid programs present their challenges as well. Students must develop the discipline and the necessary time management skills to complete assignments on their own. The online portions of courses also require students to become familiar with what can be sophisticated technologies. For professors, hybrid programs often require them to redesign entire courses to incorporate online elements. Therefore, they are responsible for learning about and using new technologies and tinkering with new instructional methods, both of which have the potential to render courses less effective. Furthermore, professors have to grapple with the
increased time demands and workloads of hybrid programs that stem from scheduling responsibilities and the preparation of online materials. Finally, administrators have the challenge of integrating hybrid programs into schools’ goals and priorities. Establishing hybrid programs can also be difficult in environments where faculty and staff members are reluctant to change, or where departments lack collaborative experience.

A study conducted by Xu and Jaggers with the Community College Research Center identified trends among students who enrolled in online and hybrid courses in Washington State Community and Technical Colleges. The research studied students enrolled between 2004 and the spring of 2009. Several results of this study are that:

- Students were more likely to fail or withdraw from online courses than from face-to-face courses
- Students who took online coursework in early terms were slightly but significantly less likely to return to school in subsequent terms
- Students who took a higher proportion of credits online were slightly but significantly less likely to attain an educational award or transfer to a four-year institution
- Students were equally likely to complete a hybrid course as to complete a face-to-face course

To summarize their work, Xu and Jaggers find that:

Overall, the findings of the current study do not provide strong evidence regarding the effectiveness of hybrid courses: observed patterns of outcomes for hybrid courses were sometimes positive and sometimes negative, were always weak, and were never statistically significant. In contrast, the evidence regarding online courses was fairly clear. We found that students who participated in online courses had lower successrates on a variety of outcomes, even after controlling for a rich array of student characteristics, including prior academic performance and concurrent hours of employment. This pattern of results is quite similar to that observed across Virginia community colleges (Jaggars & Xu, 2010; Xu & Jaggars, 2010), indicating that student difficulties with online courses in community colleges are not confined to one state.

Hackemann, in research on retention best practices for hybrid/blended courses in community colleges, compared results of a face-to-face class, a hybrid/blended class, and an online class. Selected results include:

- Students in blended instructional method courses achieved better grades than those in face-to-face instructional method courses, had lower withdrawal rates than

40 Ibid., pp. 19-20
online instructional method courses, and had retention percentages equivalent to face-to-face instructional method courses.\textsuperscript{41}

This research included a very small sample size, which limits the generalizability of the findings. However, the results indicate that the innovative practice of hybrid/blended classes has benefits for student success.

**HYFLEX COURSE DESIGN MODEL**

A new version of hybrid classes is the hyflex course design model, in which each class session is offered both in-person and online. The flexible design of the course structure uniquely differentiates this model from other hybrid/blended learning models. In this model, students are able to decide to attend each class session in-person or online, based on preference or need. Though there are two formats in which students can attend class, it is important to note that this model is not a self-paced model; there is consistent pace between the two formats and students are expected to stay on pace. Benefits of this method are a more flexible schedule for students who live far from campus or have multiple other commitments as well as providing an alternative class format should the in-person class session need to be cancelled because of instructor availability or weather issues.\textsuperscript{42}

**TYPES OF LEARNING AND INTERACTIONS IN HYBRID CLASSROOMS**

Related specifically to the online learning component of classrooms, research has identified two types of learning and interactions that occur between instructors and students and between students themselves. As Tarrant is seeking to better understanding innovative strategies that improve success in the classroom and retention, this information is provided to demonstrate the types of learning that occur within this course design.

Stefan Hrastinski, Assistant Professor of Media Technology at KTH Royal Institute of Technology, has conducted extensive research on the impacts of synchronous and asynchronous environments on student communication and participation in online education.\textsuperscript{43} Although previous literature on asynchronous and synchronous learning has focused on which is better or more effective, Hrastinski’s research is notable because it instead addresses why, when, and how to use asynchronous and synchronous learning in the proper contexts to meet students’ needs. The following table summarizes the differences between each kind of e-learning.


