WICHE
Western Interstate Commission for Higher Education

RESEARCH AND EVIDENCE: ACADEMIC SUCCESS STRATEGIES

Kate Baca | February 2026

About the Project

This research summary pairs with a series of policy briefs that highlight various postsecondary completion strategies across the WICHE region. These reviews provide a brief overview of the research on the various policies and initiatives identified in the landscape analysis of state strategic plans. Each research summary serves as the research context partner to the accompanying policy brief. While the policy briefs focus on state-level policy levers and initiatives, some of the research, such as on OER, examines institution-level outcomes. Still others, namely credit mobility policies, have been studied following state-level interventions. Future inquiry has the potential to build on the existing research base to examine outcomes within statewide contexts. More details on the findings of this analysis, including the policy briefs on student success, workforce alignment, academic success, and coordinated collaboration strategies, as well as an interactive online resource displaying state-level strategies, are available at wiche.edu/policy-research/completion. This work was generously funded by ECMC Foundation.

As states continue to invest in furthering their completion goals for postsecondary degree attainment, an integral part of completion is the strategies that focus on students' academic credit attainment.[1] WICHE defined academic success strategies as those focused on student learning and how students acquire academic credits within their postsecondary education. This includes credit for prior learning, credit transfer and mobility, dual and concurrent enrollment, and open educational resources (OER).

Credit Mobility

Credit mobility strategies facilitate the transfer of student credit from institution to institution. These strategies include common course numbering across institutions, credit

articulation agreements, reverse transfer policies, and conferment of retroactive degrees. Credit mobility initiatives have been operationalized by institutions in response to research showing that transfer students can lose as much as 40% of their academic credits when they move between institutions.[2] Policies that clarify and refine credit mobility, such as articulation agreements and clear transfer pathways, can be combined with strategies like common course numbering or a transfer of core courses, described in greater detail below, to reduce this loss of credits.[3]

Research has identified that institutions use a variety of methods to strengthen transfer policies and ensure positive student degree outcomes, through both longitudinal student matching data as well as qualitative interviews.[4] These strategies have included clarifying transfer pathways to students and tailoring advising programs to increase completion. These efforts operate in parallel to state initiatives in the landscape analysis conducted in the outlined policy briefs.[5]

Credit articulation agreements are policies and agreements between institutions to allow for credit transfer between two- and four- year institutions.[6] Such policies enable students to begin the first two years of their degree at a community college and seamlessly transfer to a four-year college to complete their second two years. This type of policy is commonly referred to as a 2+2 articulation agreement. Other articulation efforts facilitate transfers between similar institution types.[7] Articulation agreements have proliferated in large part due to the loss of credits in vertical or lateral transfer, as institutions try to create more efficient and successful transfer policies.[8] Researchers have isolated some effects of state policies. In one example, researchers examined California's Student Transfer Achievement Reform Act, which enables a more seamless transfer process, and found that a greater number of students transferring from two-year to four-year institutions drove positive student outcomes.[9]

Reverse credit transfer (RCT) is a policy that applies to students who start at a two-year institution and transfer to a four-year institution with enough credits to earn an associate degree from their starting two-year institution.[10] Both the policies allowing for reverse credit transfer and the research investigating those policies are relatively recent.[11] However, there have been some clear outcomes associated with the awarding of a reverse transfer degree. Following Texas legislation allowing for RCT, post-transfer degree recipients were more likely to persist towards a bachelor's degree than their peers who were eligible for RCT and did not receive a degree.[12] Early research also suggested that there were positive outcomes associated with bachelor's attainment and RCT in two states: Hawai'i and Minnesota. More recent research, however, suggests that some of the positive estimations may have been overstated.[13] What is clear across the research is that even when there were no clear positive outcomes, there were non-negative outcomes, meaning RCT did not negatively affect student degree completion and may contribute to overall completion depending on the context and study.[14]

Additionally, while the relationship between common course numbering and degree completion is difficult to isolate and study, strategies such as a transferable core set of courses highlight potential effects on degree completion. Schudde et al. studied the effects of a transferable core set of courses and degree completion at the state-level and found that for every additional core course completed, students were more likely to finish their degree.[15] However, once they hit the threshold of a completed core, they experienced a negative relationship, suggesting that common course numbering has a positive effect on completion as it pertains to a transferable set of core baccalaureate courses. Similarly, states have created transfer modules, or courses that will directly transfer from two- to four-year institutions. These courses increase the likelihood of students making a vertical transfer with more credits, but can lead to a longer time-to-credential for students pursuing a baccalaureate degree.[16]

