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ABSTRACT

The majority of American high school students enrolling in online education are doing so in credit recovery courses. These are online courses specifically for students who previously failed a face-to-face version of the course. Despite the popularity of credit recovery courses, the literature on online learning largely ignores credit recovery courses and students. Assuming credit recovery students are similar to other online learners can be misleading. In this article, the existing literature on credit recovery is reviewed in 3 specific areas: the proliferation of credit recovery courses, the student experience in credit recovery courses, and outcomes and impacts of credit recovery. Suggestions are given for how to advance the credit recovery literature in future research of online learning.

Introduction

During the 2009–10 school year, the National Center for Education Statistics in the Institute of Education Sciences (IES) distributed a survey to a nationally representative sample of public school districts on distance education courses. Results from the survey indicate that about 55% of school districts enrolled students in distance education courses. The majority of enrollments, 62% or an estimated 1.1 million enrollments, were for credit recovery, online courses specifically for students who previously failed the face-to-face version of the course (Queen & Lewis, 2011).

Schools, districts, and states continue to expand credit recovery options and enrollments. In 2013, Connecticut became the first state to mandate that high schools offer credit recovery to all students if the school has a dropout rate of 8% or higher (Murin, Powell, Roberts, & Patrick, 2015). Despite the Connecticut legislature's faith in credit recovery as an effective dropout prevention tool, there is no empirical evidence that credit recovery increases graduation rates or provides an equivalent educational experience as a face-to-face course (Carr, 2014). As well, credit recovery is not governed by an accountability system that would mandate systematic study of credit recovery courses for either access or rigor (Carr, 2014; McCabe & St. Andrie, 2012). The literature on credit recovery today leaves us with no definitive enrollment numbers, only one rigorous evaluation (Heppen et al., 2016), and no mechanisms for oversight (McCabe & St. Andrie, 2012).

The literature on online learning and distance education almost completely ignores credit recovery as a specific type of online learning. To illustrate, a recent search of the contents of 10 peer-reviewed journals focusing exclusively on online learning or distance

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education in the United States returned only 16 articles that mention the term "credit recovery." Of the 16 articles, only six (37.5%) include any analysis specifically on credit recovery courses (see Table 1). The purpose of this article is to motivate future online learning research that focuses specifically on credit recovery courses and learners.

This literature review addresses the following research questions:

(1) Why would researchers specifically study credit recovery as opposed to studying online learning, in general?
(2) How does the available literature address the proliferation of credit recovery?
(3) How does the available literature describe the experiences of students enrolled in credit recovery?
(4) What are the conclusions from the literature thus far on the outcomes of students enrolled in credit recovery?

Questions 2 through 4 are addressed through a literature synthesis of available academic literature on credit recovery. The available literature was compiled using Google Scholar and the ERIC database with review of the resulting papers' citations to find additional studies. This study did not focus on the findings from any particular journal or source, although all studies needed to go under peer review for inclusion.[1] At the conclusion of this study, suggestions are provided for the research required to illuminate the mechanics, benefits, and consequences of credit recovery.

Two notes are important to take into consideration at the beginning of this literature synthesis. First, this study focuses on students who enroll in online learning while enrolled in a traditional school setting. Recently, full-time virtual schools where students take all courses online have increased in popularity, but any mention of virtual schools in this article is referring to providers of individual online courses for students

Table 1. Number of articles that mention and/or substantially focus on credit recovery in 10 U.S.-focused online learning or distance education journals.

Journal	Include the term "credit recovery"	Include credit recovery in results/ analysis
The American Journal of Distance Education	3	0
Computers in the Schools	2	1
Journal of Interactive Online Learning	0	0
Journal of Online Learning and Teaching	0	0
Journal of Online Learning Research	4	1
Journal of Research on Technology in Education	3	0
Online Journal of Distance Learning Administration	0	0
Online Learning	1	1
The Quarterly Review of Distance Education	2	2
The Internet and Higher Education	1	1
Total	16	6

Note. Searches performed on July 25, 2016. Searches conducted through the journal website, ERIC, LearnTechLib, and/or the website which indexes each individual journal. Not all six of the articles that include credit recovery in the results/ analysis are reviewed in this paper because several of the articles only briefly mention credit recovery in the results/ analysis.

