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Online courses

**Do Facilitated Online
Dual Credit Courses
Result in Deep Learning**



Stark Education Partnership
February 2015

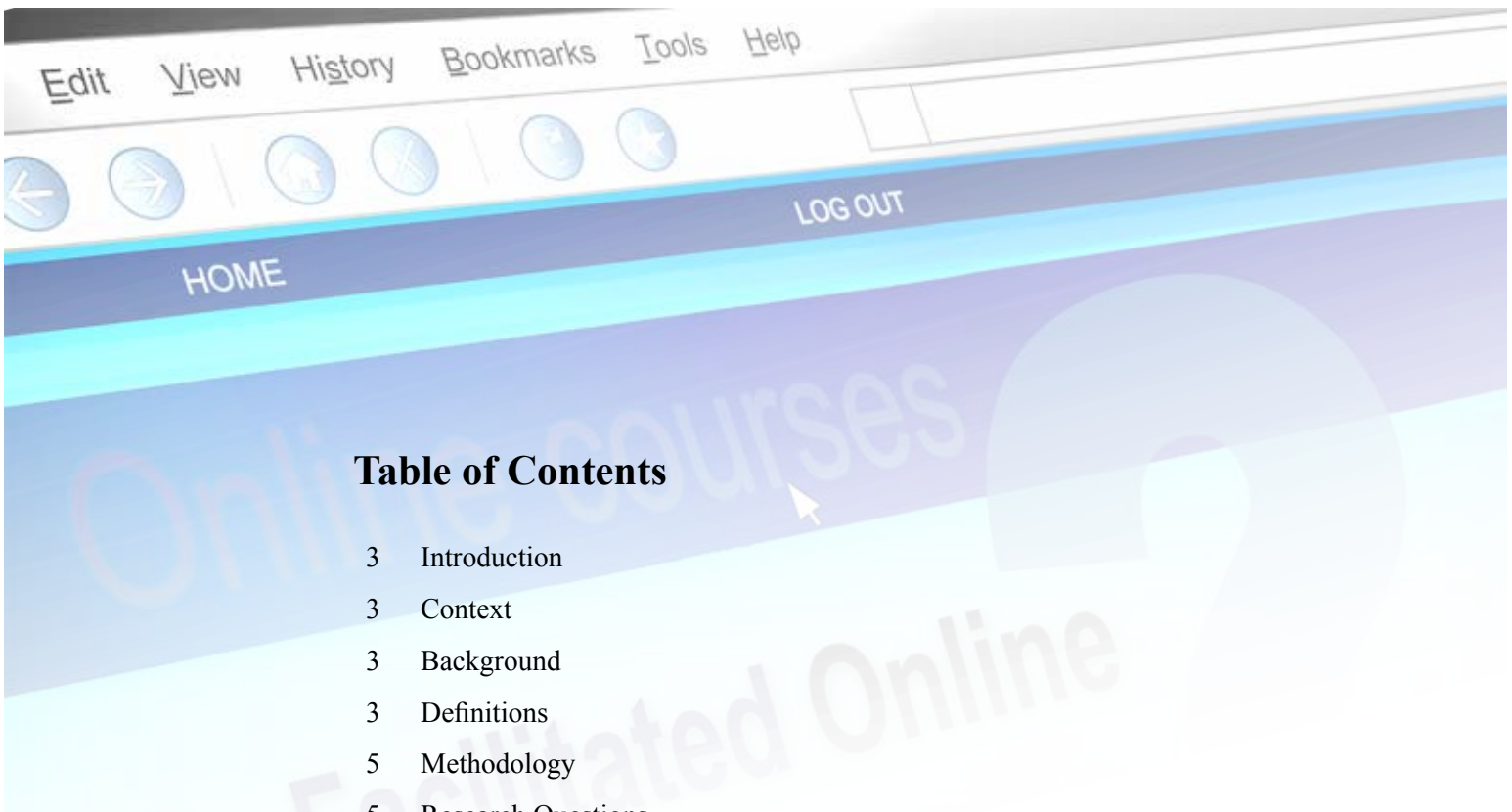


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Introduction

This study, with funding from the Jennings Foundation, sought to answer the following broad research question: Do facilitated online dual credit courses result in deep learning?

The answer to this question is key to addressing barriers many students face in bridging from high school to college.

Context

As the American public wrestles with the meaning of college and career ready it is clear that an education beyond a high school diploma is critical to self-sufficiency. There are multiple pathways available to achieve the goal and all share a common context.

- Urban and rural students comprise the major populations needed to participate in order to achieve the goal of increasing the number of students attaining an education beyond high school.
- Urban and rural students comprise the majority of first generation students.
- First generation students require additional supports to persist and graduate from post high school education.
- Online courses require skills including: time management, persistence and advocacy.
- The cost of higher education is being scrutinized on many levels and institutions must find cost effective ways to deliver content.