The research field has focused on the impact of transfer student experience, vertical transfer and impacts on students' credit mobility. States are well-positioned to study the effects of reverse credit transfer policies, as well as the impact of transferable core courses, on transfer student outcomes. Both have a burgeoning field of study that would benefit greatly from a focus on policy implementation and the effects on long-term state completion efforts. Further, streamlined articulation agreements between systems and institutions have the ability to efficiently aid student credit mobility and when studied around their implementation, could be an area of continued research.

Credit for Prior Learning

Credit for prior learning (CPL), also known as prior learning assessment (PLA), is college credit earned through demonstrated college-level equivalent experiences or assessments. These can include experiential learning, past employment experiences, competency-based education, military service, and other experiences. Often, these are assessed through standardized examinations, portfolio assessments, credit for past training (such as military or corporate training), and institutional review of licenses or certifications.[17] States are working to expand their CPL assessments and pathways to make it easier for postsecondary students to complete their studies by translating work experience into academic credits. While multi-institutional and national research on CPL is more recent, there are clear positive outcomes associated with CPL and student degree attainment.

Early research indicated that receiving CPL was a strong indicator of programmatic success and persistence toward degree completion, though these results were institutionally specific or smaller in cohort size.[18] CPL sits at the intersection of student completion, workforce needs, and institutional goals of student persistence and retention.[19] Due to the overlap of CPL with other policies and strategies, the field continues to grapple with questions about the generalizability and national scope for research. The Council for Adult and Experiential

Learning (CAEL) conducted research to examine the relationship between student outcomes and use of prior learning assessments. That research found that students who received credit through prior learning assessment were more than twice as likely to complete their degree.[20] CPL was also shown to have a strong relationship with degree completion, specifically when leveraging student assessment and portfolio PLA methods.[21]

In 2020, WICHE conducted research in partnership with CAEL on the impacts of CPL on student outcomes. The research found that students who utilized CPL had higher levels of completion, saved time working towards their degrees, and realized cost savings.[22] In some institution-specific research, students who petitioned for PLA credits completed degrees at a higher rate, saved money on tuition, earned more credits at their postsecondary institution, and had greater confidence in taking college-level coursework.[23] More recent research has continued to show positive outcomes, particularly around higher completion rates and faster degree completion, that were also seen in broader multi-institution systems.[24]

As states have worked to improve their systems around requirements and credit for prior learning, researchers have also explored student outcomes as states engage in shared coordination.[25] Statewide articulation of workforce and academic CPL pathways remains a focus with respect to positive student outcomes and completion rates.[26] Research on the policy and scalability of solutions supporting greater student completion and shared coordination continues to be a promising field.

Dual and Concurrent Enrollment

Over the last decade, dual and concurrent enrollment has grown rapidly, with approximately 2.8 million American high school students having participated in these programs as of the 2023-2024 school year.[27] Dual enrollment programs are collaborations between high schools and postsecondary institutions to allow high school students to enroll in college courses prior to their high school graduation.[28] Dual enrollment has become an increasingly prevalent strategy to support student postsecondary completion, and participation in dual-enrollment programs has been positively associated with grade point average (GPA), total earned college credits, college enrollment, early persistence, degree attainment, and full-time attendance.[29] However, these are difficult to measure, given the selection bias of students who opt into dual enrollment and their larger motivations for that choice, potentially confounding outcomes.