## Figure 1.9: Asynchronous and Synchronous Learning

<table>
<thead>
<tr>
<th></th>
<th><strong>ASYNCHRONOUS LEARNING</strong></th>
<th><strong>SYNCHRONOUS LEARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Definition</strong></td>
<td>Different time, different place</td>
<td>Same time, different place</td>
</tr>
<tr>
<td><strong>Media</strong></td>
<td>- Email</td>
<td>- Videoconferencing</td>
</tr>
<tr>
<td></td>
<td>- Discussion boards</td>
<td>- Teleconferencing</td>
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<tr>
<td></td>
<td>- Blogs</td>
<td>- Instant messaging</td>
</tr>
<tr>
<td></td>
<td>- Social networking sites</td>
<td>- Chat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Polling</td>
</tr>
<tr>
<td><strong>Main Benefits</strong></td>
<td>- Flexibility with scheduling</td>
<td>- More of a social community</td>
</tr>
<tr>
<td></td>
<td>- Increases participants’ ability to process information</td>
<td>- Participants are more motivated and committee to contribute</td>
</tr>
<tr>
<td><strong>When it Works</strong></td>
<td>- When students are required to reflect on complex issues</td>
<td>- When discussing less complex issues</td>
</tr>
<tr>
<td></td>
<td>- When synchronous meetings cannot be scheduled because of work, family, and other commitments</td>
<td>- When participants are getting acquainted</td>
</tr>
<tr>
<td></td>
<td>- When discussing less complex issues</td>
<td>- When planning tasks</td>
</tr>
<tr>
<td><strong>Why it Works</strong></td>
<td>- Supports work relations among learning and with instructors, even when participants are unable to be online at the same time</td>
<td>- Students and instructors participate in a more social learning environment</td>
</tr>
<tr>
<td></td>
<td>- Users can log into an e-learning environment at any time and download course content or asynchronously converse with instructors or classmates</td>
<td>- Supports participants in the development of online learning communities</td>
</tr>
<tr>
<td></td>
<td>- Students have more time to reflect on responses because the sender does not expect an immediate answer</td>
<td>- Participants become more committed and motivated to read and respond to messages because a quick response is expected</td>
</tr>
<tr>
<td></td>
<td>- Many participate favor asynchronous courses because it allows them to flexibly combine education with work, family, and other commitments</td>
<td>- Allows for monitoring the receiver’s reaction to messages</td>
</tr>
<tr>
<td></td>
<td>- Asynchronous communication is more conducive to thoughtful discourse because students may spend more time reflecting and refining their contributions</td>
<td>- Participants avoid frustration by asking and answering questions in real time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Live sessions help students feel more like participants than isolated observers</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>- Students expected to reflect carefully on course topics may be asked to maintain a blog</td>
<td>- Students expected to work in groups may be advised to use instant messaging as support for getting to know each other, exchanging ideas, and planning tasks</td>
</tr>
<tr>
<td></td>
<td>- Students expected to share reflections regarding course topics and critically access their peer’ ideas may be asked to participate in online discussions on a discussion board</td>
<td>- A teacher who wants to present concepts from the literature in a simplified way might give an online lecture by videoconferencing</td>
</tr>
</tbody>
</table>

Source: Hrastinski

The overall conclusion is that between synchronous and asynchronous learning, there is no clear “best” method for online instruction: rather, the two complement each other and it is more important to understand when, why, and how each type of learning should be used.

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applied. By combining asynchronous and synchronous instruction within a course, students and instructors receive several opportunities to access and exchange information, collaborate on work, and get to know one another. 45 That said, even if a course is limited to a single method of delivery, it appears that the benefits outweigh the pitfalls for both synchronous and asynchronous learning.

Hybrid and blended learning courses, a trend in higher education, provide flexibility to students while also providing the benefits to students that occur through in-person learning.