Background

More than one third of 5 to 17-year-olds in the United States are first generation students. Among underrepresented minority groups, this rate is much higher.¹ Ohio has a larger percentage of first generation college students than indicated in national statistics. As of 2010, 49% of the university system students and 59% of community college students in Ohio are first generation college students. At Stark State College, the percentage is slightly lower with 46% of its students classified as the first generation in their family to attend college.²

First generation college students are often at a disadvantage as their parents cannot provide guidance based on experience. Engle (2007) found that college is not an obvious next step to many first-generation students:

While students whose parents have a college education tend to experience 'college as a continuation' of their academic and social experiences in high school, going to college often constitutes a 'disjunction' in the lives of first-generation students and their families. (p.33)⁵

Because it is a new experience both in terms of culture and family, first generation students “often lack important ‘college knowledge’ about the process of preparing, applying, and paying for college due to the lack of experience with postsecondary education in their families.”⁶ First generation students face a number of barriers and as a result, tend to enroll in and complete fewer classes and earn lower grades than their non-first generation counterparts.⁷

Online courses can be a particular barrier. Most first generation college students do not develop the key self-regulatory skills (such as awareness of strengths and weaknesses, practice in learning, and taking on challenging tasks) needed to succeed when taking online courses. In fact, they need coaching to develop those skills.⁸ Some populations that may include first generation students are more likely to struggle in online courses. In a study by Xu and Jaggars (2013) of nearly 500,000 courses taken by 40,000 community and technical students, males, younger students, black students, and students with lower grade point averages, in particular, tended to struggle more with online courses.⁹

Taking dual credit courses in high school may provide a key bridging strategy for

Definitions

Deep Learning – includes engaging learners actively, utilizing communication and problem-solving skills, incorporating meaningful projects, and encouraging collaboration.³

Dual Credit (Dual enrollment) – “...a course or program where high school students can earn both high school and postsecondary credits for the same courses.”⁴

Facilitating Teacher – a high school teacher providing support to students in an online course taught by a college faculty member

first generation and other underrepresented populations. Swanson (2010) suggested that dual credit courses introduce first generation students to college expectations and routines, prepare students for collegiate rigor, and expose students to both academic and non-academic college skills and expectations.¹⁰

A 2013 study by the National Center for Educational Statistics (NCES) found 53% of surveyed Title IV degree granting institutions offered dual credit courses and approximately 1,277,100 students took those courses in 2010-11.¹¹ This study found that while the primary mode of delivery among those institutions was on a college campus (83%) or at the high school (63%), nearly half (48%) had the capacity to deliver courses on-line. (Note: these percentages do not total 100% as the courses could have been offered by institutions at more than one location.)

Online courses can be delivered in a traditional distance learning format where students take the course independent of their high school, or they can be delivered in a high school environment with a facilitating teacher to help ensure success. This latter model has been explored in Stark County, Ohio in partnership with Stark State College (SSC) and a number of Stark County school districts. The dual enrollment memoranda of understanding between school districts and SSC require that a high school facilitating teacher be assigned for support to an online course.

The role of facilitating teacher is evolving. SSC has familiarized high school facilitating teachers with their online system, offered the same professional development that teacher/adjuncts receive, and opened a line of communication between the professor and the teacher that includes an “early-warning” system flagging those students who are falling behind.

Facilitating teachers, working with college faculty, may provide the additional scaffolding high schools students require to engage in deep learning and help to ensure successful transition to college for first generation and other underrepresented populations. The following study sought to answer “do facilitated online dual credit courses result in deep learning?”

One of the school districts that has benefited from this opportunity is Sandy Valley Local. It is a small district with an enrollment of 1,400 students, classified by the Ohio Department of Education (ODE) as a rural, high poverty and low median income district where less than 10% of the adult population holds a bachelor’s degree.

Preliminary data gathered in the low-wealth Sandy Valley School District by Stark Education Partnership Program Officer, Adele Gelb, found that an online dual credit psychology course was well received by students and the high school facilitating teacher. The course was offered as a cost effective way to provide dual credit to a small number of students without requiring that they have a teacher on staff who meets the adjunct status qualifications.

Sandy Valley High School’s Facilitated Online Class

An online psychology class comprised of seven sophomores, juniors, and seniors met as a cohort each day to complete coursework. A teacher was present but his role was not of an instructor. He reported that he sometimes answered questions and on occasion supplied reference books.

The students reported that they liked the online class and that they had sufficient time to complete assignments. There were “lots of papers” and working with APA format was a new experience.

They were all happy to be working in a cohort and found it to be very helpful. The teacher reported that the supportive dynamic of the cohort is very productive.

While the course was taught online by a Stark State College faculty member, a high school teacher was present in the classroom acting as a facilitator. The facilitating teacher reported answering questions and supplying materials. This strategy has increased the number and variety of dual credit course that a district like Sandy Valley can offer. It also provides a potential strategy for supporting first generation and other underrepresented student populations in transitioning to college.

For small-rural and/or high poverty-low income school districts, the facilitated online experience also provides a mechanism for dramatically increasing the number and variety of dual credit courses available.