Throughout the secondary and postsecondary career of a dual-enrolled student, research has shown continued benefit to their postsecondary success. For example, students who have participated in dual enrollment courses are more likely to enroll in college.[30] These odds also increased with the number of dual enrollment credits a student took, meaning the more credits a student enrolled in, the more likely it was that a student would enroll in college.[31]

Once enrolled in an institution and across postsecondary degrees, dual enrollment students were more likely to complete their credentials than their peers who had not earned dual enrollment credits.[32] Students who participated in dual enrollment courses at a community college career and technical education program were also shown to have increased baccalaureate completion rates, highlighting that across various contexts dual enrollment has a distinctly positive relationship with credential completion.[33] These positive associations were echoed not only in their degree completion but also in their overall persistence towards the degree, with dual enrollment students exhibiting higher rates of first-year retention as well as overall persistence to their degree.[34]

Research on the relationship between dual enrollment and student outcomes extends beyond completion, investigating various contributing factors to student success. Students who participated in dual enrollment are also more likely to exhibit vertical transfer from a two-year institution into a four-year institution, suggesting similar benefits of persistence towards a degree.[35] Additionally, the time needed for degree completion was reduced for students who participated in dual enrollment.[36] Students who enrolled in dual enrollment courses were also more likely to be successful in their courses, as measured by degree attainment and course grades.[37] Across student completion metrics, dual enrollment research continues to offer substantive evidence for positive associations with degree completion.

Given the wide participation in dual enrollment, there is a substantial base of research that has examined the effects of dual enrollment on college enrollment, student success outcomes and completion. However, the experience and motivations behind student decisions and enrollment into dual enrollment continue to be an important confounding factor in these outcomes. The field of research has largely established positive relationships between dual enrollment participation and college matriculation, the applications of dual enrollment courses, the trajectory of those students over time, and the return on investments for states continue to be important fields of study.

Open Educational Resources

Open educational resources (OER) are defined as all educational materials that reside in the public domain or are openly licensed.[38] These can include textbooks, curricula, syllabi, lecture notes, projects, assignments, tests and ancillary materials students use in their education. States across the WICHE region have continued to invest in OER as one way to lower the cost of attendance for students and increase their chances of credential completion. OER has been seen as an important affordability measure for states to invest in, as students make choices on foregoing their course materials given the rising cost of postsecondary and the financial difficulty experienced by many students in meeting their needs.[39]

The most frequent and oft-cited benefit of OER, according to the research, is the cost savings to students and return on investment for states and institutions. In more recent years, there has been greater convergence on how to calculate cost savings to students for using OER over traditional textbooks.[40] Recent research has indicated that institutions shifting to the use of OER can help students save on the overall cost of their degree, which has a direct positive impact on affordability and student success.[41]

Continued research has also investigated student success at the course level, with students exhibiting higher course completion rates and higher instances of passing the course.[42] These results have been shown both on an individual course level, with greater academic achievement, lower course withdrawal rates, and greater completion rates, as well as across multi-institution research.[43] These course-level findings contribute to a greater body of research suggesting that OER adoption can alleviate financial burden as well as promoting improved student performance and retention.[44]

Research conducted on a community college campus saw neutral impact on completion and retention, however, when disaggregated by student population, historically underrepresented students experienced a 6% increase in retention from fall to spring.[45] Across a larger-scale, multi-institution study of community colleges, students who took OER courses had a higher accumulation of credits without a drop in GPA, meaning they were able to take more courses while maintaining positive academic outcomes. Subsequently, these students also progressed towards their degree at a faster pace.[46] Meta-analyses across the field of OER research also highlights stable student achievement, lower course withdrawal rates and particular benefits to financially disadvantaged students.[47]

Given the gap in research on more longitudinal data for student completion and OER adoption, WICHE conducted a pilot study with one institution to examine the relationship between OER and degree completion. That research found that students were more likely to complete their degree if they took a course with OER or no-cost or low-cost course materials, though they may have taken more semesters to complete their degree.[48] While research continues to investigate the completion implications for OER investments, there have been clear themes of both cost savings to students and lower rates of academic failure.

First-Year Success

Historically, early student outcomes have been a dominant predictor of degree completion and persistence.[49] In other words, student success in the crucial first year (as measured through GPA, credit load, and gateway course performance) has an outsized influence on persistence and degree attainment. Given the influence of first-year experiences, states have continued to invest in first-year success programs to support their students and boost their completion outcomes. Examples of these policies include corequisite remediation, peer

learning communities, and peer advising. Specific WICHE state examples of first-year success programs can be found in the accompanying policy brief on academic success strategies.