[1]There are no articles included whose analysis is on a sample based outside of the United States because no study of credit recovery outside of the United States was found.

enrolled in a brick-and-mortar school. Second, I do not include dissertation manuscripts or reports produced outside of the federal government because these findings have not undergone either the peer-review process or the rigorous screening process of federal government reports. Not including dissertations and reports in this review does not speak to the quality of individual studies but instead is due to both space constraints and the overall purpose of this article to encourage a stronger peer-reviewed literature base on credit recovery.

Why specifically study credit recovery?

In many articles that focus on online learning in K–12 education, the authors might mention credit recovery in the literature review or state in the methods section that their sample of online learners includes students enrolled in credit recovery. However, when researchers include credit recovery students with other online learners, this is making an implicit assumption that credit recovery students are similar to, if not identical to, other online learners. I review three reasons this assumption is flawed: prior exposure to course material, lower technological skills, and likelihood of multiple skill deficits.

By definition, credit recovery students have previously enrolled in the same course but did not earn course credit due to failing the class. Therefore, students in credit recovery courses will have been exposed to the class material before, making credit recovery courses more similar to a remedial course than an advanced or extension course. This aspect of credit recovery should be a concern to researchers because when students taking credit recovery courses are grouped in with students taking advanced online courses, positive effects of taking an advanced course could be diluted by the students who are not learning new material in their online course if the effects of online learning are differentiated between remedial and advanced students.

Second, evidence from both credit recovery research and from studies of students who fail courses in general indicates that students in credit recovery courses are likely to have lower technological skills than other online learners. In general, students who fail courses tend to come from at-risk backgrounds where the student will be less likely to have access to technology at home and have lower technological skills compared with other students (see Judge, 2005; Kuhlemeier & Hemker, 2007; Valadez & Duran, 2007). Specific to credit recovery, a study of students enrolled in North Carolina Virtual Public Schools found that credit recovery students self-report that they have significantly lower technical skills when compared with the accelerated students' self-reports (Oliver, Osborne, Patel, & Kleiman, 2009). Researchers who study online learning might be concerned about including credit recovery students into an overall estimate of the effectiveness of online learning because credit recovery students might show lower performance than other online learners due to their lower capacity to access and function at a high level using an online platform.

Third, students who have failed one course are more likely to have failed other courses (Bowers & Sprott, 2012; Judge, 2005; Roderick, 1994). Students who fail multiple courses are likely to have skill deficits that are not isolated to the courses they fail. For instance, if credit recovery students are more likely to be poor readers, then online learning will be more difficult for those students who might be learning almost exclusively through a text-heavy online platform. Overall, assuming credit recovery students will only be seeking remediation for the specific course they are repeating would be ignoring the high

probability that these students likely have failed or will fail other classes at least partially due to multiple skill deficits (Bowers & Sprott, 2012; Judge, 2005; Roderick, 1994).

As summed up by Huett and colleagues in a review of knowledge about K–12 online learning, "We fear that distance education may become little more than a 'dumping ground' for credit recovery … the exact opposite population the research says tends to thrive in the distance environment" (Huett, Moller, Foshay, & Coleman, 2008, p. 64). In order to guide future research on credit recovery, it is useful to review the current literature on credit recovery.

Proliferation of credit recovery

Research and reports specifying the enrollment and prevalence of credit recovery is surprisingly difficult to come by, with many reports using more rudimentary ways of trying to categorize the popularity of credit recovery. For instance, many reports ask school or district administrators how important or how popular credit recovery is at their school instead of reporting on actual enrollment numbers (see Clements, Pazzaglia, & Zweig, 2015; Picciano, Seaman, Shea, & Swan, 2012). The information available on the proliferation of credit recovery follows in this section with a summary of the findings listed in Table 2.