Methodology

A descriptive case study was conducted in the fall of 2014. Yin (2009) suggests that “the case study is preferred in examining contemporary events...when the relevant behavior cannot be manipulated.”¹² Yin (2009) also notes that descriptive case studies provide “two sources of evidence...direct observations of the events being studied and interviews of the persons involved in the events.”¹³

This descriptive case study included surveys, interviews, and focus groups of students taking online dual enrollment courses in Stark County, Ohio. High school facilitating teachers and college faculty teaching the online dual enrollment courses were also surveyed and interviewed.

A purposeful sampling plan was implemented with college faculty, facilitating high school teachers, and students selecting to participate. Each participant was assured anonymity. Surveys, focus group, and interview protocols were designed to be short and to minimize intrusion on class and faculty time.

Finally, all data (with the exception of student course grades) are self-reported. This is particularly important to keep in mind when interpreting demographic data. This methodology allowed for a large amount of data to be collected efficiently, unobtrusively, and while protecting student anonymity. However, this methodology does present some limitations that will be further elucidated in the Limitations section of the report. Research questions guiding the study were developed by Stark Education Partnership staff with experience in K-12 and collegiate settings and founded in a review of relevant literature.

Data included both open-ended qualitative responses as well as quantitative responses. Quantitative data were analyzed using MS Excel and SPSS. Descriptive and inferential statistics were run including frequencies, cross-tabs, and chi-squares.

Qualitative data were coded for patterns. Categories were identified and collapsed to allow for frequencies to be run where appropriate. Additionally, qualitative data is utilized to provide depth and anecdotal support for the quantitative analyses.

Research Questions

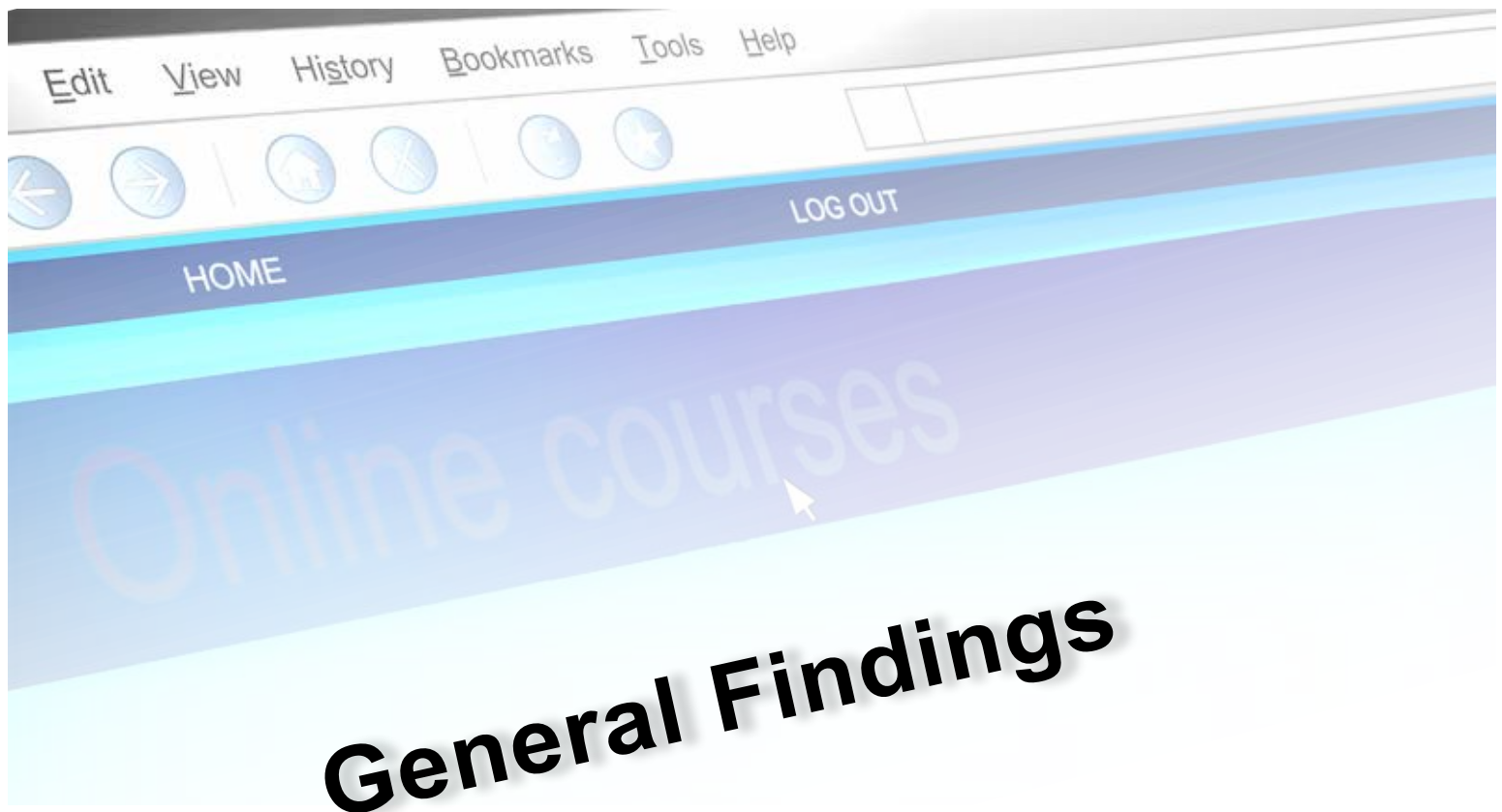
1. What aspects of the online dual credit courses support deep learning?
2. What strengths do students have that may contribute to their success in online dual credit courses?
3. How have students performed in online dual credit courses?
4. What challenges to students face in online dual credit courses?
5. What demographic differences impact the challenges students in online dual credit courses?
6. What are the roles, responsibilities, and relationship of college faculty and facilitating teachers in support of students’ deep learning in online dual credit courses?