One strategy to support early student success is corequisite remediation. This tactic involves the enrollment of students who require remedial education into credit-bearing, college-level courses, as well as the provision of academic supports for those students.[50] This approach represents a holistic, supportive alternative to the traditional remediation course model. The corequisite methodology was developed in response to research indicating that students enrolled in non-credit-bearing remediation courses were more likely to stop-out or not complete their postsecondary degree.[51] While the transition to the corequisite model is more recent, early examples show promise through evaluations using propensity score matching and subsequent regression modeling on course outcomes. These studies demonstrated higher course-passing rates for the corequisite model as compared to the remediation model.[52] This was also found to be the case for nontraditional students at a two-year college, though the results were positive for corequisite remediation mathematics courses and no relationship was found for the reading courses utilizing a similar model.[53] More recent research found positive outcomes for degree attainment and completion for students who took corequisite remedial courses, though most of these outcomes were specific to math courses.[54]

Peer advising, peer tutoring, and peer learning communities are also featured in first-year success programs. Some of these programs, such as peer-assisted study sessions, have been shown to contribute to first-year academic success, greater retention, and degree completion, though these programs also attract academically high-achieving students.[55] Other programs, like peer learning communities, have a larger body of research showing positive outcomes for students who have engaged in peer support and academic communities.[56] Overall, it is important for states to invest in high-quality programs designed to improve student retention in the crucial first year, given their long-term impact on degree completion outcomes.

Conclusion

Across the academic strategies highlighted in the Western states' strategic plans, states are investing in a mix of initiatives that have been shown to affect student completion at varying levels. As states choose which strategies to invest in, research suggests that they should have clear objectives for the outcomes they intend to influence.[57] The academic strategies of credit for prior learning, credit transfer and mobility, dual and concurrent enrollment, open educational resources (OER), and first-year success programs have important completion outcomes that can vary across contexts. States can continue to invest in data infrastructure to better understand the long-term effects of these strategies and understand their own postsecondary landscape and strategic initiatives.

ENDNOTES

1 WICHE is a regional higher education interstate compact that includes 15 states and the U.S. Pacific Territories and Freely Associated States. The use of the term state reflects all states, territories, and freely associated states in the WICHE region. The WICHE region includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming, and the following U.S. Pacific Territories and Freely Associated States: American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Republic of the Marshall Islands, and Republic of Palau. Throughout this brief, the term "state" is understood to include states, territories, and freely associated states.

2 Carroll, W., & Smith, B. (2024). The cost of today's college credit transfer system for learners and the mindsets and practices that reduce them. Center For Higher Education Policy and Practice. https://www.chepp.org/wp-content/uploads/2024/05/CHEPP_Cost-of-Todays-College-Credit_WHITE-PAPER-003-FINAL.pdf.

3 Zaragoza, D. (2021). The state of state transfer policy: A typology to evaluate transfer and recognition of learning policies. HCM Strategists, Sova, & Aspen Institute College Excellence Program. https://highered.aspeninstitute.org/media/66.

4 Fink, J., & Jenkins, D. (2017). Takes two to tango: Essential practices of highly effective transfer partnerships. *Community College Review, 45*(4), 294–310. https://doi.org/10.1177/0091552117724512; Hodara, M., Martinez-Wenzl, M., Stevens, D., & Mazzeo, C. (2017). Exploring credit mobility and major-specific pathways: A policy analysis and student perspective on community college to university transfer. *Community College Review, 45*(4), 331–349. https://doi.org/10.1177/0091552117724197.

5 Fink & Jenkins, 2017.

6 Kamen, S. M., Booker, M., Brooks, K., De La Torre, D., Grites, T. J., Hills, M., Redington, J., Reeves, B., & Schwienteck, K. (2019). Guide to best practices articulation agreements. American Association of Collegiate Registrars and Admissions Officers. https://www.aacrao.org/docs/default-source/signature-initiative-docs/trending-topic-docs/transfer/aacrao-articulation-agreement-final_aacraocover.pdf; Montague, N. R. (2012). Articulation agreements: No credits left behind. *Issues In Accounting Education, 27*(1), 281–298. https://doi.org/10.2308/iace-10218.

7 Kamen, Booker, Brooks, De La Torre, Grites, Hills, Redington, Reeves, & Schwienteck, 2019.

8 Taylor, J. L., & Jain, D. (2017). The multiple dimensions of transfer: Examining the transfer function in American higher education. *Community College Review, 45*(4), 273–293. https://doi.org/10.1177/0091552117725177.