IES has conducted or sponsored several studies to try to measure the proliferation of online learning and credit recovery. As discussed in the introduction of this article, IES distributed a survey to a nationally representative sample of public school districts (2,310 districts with a 94% response rate) in the 2009–10 school year on distance education courses. They defined distance education as credit-granting courses that are technology delivered and have an instructor in a different location and/or content developed in or delivered from a different location from the students (Queen & Lewis, 2011). Results from the survey indicate that about 55% of districts enroll students in distance education courses for an estimated enrollment of 1,816,400 for the 2009–10 school year. Of all distance education courses, 62% were for online courses for credit recovery. As well, 57% of districts with distance education courses reported that offering credit recovery was a very important reason for having distance education courses (Queen & Lewis, 2011).

IES also produced several reports on online courses through Regional Education Laboratories (RELs) in several regions across the country. The report from REL Midwest included a survey of a stratified random sample of public high schools in Iowa and Wisconsin. The response rate in Iowa was 70% and 57% in Wisconsin, with some indication that the lower response rate is due to nonresponse of schools that do not offer online courses (Clements, Stafford, Pazzaglia, & Jacobs, 2015). In both states, credit recovery was the top objective of online courses. In Iowa, 71% of schools reported enrolling students in credit recovery, and in Wisconsin 66% of schools reported enrolling students in credit recovery (Clements, Stafford, Pazzaglia, & Jacobs 2015).

The report from REL Northeast includes the results from a 2012–13 survey of 99 member public high schools (60% response rate for a sample of 59 schools) in the New York Greater Capital Region's Capital Area School Development Association headquartered in Albany, NY (Clements, Pazzaglia, & Zweig, 2015). Over half of these schools are in rural areas, and a quarter of schools are in city or suburban areas. Most schools in this

Table 2. Estimates of credit recovery (CR) course enrollment or CR course availability.

Study	Year	State	District	School	Students	CR enrollment
				Sample		
Clements et al. 2015	2012–13 SY	New York State	—	99 schools in New York's Capital Region	—	46% schools offer CR (27 schools)
Clements, Stafford, Pazzaglia, & Jacobs, 2015	2012–13 SY	Iowa and Wisconsin	—	168 schools in each state (statewide random samples)	—	71% of schools in Iowa and 66% of schools in Wisconsin offer CR*
Hughes et al., 2015	2007–08 through 2010–11 SYs	Florida	All districts	All schools	About 866,000 students per year (all high school students)	4,063 enrollments in CR in 2010–11; 3,236 enrollments in CR in 2009–10; 2,053 enrollments in CR in 2008–09; 259 enrollments in CR in 2007–08
Queen & Lewis, 2011	2009–10 SY	All 50 states	2,290 Districts (nationally representative random sample)	—	—	1,126,000 enrollments[a]
Picciano et al., 2012	2008–09 SY	—	—	441 high school principals		73% of schools offer CR (322 schools)
Oliver et al., 2009	Summer 2007	North Carolina	—	—	6,986 students enrolled in North Carolina Virtual Public Schools	78% of students enrolled in a CR course (5,449 students)

Note. SY = school year.
[a]Weighted estimate(s).

sample are Title I eligible (i.e., enroll a high percentage of economically disadvantaged students) and serve a majority white student population. In this sample, about 60% of schools offered online courses that school year with schools offering online courses having an average of 6% of their students enrolled in an online course. About three quarters of students enrolled in an online course were enrolled in a credit recovery course, and 82% of schools with online courses report that online courses for credit recovery was a very important reason for having online courses (Clements, Pazzaglia, & Zweig, 2015).

Focusing on Florida, a report from REL Southeast gives estimates for the number of students who are enrolled in credit recovery courses in multiple school years. The estimates for credit recovery enrollment were based on administrative data maintained by the Florida Department of Education, so these estimates are the most detailed in this synthesis. However, the way the authors coded credit recovery courses undercounts the actual enrollment in credit recovery courses. Credit recovery courses can be offered to students in several ways. In Florida, they have a large, state-run virtual school that offers credit recovery courses, four school districts administer their own district-run virtual schools, and districts/schools can contract to a private provider for credit recovery courses. In the REL Southeast report, any credit recovery course taken through a private provider (e.g., PLATO, Apex, Aventa, education2020) will not be included in the enrollment estimates. As another consequence of their coding, students who previously failed a course outside of the state of Florida, in a private

school, or in a charter school would not be included. According to the estimates in this report, enrollment in credit recovery greatly expanded between the 2007–08 and 2010–11 school years starting with an enrollment of 259 and ending with an enrollment of 4,063, an almost 16-fold increase in credit recovery enrollment in 3 years. See Table 2 for year-by-year estimates (Hughes, Zhou, & Petscher, 2015).