Limitations

Due to a change in the understanding of policy at Stark State College regarding access to college faculty for surveys and interviews, there was a small response rate for college faculty. This may have created some degree of response bias if those college faculty who responded were also those for whom the study questions were of most interest or resonated with their teaching approach the most.

Additionally, it should be noted that the study was conducted with a purposeful sampling plan with voluntary anonymous participation. This may limit the generalizability of the results.

Finally, class time interruption was minimized in the methodology design for surveys, focus groups, and interviews. However, this attention to minimizing class disruptions does provide a limitation to the length and depth of the focus group and interview data.



General Findings

Demographics

- Surveys of 209 students representing 16 school districts were conducted fall, 2014.

Alliance City
Canton City
Canton Local
Carrollton Village
Fairless Local
Jackson Local
Louisville City
Marlington Local
Massillon City
Minerva Local
North Canton City
Osnaburg Local
Perry Local
Plain Local
R.G. Drage Career Technical Center
Sandy Valley Local
Tuslaw Local

- Most students in the study were seniors (67%) with juniors the next largest class (25%) and the remaining 8% of the students were sophomores or freshman.
- The majority of students were female (59%) and identified as white (non Hispanic) (86%). The remaining 14% of students identified as black (non Hispanic), multi-racial, Hispanic, and Asian/Pacific Islander.
- Students reported an average unweighted GPA of 3.45
- As would be expected, the majority of seniors (66%) had taken the ACT or SAT as well as almost half (47%) of the juniors and around 30% of the sophomores and freshman.



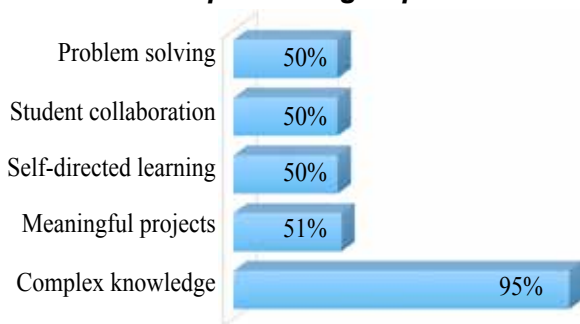
Research Question 1: *What aspects of the online dual credit courses support deep learning?*

Facilitating teacher and college faculty perceptions

Both the majority of college faculty and the majority of facilitating teachers noted students using complex knowledge in their online dual enrollment courses. However, overall, college faculty appeared to be far more confident that aspects of deep learning are taking place in their online dual enrollment courses than the facilitating teachers noted in their observation of the courses.

The majority of college faculty and around 50% of the facilitating teachers agreed that in the online dual enrollment courses, students are engaged in self-directed learning, meaningful projects, and developing problem solving skills. Finally, the majority (67%) of college faculty and half (50%) of facilitating teachers noted that students were working collaboratively with other students in their online dual credit courses.

Observed Deep Learning Aspects



High school experience was not a significant predictor of whether professors incorporated deep learning in online dual enrollment courses. However, as noted in the Limitations section, sample size was low for college faculty and most had previous experience teaching high school

Student perceptions

In focus groups, students reported that they found the courses to be more hands on and requiring less busy work than their high school courses. The majority (56%) noted that they were required to apply what they were learning to a problem or a project. Those applications included:

- Collaborative essay writing
- Case studies
- Virtual field trips
- 3-D Modeling
- Journaling comparing personal lives to those studied
- Practical problem solving
- Research papers and presentations

Aspects of deep learning in online dual credit courses conclusion

Overall, the college faculty surveyed were far more likely to state that their students were engaging in aspects of deep learning. Facilitating teachers reported that they perceived students to be developing complex knowledge and skills, but only half reported seeing meaningful projects, self-directed learning, student collaboration, and problem solving. This may indicate a difference in the perception of deep learning at the high school and collegiate level. It may also be subject to some selection bias as the sample size for the college faculty was low.

Students in focus groups, reported working on projects that likely require some degree of self-directed learning and problem solving and are meaningful. A few of the projects indicated some degree of collaboration as well.