45 Ibid.
SECTION II: ADDITIONAL INNOVATIVE STRATEGIES

While the first section of this report focuses on teaching styles and technologies that can be used in the classroom, in this section, we briefly introduce innovative strategies that impact the classroom, but that are not directly related to changes in teaching.

ACCELERATION

The National Center for Postsecondary Research recently released a report written by Elizabeth M. Zachry and Emily Schneider titled A Review of Rigorous Research and Promising Trends in Developmental Education. This report discusses the breadth of research on innovative learning strategies in developmental education and specifically highlights that despite this extent of information, there is little information on the effects of these strategies on student achievement. Two of the strategies supported by research in this report are the acceleration of students through developmental courses and learning communities.

Students in developmental education courses face many obstacles to the completion of the developmental education sequence, progression through college-level courses, and the completion of a degree or certificate program. Zachry and Schneider discuss specific issues such as the need to complete multiple levels of semester long developmental classes before progressing to college-level courses, the inability to transfer these developmental classes to four-year institutions, and the use of limited financial-aid funds to pay for developmental classes as specific obstacles to students in developmental education classes. Citing research that finds that “less than 30% of students who place into the lowest levels of developmental math and reading ever complete their developmental education coursework” and “fewer than 10 percent of students who are recommended to the lowest level of developmental math successfully complete a college-level math course,” Zachry and Schneider support the strategy of accelerating students through developmental courses. Zachry and Schneider present three models and research that supports these models for accelerating students through developmental courses to reduce the barriers to student success: Fast-track courses, modularized courses, and mainstreaming into college-level courses. These strategies are briefly presented below.

- **Fast-Track Courses**: Rather than structuring developmental courses as semester-long courses, fast-track courses are several weeks or a half-semester in duration. By allowing students to complete multiple levels of a developmental education class in a semester, students are able to progress through developmental classes faster than in a traditional schedule. Many community colleges that currently implement fast-track developmental classes restrict the enrollment in these courses to students that scored near the higher level class to ensure that students will be able to complete the requirements of the faster-paced class. These classes also often used a different pedagogy to assist students in progressing through course content at a faster rate.

- **Modularized Classes**: These classes are designed by units, so that students can demonstrate mastery of specific skills and concepts. Upon the completion of a
unit, students are able to progress to more advanced units followed by college-level courses. This design allows students to focus on the specific skills or concepts needed, rather than a longer duration course that may include skills in which the students have already demonstrated mastery. Modularized classes often incorporate computer instruction to support the self-paced nature of this design.

- **Mainstreaming into College-Level Courses**: Providing the opportunity for students to earn college-level credits immediately upon entering college as well as exposing students to the skills and concepts taught in college-level courses, the practice of mainstreaming students into college-level courses is practiced in an increasing number of community colleges across the country. Two common techniques for mainstreaming into college-level courses include modifying a college-level course to be offered over a longer duration, such as two semesters, as well as providing additional student support services such as tutoring and additional class periods to developmental students enrolled in college-level classes. Zachry and Schneider find that “both approaches rely on the assumption that students with remedial needs are, with extra assistance, capable of successfully mastering college-level work.”

The authors cite research from the Community College Research Center’s evaluation of the Accelerated Learning Program which found that:

> When comparing students with similar skill levels and controlling for pre-existing student characteristics, students who participated in CCBC’s Accelerated Learning Program were found to complete introductory college-level courses, enroll and complete additional college English requirements, and attempt college courses at a higher rate than non-ALP students.

### Learning Communities

Learning Communities provide opportunities for students to form cohorts as they progress throughout their courses. The goal of a learning community is to provide a social support network for students to benefit from in academic courses. While some learning communities provide a cohort design for students to enroll in classes together, other learning communities are comprised of courses with integrated curricula and joint projects and concepts addressed across courses. Zachry and Schneider find that often courses in a learning community involve developmental education students who are enrolled in a developmental education class as well as a college-level course. When evaluating learning communities, Zachry and Schneider find that:

> Although most learning communities do not engender the type of workforce or experiential skills addressed in other contextualized learning settings, the deliberate links made between developmental and college-level courses can give students the opportunity to practice skills they are learning in their developmental courses in college-level content classes.