North Carolina also has a large state-run virtual school. A recent article in *The Quarterly Review of Distance Education* explores the deployment of the North Carolina Virtual Public Schools (NCVPS), now the second largest statewide virtual school, in its first term of courses in summer 2007. In summer 2007, around 7,000 students enrolled in an NCVPS course with 78% of students taking credit recovery courses and the remainder taking accelerated courses (Oliver et al., 2009).

Another article published in *Internet and Higher Education* reports on three national surveys funded by the Alfred P. Sloan Foundation. The three surveys were administered to school districts or high school administrators and asked about how the districts or schools utilized online learning. The authors do not report on the survey design, how the sample was selected, or the response rate. The first two surveys were distributed to school district administrators in the 2005–06 and 2007–08 school years, with 366 and 867 respondents, respectively, and the third survey was distributed to high school principals in the 2008–09 school year with 441 respondents. Credit recovery was a key component of online learning according to respondents to all three surveys with 55% of district administrators in 2005–06, 60% of district administrators in 2007–08, and 73% of high school principals in 2008–09 indicating that permitting students who failed a course to take it again was an important reason to offer online learning. In the 2008–09 survey, credit recovery was listed as the most popular type of online course offering with just under 70% of schools offering credit recovery (Picciano et al., 2012).

The nascent literature base on the proliferation of online credit recovery has found that credit recovery is a popular online learning option with most high schools offering credit recovery along with other online learning opportunities. As shown in Table 2, overall estimates of enrollment or offerings of credit recovery are highly disparate depending on the study, although many reports do indicate that credit recovery is an option at around three quarters of high schools. Future estimates that come from surveys asking more specific questions on credit recovery or that take advantage of access to administrative data on student-level course taking will be able to more fully account for the enrollment in and availability of credit recovery courses.

The student experience in credit recovery courses

Because credit recovery is a relatively new model for student learning, what is known at this point about how students experience credit recovery courses? Some IES reports have investigated the educational experiences of students in credit recovery courses. For instance, in the REL Midwest report, most schools in Wisconsin and Iowa reported that students were enrolled in synchronous online courses where they had the opportunity to communicate directly with an online teacher, and most schools assigned an on-site monitor to supervise students in online courses (Clements, Stafford, Pazzaglia, & Jacobs, 2015).

In the article on the NCVPS deployment in summer 2007, the authors provided unique information unavailable in other sources. For instance, the authors pointed out that all

courses for NCVPS in summer 2007 were aligned to the Southern Region Education Board's e-learning standards that were later adopted by the North American Council for Online Learning as the National Standards for Quality Online Teaching. This study also includes information from a survey of all teachers and students who enrolled in an online course through NCVPS that summer, separating both groups into those involved in an accelerated course and those involved in a credit recovery course. Teachers of credit recovery courses rated the quality of resource materials as significantly lower than teachers of accelerated courses. Just under half of credit recovery students reported having a very clear idea of how their classwork was evaluated and that they always received prompt feedback on completed assignments. The speediness of the feedback, in particular, was a noted issue because the courses were self-paced and often students would not receive feedback until after they had completed that section of the course (Oliver et al., 2009). This study partially illuminates how this specific set of credit recovery courses is structured, opening a window into what students are doing while logged into their credit recovery courses.