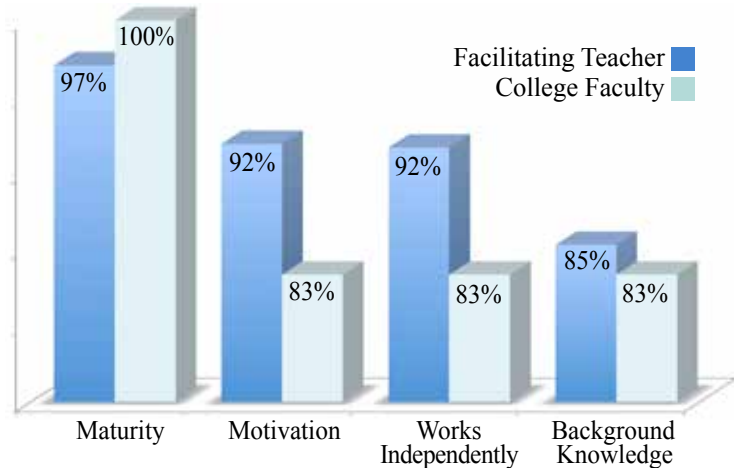
Research Question 2: *What strengths do students have that may contribute to their success in online dual credit courses?*

Facilitating teacher and college faculty perceptions of student strengths

In order to engage in deep learning at the college level in online dual credit courses, students need to exhibit some foundational capabilities.

The majority of facilitating teachers and college faculty agreed that the students enrolled in online dual enrollment courses worked independently, were mature, were motivated and possessed background knowledge. However, the relative weighting of the students' strengths differed between facilitating teachers and college faculty.

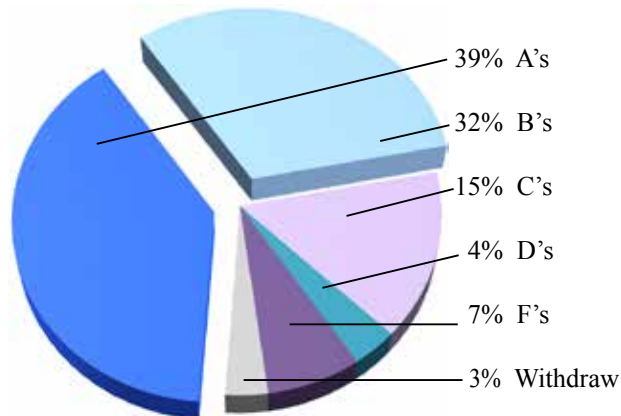
Perceived Student Strengths



Research Question 3: *How have students performed in online dual credit courses?*

The majority of facilitating teachers reported that their students' performance on college content is good to excellent. This is reflected in the end of semester grades with 71% of students enrolled earning an A or B.

Student Grades - Fall 2014





Research Question 4: *What challenges do students face in online dual credit courses?*

Facilitating teacher and college faculty perceptions of student challenges

Only one third of the facilitating teachers perceived of pre-requisite knowledge and/or academic skills as a challenge students faced in their online dual enrollment courses. The majority though viewed testing, papers and projects, time management, and the rigor of the course to be challenges for students.

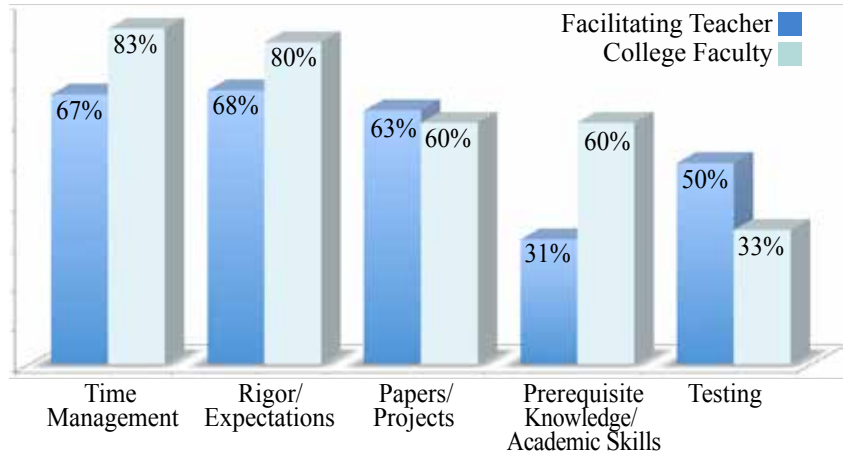
Student perceptions of challenges faced

Ninety percent of students reported facing at least one challenge (though many listed multiple challenges) in completing their online dual enrollment courses.