9 Baker, R. (2016). The effects of structured transfer pathways in community colleges. *Educational Evaluation and Policy Analysis, 38*(4), 626–646. https://doi.org/10.3102/0162373716651491; Baker, R., Friedmann, E., & Kurlaender, M. (2023). Improving the community college transfer pathway to the baccalaureate: The effect of California's associate degree for transfer. *Journal Of Policy Analysis and Management, 42*(2), 488–524. https://doi.org/10.1002/pam.22462.

10 Giani, M. S., Taylor, J. L., & Kauppila, S. (2021). Examining the educational and employment outcomes of reverse credit transfer. *Aera Open, 7*, 2332858421989998. https://doi.org/10.1177/2332858421989998.

11 Taylor, J. L., & Giani, M. (2019). Modeling the effect of the reverse credit transfer associate's degree: evidence from two states. *Review Of Higher Education, 42*(2), 427–455. https://doi.org/10.1353/rhe.2019.0002.

12 Giani, Taylor, & Kauppila, 2021.

13 Odle, T. K., & Russell, L. C. (2023). The impact of reverse transfer associate degrees on education and labor market outcomes. *Journal of Policy Analysis and Management, 42*(3), 648–676. https://doi.org/10.1002/pam.22480; Taylor & Giani, 2019.

14 Giani, Taylor, & Kauppila, 2021; Odle & Russell, 2023; Taylor & Giani, 2019.

15 Schudde, L., Bicak, I., & Meghan, S. (2022). Getting to the core of credit transfer: How do pre-transfer core credits predict baccalaureate attainment for community college transfer students? *Educational Policy, 37*(4), 1014–1043. https://doi.org/10.1177/08959048211049415.

16 Boatman, A., & Soliz, A. (2018). Statewide transfer policies and community college student success. *Education Finance and Policy, 13*(4), 449–483. https://doi.org/10.1162/edfp_a_00233.

17 Klein-Collins, R., Taylor, J., Bishop, C., Bransberger, P., Lane, P., & Leibrandt, S. (2020). The PLA boost: Results from a 72-institution targeted study of prior learning assessment and adult student outcomes. Council For Adult And Experiential Learning. https://www.wiche.edu/wp-content/uploads/2020/10/PLA-Boost-Report-CAEL-WICHE-Revised-Dec-2020.pdf.

18 Billingham, C. J., & Travaglini, J. (1981). Predicting adult academic success in an undergraduate program. Alternative Higher Education, 5(3), 169–182. https://doi.org/10.1007/bf01079557; Pearson, W. (2000). Enhancing adult student persistence: The relationship between prior learning assessment and persistence toward the baccalaureate degree [Dissertation, Iowa State University]. https://dr.lib.iastate.edu/entities/publication/7d1c6ccb-c7b2-48c8-b7a0-60c86186475c.

19 Delleville, V. A. (2019). Enhancing adult student outcomes and employability with prior learning assessment. *New Directions for Adult and Continuing Education, 2019*(163), 83–93. https://doi.org/10.1002/ace.20343.

20 Klein-Collins, R. (2010). Fueling the race to postsecondary success: A 48-institution study of prior learning assessment and adult student outcomes. Council For Adult and Experiential Learning. https://www.cael.org//hubfs/premium_content_resources/pla/PDF/PLA_Fueling-the-Race.pdf.

21 Boatman, A., Hurwitz, M., Lee, J., & Smith, J. (2020). The impact of prior learning assessments on college completion and financial outcomes. *Journal Of Human Resources, 55*(4), 1161–1193. https://doi.org/10.3368/jhr.55.4.1117-9167r2; Klein-Collins, R., & Hudson, S. (2018). Do methods matter? PLA, portfolio assessment, and the road to completion and persistence. A study of prior learning assessment and adult students' academic outcomes at four learning counts partner colleges. Council For Adult and Experiential Learning. https://eric.ed.gov/?id=ed593472.