Oliver and Kellogg (2015) conducted a follow-up survey of NCVPS students and teachers in a more recent summer. In this survey, the authors found that credit recovery teachers had typically taught only one online course prior to that summer, much fewer courses compared with accelerated course teachers. Credit recovery students felt as if they received more one-on-one teacher help in their online course than when they originally took the course with a face-to-face instructor, and students felt confident they would pass the credit recovery course because they had put in time and effort. In total, 85% of credit recovery students felt successful in their course with 78% of credit recovery teachers responding that they though their students were succeeding in the credit recovery course. As far as learning, 62% of credit recovery students responded that they were learning a little or much more online than they would in a face-to-face course and 84% agreed that their technology literacy skills were improving. For course content, credit recovery teachers reported rarely having collaborative assignments, providing little encouragement for peer-to-peer learning, and rarely requiring hands-on or authentic projects. Instead, credit recovery teachers noted the mastery-based design of the courses, the new teaching strategies used by the online platform, and the interactive web tools available to students (Oliver & Kellogg, 2015).

Taking an ethnographic approach to understanding the student experience in credit recovery, Ingerham (2012) observed two classes of Algebra I credit recovery in one high school in North Carolina (this study included no comparison group of students who were in a traditional classroom setting). Both courses were offered through NCVPS, administered during a regular course period during the school day, and had a teacher in the room to help with course content questions. Ingerham observed 16 students, recording the activities of the 16 students every 2 min for a total of 45 data points per student. Ingerham found almost half of the students spent at least half of the class period interacting with the online content. Three students spent at least 20 min interacting with the face-to-face teacher. One student spent 11 min interacting with the virtual teacher. Fewer than half of the students interacted with other students on course content. On-task interactions accounted for over half of the class period for 12 students with 2 students spending over three quarters of the class on task. The majority of students accessed other websites, spending at least 15 min on other websites. Ingerham found that some students were able

to focus on the credit recovery course, but overall the students had many distractions because they were on computers with Internet access (Ingerham, 2012).

Using a case study approach, Levy (2011) investigated a specific program for migrant students in Texas that included credit recovery as one component of the program. Five students were included in the study, and each student was given a laptop on which to access the NovaNET program for credit recovery purposes. The NovaNET program includes textbook-supported notes and lessons as well as tutorials and assessments. Levy described the NovaNET program as versatile because the courses are self-paced, and students can pause lessons at any time. As part of the program structure, students were only able to access NovaNET after 5 p.m. on weekdays and throughout the weekend. As far as students' reports of their experiences with NovaNET, the case study students indicated that they liked using NovaNET for credit recovery because of both the flexibility of the platform and the personalization. They appreciated being able to learn from home and noted how the system helped them be successful by allowing them to overcome obstacles like long bus rides and having young children (Levy, 2011).

It is difficult to summarize the information on the experiences of students in credit recovery because the reports on student experiences are highly varied, specific to the location and time of the data collection, and lack an overall framework with which to categorize the credit recovery experience. Overall, it appears that most online courses have some sort of teacher interaction, virtual and/or with a teacher in the room. Online courses can be in a very flexible anytime anywhere format, or they can be taken within a traditional school day schedule. Some studies attempt to describe what exactly students are doing in the online courses, but the terms remain vague with only short descriptions of interactive online modules or lessons. Also unclear is how students are assessed in the class and how the online platform determines a student has reached mastery both in individual lessons and overall for the course. Future research can further explore both the content and pedagogical approach of credit recovery courses as well as how students are experiencing, interacting with, and engaging in the credit recovery course.

Outcomes and impacts of credit recovery

The overall literature on the impact of credit recovery can be summed up by a 2015 What Works Clearinghouse (WWC) report on credit recovery programs: "The WWC is unable to draw any conclusions based on research about the effectiveness or ineffectiveness of credit recovery programs" (U.S. Department of Education, Institute for Education Sciences, What Works Clearinghouse, 2015, p. 1). Since the WWC report was released, one study has been published that marks itself as the only impact study of credit recovery available today. This study is a randomized control trial comparing credit recovery with traditional face-to-face summer school conducted by researchers at American Institutes for Research (AIR) and the Consortium on Chicago School Research. Ninth-grade students (1,224 students) who failed Algebra I in one of 17 Chicago Public Schools high schools were randomly assigned to face-to-face summer school or credit recovery. This study is of one credit recovery provider, Aventa Learning. Aventa Learning uses a supervised model with in-class mentors, meaning that students take the course at school. The authors point out that they picked Aventa because it is available in every state, and its Algebra I credit recovery course was used in an estimated 500 schools in 2011. Students in the credit recovery course reported the class was significantly more difficult than students in the face-