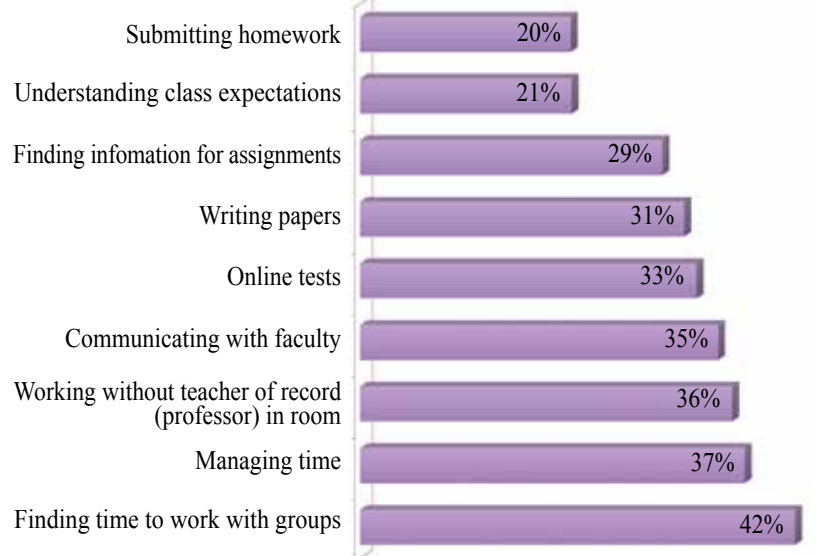
Challenges that had the most frequent responses were finding time to work with groups, managing time, and working without a teacher of record (professor) in the room.

It is interesting that the third most noted challenge for students is “working without the teacher of record (professor) in the room” which may occur in classes where a strong facilitating teacher model is not being implemented. This provides further indication of the importance to students in online dual enrollment courses that such support be available.

Student Challenges Perceived by Facilitating Teachers and College Faculty



Challenges Perceived by Students





Research Question 5: What demographic differences impact the challenges students face in online dual credit courses?

A series of chi-square analyses were run to further explore demographic differences (gender, economic status, and age) in the perception of students about the challenges they faced in online dual enrollment courses.

Challenge	Demographic	Chi Square	df	Significance Level	Interpretation
Communicating with Faculty	Gender	17.65	4	<.01	Males were slightly more likely than females to view as a challenge
	Economic Status	13.12	6	<.05	Students receiving free or reduced lunch slightly more likely than those not receiving free or reduced lunch to view as a challenge
	Age	22.27	6	<.01	Freshman were more likely than other ages to view as a challenge
Managing Time	Gender	15.08	4	<.01	Males were slightly more likely than females to view as a challenge
	Economic Status	18.33	6	<.01	Students receiving free or reduced lunch slightly more likely than those not receiving free or reduced lunch to view as a challenge
	Age	18.86	6	<.01	Freshman and Sophomores were more likely than other ages to view as a challenge
Finding Information for Assignments	Gender	15.66	4	<.01	Males were slightly more likely than females to view as a challenge
	Economic Status	12.01	6	Not Significant	No significant or practical differences were found
	Age	11.08	6	Not Significant	No significant or practical differences were found
Writing Papers	Gender	16.64	4	<.01	Males were slightly more likely than females to view as a challenge
	Economic Status	13.1	6	<.05	Students receiving free or reduced lunch slightly more likely than those not receiving free or reduced lunch to view as a challenge
	Age	11.08	6	Not Significant	No significant or practical differences were found
Finding Time to Work in Groups	Gender	15.16	4	<.01	Females were slightly more likely than males to view as a challenge
	Economic Status	16.29	6	<.05	Students receiving free or reduced lunch slightly more likely than those not receiving free or reduced lunch to view as a challenge
	Age	18.16	6	<.01	Freshman and Sophomores were more likely than other ages to view as a challenge
Understanding Class Expectations	Gender	17.35	6	<.05	Males were slightly more likely than females to view as a challenge
	Economic Status	13.85	6	<.05	No practical differences were found
	Age	16.13	6	<.05	Freshman were more likely than other class ranks to view as a challenge
Working without Teacher in the Room	Gender	18.72	4	<.01	Males were slightly more likely than females to view as a challenge
	Economic Status	15.7	6	<.05	Students receiving free or reduced lunch slightly more likely than those not receiving free or reduced lunch to view as a challenge
	Age	18.32	6	<.01	Freshman were more likely than other ages to view as a challenge
Working without Teacher in the Room	Gender	16.44	4	<.01	Males were slightly more likely than females to view as a challenge
	Economic Status	17.14	6	<.01	No practical differences were found
	Age	21.97	6	<.01	Freshman were more likely than other class ranks to view as a challenge

Although most of these differences were statistically significant (and therefore could be replicated in the population) only age had strong practical significance. The practical difference within gender and the difference within economic class on each of these student perceived challenges was small.

Age was both statistically and practically significant with freshman being more likely than other classes to find communicating with faculty, understanding class expectations, submitting homework, and working without the teacher of record (professor) in the room to be challenges. Freshman and sophomores also found managing time and finding time to work in groups to be more challenging than juniors and seniors noted.

Student challenges conclusion

Facilitating teachers and college faculty both perceived time management, rigor, and papers

or projects to be the most challenging for students in online dual enrollment courses.

Facilitating teachers reported testing to be more of a challenge for students than prerequisite knowledge or skills. However, college faculty felt that prerequisite knowledge or skills was more of a challenge for students. Interestingly, students also perceived time management as a challenge. However, fewer students noted papers, projects, or testing as challenges as they noted more relationship and time oriented variables such as having time to work in groups and time management, communicating with college faculty (and have college faculty or teacher of record in the classroom) as the most frequently noted challenges.