22 Klein-Collins, Taylor, Bishop, Bransberger, Lane, & Leibrandt, 2020.

23 Berek, J., & Kortegast, C. A. (2022). Widening the pathway to a degree: Community college students experiences with credit for prior learning. *Journal Of the First-Year Experience & Students in Transition, 34*(2), 111–127. https://doi.org/10.65005/154230722836064016; Klein-Collins, Taylor, Bishop, Bransberger, Lane, & Leibrandt, 2020; Klein, J. (2017). Early results in Capella's prior learning assessment experimental site initiative. *The Journal of Continuing Higher Education, 65*(1), 54–58. https://doi.org/10.1080/07377363.2017.1272401.

24 Boatman, Hurwitz, Lee, & Smith, 2020; McKay, H., Cohn, B., & Kuang, L. (2016). Prior learning assessment redesign: Using evidence to support change. *The Journal of Continuing Higher Education, 64*(3), 196–201. https://doi.org/10.1080/07377363.2016.1229506.

25 Leigh, E. W., & Daugherty, L. (2025). Awarding college credit for industry credentials: Findings from Ohio community colleges on outreach and intake practices. The Rand Corporation. https://www.rand.org/content/dam/rand/pubs/research_reports/RRA4000/RRA4071-1/RAND_RRA4071-1.pdf.

26 Soler, M. C., Klein-Collins, R., Swirsky, E., Seidel, K., & Hirsch, R. (2024). The national landscape of credit for prior learning: Effective state and system policies for success and equity. American Council on Education.

27 Fink, J. (2025). High school dual enrollment grows to 2.8 million. Community College Research Center. https://ccrc.tc.columbia.edu/easyblog/high-school-dual-enrollment-grows.html.

28 Karp, M. M., Calcagno, J. C., Hughes, K. L., Jeong, D. W., & Bailey, T. R. (2007). The postsecondary achievement of participants in dual enrollment: An analysis of student outcomes in two states. *Techniques: Connecting Education and Careers 83*(7). https://ccrc.tc.columbia.edu/publications/dual-enrollment-student-outcomes.html; Klopfenstein, K., & Lively, K. (2012). Dual enrollment in the broader context of college-level high school programs. New Directions for Higher Education, 2012(158), 59–68. https://doi.org/10.1002/he.20015.

29 Karp, M. M. (2015). Dual enrollment, structural reform, and the completion agenda. *New Directions for Community Colleges, 2015*(169), 103–111. https://doi.org/10.1002/cc.20137; Schaller, T. K., Routon, P. W., Partridge, M. A., & Berry, R. (2023). A systematic review and meta-analysis of dual enrollment research. *Journal of College Student Retention: Research, Theory & Practice, 27*(1), 263–289. https://doi.org/10.1177/15210251231170331.

30 Giani, M., Alexander, C., & Reyes, P. (2014). Exploring variation in the impact of dual-credit coursework on postsecondary outcomes: A quasi-experimental analysis of Texas students. *High School Journal, 97*(4), 200. https://www.jstor.org/stable/43281031.

31 Ferrari, T. (2017). The duality of dual enrollment: How the relationship between student demographics, academic metrics, and college enrollment adds up [Dissertation, The College of William and Mary]. https://scholarworks.wm.edu/items/fbbb6e79-04de-4bf1-8594-6ed2215c71d7.

32 Blankenberger, B., Lichtenberger, E., & Witt, M. A. (2017). Dual credit, college type, and enhanced degree attainment. *Educational Researcher, 46*(5), 259–263. https://doi.org/10.3102/0013189x17718796; Grubb, J. M., Scott, P. H., & Good, D. W. (2016). The answer is yes: Dual enrollment benefits students at the community college. *Community College Review, 45*(2), 79–98. https://doi.org/10.1177/0091552116682590; Ison, M. P. (2022). Dual enrollment, performance-based funding, and the completion agenda: an analysis of post-secondary credential outcomes of dual enrollment students by credential type. Community College Review, 50(1), 51–70. https://doi.org/10.1177/00915521211047673.

33 An, B. P. (2013). The impact of dual enrollment on college degree attainment: Do low-SES students benefit? *Educational Evaluation and Policy Analysis, 35*(1), 57–75. https://doi.org/10.3102/0162373712461933.

34 An, B. P., & Loes, C. N. (2025). Examining the role of student engagement on the relation between dual enrollment and college persistence or transfer. *Research In Higher Education, 66*(6), 35. https://doi.org/10.1007/s11162-025-09854-6; Giani, Alexander, & Reyes, 2014; Struhl, B., & Vargas, J. (2012). Taking college courses in high school: A strategy guide for college readiness--The college outcomes of dual enrollment in Texas. Jobs For the Future. https://eric.ed.gov/?id=ed537253.