to-face course. Students in the credit recovery course were significantly less likely to receive course credit for the course and received lower Algebra I posttest scores than the students in the face-to-face condition. However, the researchers find no statistically significant differences on any of the outcomes measured during the second year of high school including math test scores, passage of subsequent math classes, cumulative math credits, and on-track-to-graduation rates (Heppen et al., 2016). These findings leave a mixed picture where the increased rigor of the credit recovery course resulted in fewer students with course credit, but overall being placed in either condition led to the same results the following school year.

In the REL Southeast report, the authors compared students who took online courses with those who took face-to-face courses (Hughes et al., 2015). The report focuses on Florida high school students and uses the outcome of receiving a grade of C or higher. The authors found that students in online credit recovery had a higher likelihood of earning a C or higher than students repeating a previously failed course offline (i.e., face-to-face), although the difference in the predicted likelihood of earning a C or higher is reduced to almost zero for students in the 12th grade. Black, Hispanic, economically disadvantaged, and special education students in credit recovery had a higher likelihood of receiving a C or higher than students repeating a course offline except if the student was enrolled in the 12th grade. The likelihood of receiving a C or higher was no different between students taking online credit recovery versus repeating the course offline if the student was classified as an English Language Learner (Hughes et al., 2015). Although this study has positive results indicating online credit recovery is more effective than repeating a course face-to-face, the results should be interpreted with caution because little is known about how grades are assigned in online courses.

Franco and Patel (2011) investigated a pilot credit recovery program of 23 students in a large suburban Midwestern high school. The credit recovery courses were supervised by content specialists and were offered in summer 2009, the summer after the students' freshman year of high school. Students in the credit recovery courses all earned course credit although 10 of the 23 had not earned enough credits to be promoted to sophomore status by the end of the summer (Franco & Patel, 2011).

In the study of migrant students with access to NovaNET, Levy (2011) provided a few indicators of the effects of the NovaNET program. The five students earned, on average, three and a half course credits each throughout the year they had access to the laptops with NovaNET. Three students completed five courses each, and these students reported that they would not have graduated from high school on time if they had not had access to NovaNET (Levy, 2011).

Overall, estimating the outcomes of credit recovery students is the weakest area investigated in this literature review because fewer than five studies were found that could be included in this section. Future studies could investigate whether or not students who take credit recovery courses are passing the course and receiving credit.

Conclusion

Although many open questions remain about credit recovery, it is clear from the work done thus far that credit recovery is an increasingly popular use of online learning in high schools across the country. A large percentage of district and school administrators agree that an important reason to offer online learning in their schools is for students to take

credit recovery courses. States and districts have responded by financing large virtual school networks that provide courses to students at traditional public schools. At the same time, a private marketplace of providers like Aventa are marketing themselves to schools as providers of credit recovery courses. Due to the clear finding that credit recovery is a popular online learning tool, I argue the research base on online learning should shift to include more studies either focusing exclusively on credit recovery or including credit recovery as an important subgroup to analyze separately.

This article contains many suggestions for how researchers could proceed in growing the literature base on credit recovery. For articles about enrollment and availability of credit recovery, surveys can contain more specific questions asking, for instance, how many different courses are offered, what kinds of providers the school utilizes (i.e., state run, district run, private), and how many students are enrolled in credit recovery courses. To investigate the content and student experience of credit recovery courses, studies could provide a more detailed summary of the courses students are enrolled in, how students are assessed, and how long students take to complete a course. Finally, schools are likely offering credit recovery courses with a specific goal in mind: high school graduation. In all but one state (North Dakota), state law sets minimum graduation requirements for all public school students that include completing a certain number of course credits in order to graduate ("Standard High School Graduation Requirements (50-state)," 2016). Future research should investigate if offering credit recovery is in fact effectively allowing students to accumulate more course credits followed by graduating from high school. Critical investigations of credit recovery will both illuminate the experience of possibly millions of online learners and might help improve both the courses themselves and the outcomes of students in those courses.

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