These findings are consistent with the challenges that many young and first generation college students face in online college courses^{14,15,16} and potentially suggest the need for a facilitating teacher particularly in classes with freshman and sophomore students.



Research Question 6: *What are the roles, responsibilities, and relationship of college faculty and facilitating teachers in support of students’ deep learning in online dual credit courses?*

College faculty perceptions

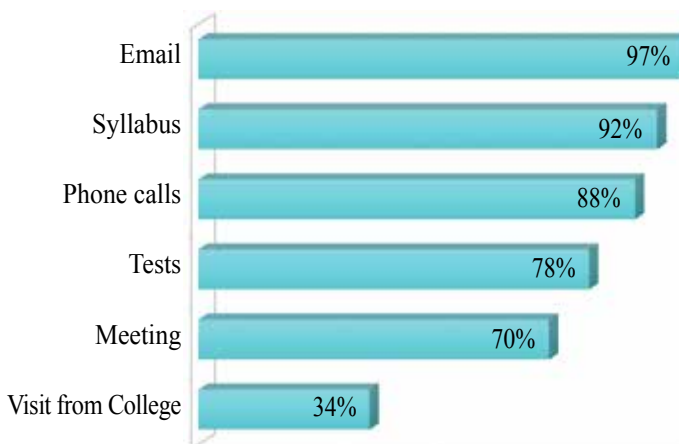
All of the college faculty had worked with high school faculty before, and all but one of the college faculty members had taught high school indicating that the college faculty were familiar with the role and responsibilities of high school teachers. Most (83%) of college faculty responded that rigor was met in the high school setting and, all but one of the college faculty members felt that the college faculty/teacher relationship was critical. However, the majority of college faculty reported that facilitating teachers only reached out to them occasionally.

Facilitating teacher perceptions

The vast majority (92%) of the facilitating teachers had supported courses that were in their area of expertise. In addition, the majority of the facilitating teachers (56%) had taught for 2 years or more.

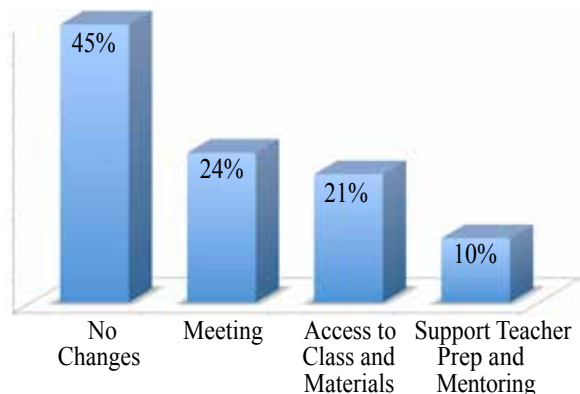
Facilitating teachers universally (100%) rated the support they received from college faculty to be *good* to *excellent* with 60% rating the support as *excellent*.

College Faculty Support for Facilitating Teachers



Most facilitating teachers noted that they connected with college faculty through email, phone, and meetings. They also reported having other support such as access to the syllabus and tests. Only 34% noted visits from the college.

Facilitating Teacher Suggested Changes in Relationship with College Faculty



Over 40% of facilitating teachers did not note any needed changes in their relationship with the college faculty. “Access to class and materials” included suggestions from facilitating teachers for more access to course materials, the textbook, lab, and auditing the course as aspects of that access.

Facilitating teachers indicated a desire to have more “meetings”, and noted that they wanted the students to have more access to their college professors before, mid-semester, and/or after semester face-to-face meetings or with online chats.

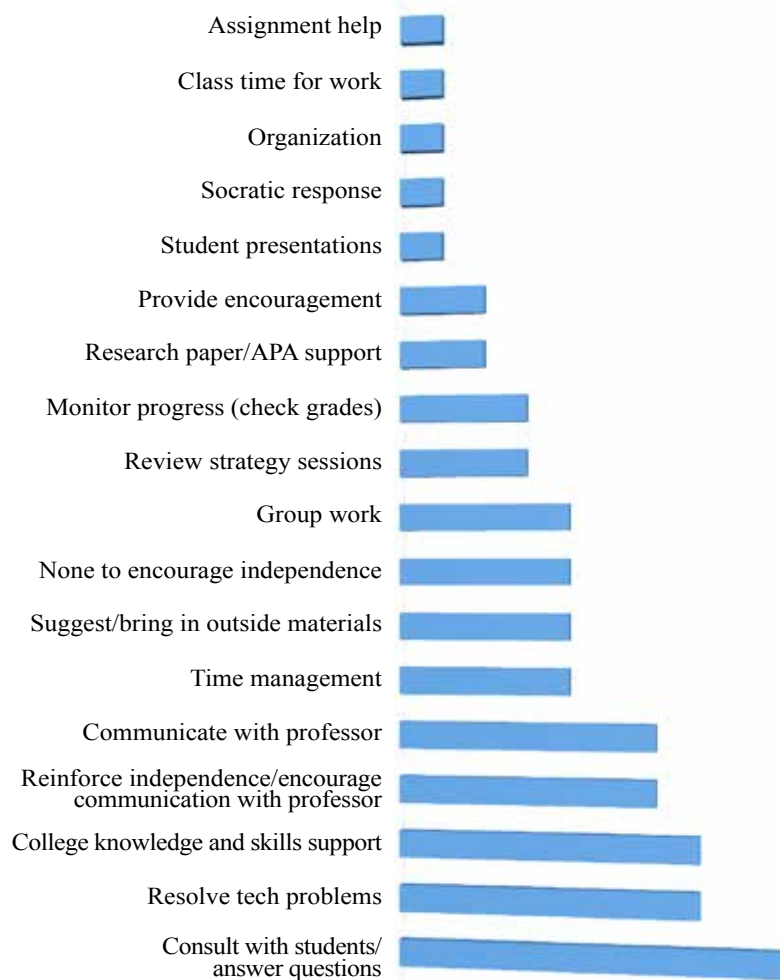
Finally, facilitating teachers reported that they would like more training in online course management (ANGEL), clearly stated expectations from college professors, and course guidelines.