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46 Ibid., p. 28
47 Ibid., p. 29
48 Ibid., p. 36
As such, learning communities provide students with the opportunity to form bonds and sources of support as they progress throughout the degree or certificate program, as well as provide opportunities for students to develop skills in college-level courses in some designs of learning communities.

**CLASSROOM DESIGN**

Emory University recently released a report on specific elements of the design of college classrooms. The findings of the report are based on research from design guides used by other colleges and universities, reports by vendors who provide some of the materials and technologies used, as well as faculty and students who use college classrooms. The guide identifies best practices areas such as infrastructure (hallways, signage, and bulletin boards); flooring, doors, and acoustics; room sizes by type; room definitions (seminar, conference, collaborative, and auditorium); furniture and equipment (chairs, tables, and whiteboards); and audio-visual technologies (the lectern, projectors, screens, and audio systems). The goal of the guide is to assemble best practices in college classroom design.

Following the review of ten college classrooms, SERA Architects developed a detailed and specific list of recommended college classroom designs. One of the main findings of the report is that “virtual and online learning is likely to augment, rather than replace, traditional face-to-face learning environments.” As such, designing elements of the college classroom that encourage academic success will continue to be important on college campuses.

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SECTION III: POTENTIAL CONFERENCE OR LECTURE PRESENTERS

In this section, we provide leads for potential conference or lecture presenters for Tarrant County College District to consider contacting or participating in to gain further understanding of the concepts presented in this report.

- The FlipCon2013 annual conference will be held in Stillwater, MN on June 17-19, 2013. Information on this conference can be found online here.

- Webinars offered in recent years by the following list of presenters discussed Practical Comparison of Lecture Capture Systems, which includes recommendations for classroom use. The presenters are Douglas L. McCartney (Portland State University - Echo360), Brian Smith (University of Florida – Mediasite), Peggy M. Brown (Syracuse University - Panopto CourseCast), Adam Hochman (University of California, Berkeley - Open Cast), and Sandra Miller (William Paterson University) and Jeffrey Donahue (Binghamton University), Elizabeth Fellendorf (University at Buffalo), Jason Spartz (St. Mary's University of Minnesota), and Blake Haggerty (New Jersey Institute of Technology).

- Jeffery Donahue (Retired- formerly at Binghamton University), Matthew Silverman (George Mason University), and Tim Schnabel (Extron Electronics) recently delivered a webinar titled Classroom Digital Conversion that addresses the technological needs of classrooms when upgrading technologies.

- Shaun Black (LeMoyne College), Greg Bronson (Cornell University), Sue Clabaugh (University of Maryland), Robert Schmitt (Portland Community College), and Sandie Miller (William Paterson University) recently delivered a webinar in the Classroom Design Series that discussed technologies standards and budgeting for classroom learning design.

- The University of Washington provides a listing of presentations on the topic of Classroom Presenters. Many of these presentations are given by Richard Anderson.

- The Center for Teaching and Learning at the University of Missouri- St. Louis organizes an annual conference on teaching and technology. Topics presented during the 2012 conference include Designing, Implementing and Assessing Technology-Based Assignments; Learning-Centered Teaching: Successful Collaborative Learning Strategies F2F and Online; and Using Google and Prezi Sites to Extend Learning and Collaborating Beyond the Classroom.

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52 Ibid.
53 Ibid.
Jeremy Todd (University of Minnesota- Twin Cities), Mark Decker (University of Minnesota- Twin Cities), and William Hites (University of Illinois) recently presented a webinar titled *Active Learning Classrooms- Enhancing Education with Integrative Technology* through the Society for College and University Planning.56

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