35 An & Loes, 2025.

36 Miller, T., Kosiewicz, H., Tanenbaum, C., Atchison, D., Knight, D., Ratway, B., Delhommer, S., & Levin, J. (2018). Dual-credit education programs in Texas: Phase II. American Institutes for Research. https://www.air.org/project/dual-credit-education-programs-texas.

37 Radunzel, J., Noble, J., & Wheeler, S. (2014). Dual-credit/dual-enrollment coursework and long-term college success in Texas. ACT. https://www.act.org/content/dam/act/unsecured/documents/DualCreditTexasReport.pdf.

38 United Nations Educational, Scientific and Cultural Organization. (2025, August 15). Open educational resources | UNESCO. Open educational resources. https://www.unesco.org/en/open-educational-resources.

39 Nagle, C., & Vitez, K. (2021). Fixing the broken textbook market: Third edition. U.S. PIRG. https://studentpirgs.org/2021/02/24/fixing-the-broken-textbook-market-third-edition/; Noone, J., Champieux, R., Taha, A., Gran-Moravec, M., Hatfield, L., Cronin, S., & Shoemaker, R. (2024). Implementing open educational resources: Lessons learned. *Journal Of Professional Nursing, 55*, 65–69. https://doi.org/10.1016/j.profnurs.2024.08.005.

40 Zaback, K. (2022). Toward convergence: Creating clarity to drive more consistency in understanding the benefits and costs of OER. Research Report. Midwestern Higher Education Compact. https://mhec.org/wp-content/uploads/2025/02/2022MHECOER-Toward-Convergence_compressed.pdf.

41 Hilton, J. (2016). Open educational resources and college textbook choices: A review of research on efficacy and perceptions. *Educational Technology Research and Development, 64*(4), 573–590. https://doi.org/10.1007/s11423-016-9434-9; Noone, Champieux, Taha, Gran-Moravec, Hatfield, Cronin, & Shoemaker, 2024; Weller, M. (2020). Open and free access to education for all. In D. Burgos (ed.), *Radical solutions and open science: An open approach to boost higher education* (pp. 1–15). Springer. https://doi.org/10.1007/978-981-15-4276-3_1.

42 Fischer, L., Hilton, J., Robinson, T. J., & Wiley, D. A. (2015). A multi-institutional study of the impact of open textbook adoption on the learning outcomes of post-secondary students. *Journal Of Computing in Higher Education*, 27(3), 159–172. https://doi.org/10.1007/s12528-015-9101-x; Mayer, J. (2023). Open educational resources (OER) efficacy and experiences: A mixed methods study. *Portal: Libraries and the Academy, 23*(4), 773–798. https://digscholarship.unco.edu/cgi/viewcontent.cgi?article=1160&context=libfacpub.

43 Fischer, Hilton, Robinson, & Wiley, 2015; Suriano, Z. J. (2024). Impact of open educational resources on student performance in an introductory geography course. *Journal Of Geography in Higher Education, 48*(3), 491–500. https://doi.org/10.1080/03098265.2023.2255556

44 Colvard, N. B., Watson, C. E., & Park, H. (2018). The impact of open educational resources on various student success metrics. *International Journal of Teaching and Learning in Higher Education, 30*(2), 262–276. https://www.isetl.org/ijtlhe/pdf/IJTLHE3386.pdf.

45 Crossfield, M., & Ryan, D. (2022). White paper: Improving student success through the use of open educational resources. Yavapai College.

46 Griffiths, R., Mislevy, J., & Wang, S. (2022). Encouraging impacts of an open education resource degree initiative on college students' progress to degree. Higher Education, 84(5), 1089–1106. https://doi.org/10.1007/s10734-022-00817-9.

47 Cho, K. W., & Permzadian, V. (2024). The Impact of open educational resources on student achievement: A meta-analysis. *International Journal of Educational Research, 126*, 102365. https://doi.org/10.1016/j.ijer.2024.102365; *Mullens, A. M., & Hoffman, B. (2023)*. The affordability solution: A systematic review of open educational resources. *Educational Psychology Review, 35*(3), 72. https://doi.org/10.1007/s10648-023-09793-7.