Overall, college faculty agreed with facilitating teachers that the relationship was a good one but could use some strengthening, noting that communication about the program was fair to good. College faculty noted that they saw facilitating teachers reach out to them only occasionally.

Strategies of facilitating teachers supporting online dual enrollment courses

The majority of facilitating teachers provided support ranging from class time for work and communicating with the college faculty, to providing review strategy sessions and answering student questions. However, several teachers indicated that they provided no support as either they or the parents of the students wanted to encourage independence.

Facilitating Teacher Strategies



When asked in an open-ended question about support they provided to students, facilitating teachers noted over 30 strategies. These strategies have been coded and collapsed into

18 categories. A quarter or more of facilitating teachers noted communicating with professors, college knowledge and skills support, and consulting with students as strategies employed in supporting students' deep learning and success. These are key to addressing the challenges noted by college faculty, students, and facilitating teachers that students face in online dual credit courses.

There was a significant difference in facilitating teacher reported support for students related to whether the class was in their field of study ($C^2=35.5$, $df=8$, $a<.001$). Facilitating teachers who were facilitating courses in their field of study were more likely to provide support to students in online dual enrollment courses.

Conclusion

So, do facilitated online dual credit courses result in deep learning?

Our study of online dual credit courses in Stark County, Ohio indicates that they can definitely result in deep learning. Students, facilitating teachers, and college faculty agreed that a number of the components of deep learning (engaging learners actively, utilizing communication & problem-solving skills, incorporating meaningful projects, and/or encouraging collaboration) were present in the online dual credit courses students were enrolled in with Stark State College in the fall of 2014.

Online dual credit courses provide an opportunity for first generation and other underserved students who meet the academic requirements to earn college credit in high school, reduce the costs of college, and demonstrate to themselves that they have the capacity to pursue college pathways.

However, college courses present more than an academic challenge. Soft skills and "college knowledge" (such as willingness to accept criticism, acceptance of critical feedback, problem solving, and critical thinking)¹⁷ are necessary for successful completion of online dual credit courses.¹⁸ In this study, the majority of students mentioned time management and working without teacher of record (professor) in the room to be challenges. Facilitating teachers reported that providing assistance with time management, answering questions, and providing college knowledge and skill supports

to be primary strategies they implement in supporting students. The challenges students report facing and the support facilitating teachers report providing are strong examples of the college success coaching model that has emerged at the collegiate level.

College attendance rates have increased over the last 20 years. However, college completion rates have not kept pace. Bettinger and Baker (2011) suggest that this may be due to an increase in students lacking in time management, college culture knowledge, and other soft skills. In the study of a coaching program, they found "students who were randomly assigned to a coach were more likely to persist during the treatment period and were more likely to be attending the university one year after the coaching had ended. Coaching also proved a more cost-effective method of achieving retention and completion gains when compared to previously studied interventions such as increased financial aid."¹⁹

Nationally, there is a much higher average number of students per high school counselor 471:1 than the recommended 250:1 by the American School Counselor Association. This high ratio is amplified in low-income school districts where "families have the greatest need for college counseling, yet have the least access to counselors."²⁰

High stakes testing and other pressures have caused strain for high school counselors limiting the time they have to provide college knowledge and skills building sessions. Facilitating teachers can help fill that gap. The role of the facilitating teacher in online dual credit courses may be particularly crucial in bridging the gap for low income and first generation college students.

Recommendation

In 2015-16, College Credit Plus will require high school teachers providing support for online dual credit course to participate in three hours of professional development. Given the leadership of Stark State College in providing a model for college faculty and facilitating teacher roles and relationships, the college may want to consider offering an online webinar for facilitating teachers. This webinar could provide training that establishes a foundation for additional "college knowledge" supports offered by facilitating teachers.

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