48 Solodukhin, L. D., Macdonald, M., Falkenstern, C., Lane, P., & Jones, K. (2025). No-cost/low-cost and OER impact on time-to-credential: An event history modeling study. *Journal Of Open Educational Resources in Higher Education, 3*(1). https://doi.org/10.31274/joerhe.17772.

49 Nelson, K. (2011). Trends in policies, programs and practices in the Australasian first year experience literature 2000-2010. Queensland University of Technology. https://research.usc.edu.au/esploro/outputs/99449092002621; Tinto, V. (2009). Taking student retention seriously: Rethinking the first year of university. In ALTC FYE Curriculum Design Symposium (Vol. 5).; Van Der Meer, J., Wass, R., Scott, S., & Kokaua, J. (2017a). Entry characteristics and participation in a peer learning program as predictors of first-year students' achievement, retention, and degree completion. *Aera Open, 3*(3), 2332858417731572. https://doi.org/10.1177/2332858417731572.

50 Logue, A. W., Douglas, D., & Watanabe-Rose, M. (2019). Corequisite mathematics remediation: Results over time and in different contexts. *Educational Evaluation and Policy Analysis, 41*(3), 294–315. https://doi.org/10.3102/0162373719848777.

51 Attewell, P., Lavin, D., Domina, T., & Levey, T. (2006). New evidence on college remediation. *The Journal of Higher Education, 77*(5), 886–924. https://doi.org/10.1080/00221546.2006.11778948; Chen, X. (2016). Remedial coursetaking at U.S. public 2- and 4-year institutions: Scope, experiences, and outcomes. Statistical Analysis Report. NCES 2016-405. National Center for Education Statistics. https://nces.ed.gov/pubs2016/2016405.pdf.

52 Logue, Douglas, & Watanabe-Rose, 2019; Ran, F. X., & Lin, Y. (2022). The effects of corequisite remediation: Evidence from a statewide reform in Tennessee. *Educational Evaluation and Policy Analysis, 44*(3), 458–484. https://doi.org/10.3102/01623737211070836.

53 Burns, p. (2022). Nontraditional student persistence amid the transition to corequisite remediation: Examining the relationship of developmental education and academic support courses [Dissertation, Liberty University]. https://digitalcommons.liberty.edu/doctoral/3983.

54 Douglas, D., Logue, A. W., & Watanabe-Rose, M. (2023). The long-term impacts of corequisite mathematics remediation with statistics: Degree completion and wage outcomes. *Educational Researcher, 52*(1), 7–15. https://doi.org/10.3102/0013189x221138848; Petillo, A. E., & Anuszkiewicz, M. J. (2023). Co-requisite remediation: An access ramp for college completion. *Primus, 33*(4), 402–413.https://doi.org/10.1080/10511970.2022.2073622; Ran, F. X., & Lee, H. (2025). Does corequisite remediation work for everyone? An exploration of heterogeneous effects and mechanisms. *Education Finance and Policy, 20*(4), 534–561. https://doi.org/10.1162/edfp_a_00451.

55 Van Der Meer, J., Wass, R., Scott, S., & Kokaua, J. (2017b). Entry characteristics and participation in a peer learning program as predictors of first-year students' achievement, retention, and degree completion. *Aera Open, 3*(3), 2332858417731572. https://doi.org/10.1177/2332858417731572.

56 Eather, N., Mavilidi, M. F., Sharp, H., & Parkes, R. (2022). Programmes targeting student retention/success and satisfaction/experience in higher education: A systematic review. *Journal Of Higher Education Policy and Management, 44*(3), 223–239. https://doi.org/10.1080/1360080x.2021.2021600; Noble, K., Flynn, N. T., Lee, J. D., & Hilton, D. (2007). Predicting successful college experiences: Evidence from a first-year retention program. *Journal Of College Student Retention: Research, Theory & Practice, 9*(1), 39–60. https://doi.org/10.2190/6841-42jx-x170-8177.

57 Roksa, J. (2009). Building bridges for student success: Are higher education articulation policies effective? *Teachers College Record, 111*(10), 2444–2478. https://doi.org/10.1177/016146810911101001.