

Build the Teacher Pipeline Initiative: A Four-pronged Approach to Address the Teacher Shortage

AUTHORS

Julienne Cuccio-Slichko
Frances M. Ihle
Jennifer Gish

Journal of Special
Education Preparation
3(2), 18-25
© 2023 Cuccio-Slichko, Ihle and Gish
Licensed with CC-BY-NC-ND 4.0
License
DOI: 10.33043/JOSEP.3.2.18-25
openjournals.bsu.edu/JOSEP

ABSTRACT

To address local and the national teacher shortage, one college has launched the Build the Teacher Pipeline Initiative. The initiative is designed as a four-pronged, wraparound approach to not only recruit new teachers but also empower educators in elementary, secondary, and special education positions. The article outlines the goals and strategies of the four prongs – free housing for new students, scholarships for career changers, flexible graduate study options, and professional development for pre-service and in-service teachers. In collaboration with pre-k to 12 field partners, we are not only recruiting interested high school students but designing professional development opportunities to support existing teachers including our 28,000 alumni. The article will discuss the efforts and outcomes thus far and offer suggestions for replication.

KEYWORDS

Teacher shortage, teacher pipeline, special education, teacher preparation, teacher professional development, Flex graduate programs

Drs. James and Frank are having a conversation following a faculty meeting on enrollment. Admission representatives stated that high school students are less interested in pursuing education degrees. Meanwhile both faculty members receive regular emails from schools desperate for teacher candidates. With the teacher shortage, Dr. Frank feels the pressure from both sides – dwindling enrollment and fewer experienced cooperating teachers in the field. After another faculty member in the meeting expressed concerns regarding teacher burnout, Dr. James began wondering about the feasibility of developing an initiative that would entice prospective students, high school students and career changers, into the teaching profession while simultaneously giving back to alumni and field partners. With teachers leaving the profession and fewer students enrolling, the teacher pipeline is diminishing at both ends. As they continued to brainstorm, Dr. James exclaimed, “what if we launch a creative initiative that addresses both, not just enrollment but also professional development opportunities for our teaching community?” Drs. James and Frank decide to approach administration to ask about funding possibilities and a strategic marketing plan.

THE TEACHER SHORTAGE

Scarcity of newly certified teachers, teacher retirement, and teacher burnout from the COVID-19 pandemic have exacerbated the crisis in education. According to the National Center for Education Statistics (NCES, 2021), the number of full-time and part-time schoolteachers (including charter and private schools) has significantly decreased since the 2017-18 school year. Almost half of public schools in the United States reported vacancies and of those schools, 61% of them attribute the pandemic as the source (NCES, 2022).

In the Learning Policy Institute’s 2016 report, Sutchter et al. predicted the crisis prior to the COVID-19 pandemic. The teacher shortage is worse than this report

predicted and is more dire when considering teacher credentials within high-poverty schools (Garcia & Weiss, 2019). The teacher shortage phenomenon impacts not only the school districts that employ educators but also the institutions that train them; school districts struggle to retain current teachers while institutions of higher education (IHE) report a notable decline in teacher program applications. Currently, 51% of teacher vacancies are attributed to teachers leaving the field and 21% to teachers retiring (NCES, 2022). Concurrently, IHE and teacher preparation programs (TPP) reported a 32% drop in enrollment between 2012-13 and 2018-19, as well as a 28% decline in degree completers during the same time (U.S. Department of Education, Office of Postsecondary Education, 2022). With experienced teachers exiting the profession and fewer teacher candidates to replace them, the education of America's children is at stake.

Critical Needs and Current Responses

Teacher vacancies are predominantly reported in the areas of bilingual education, bilingual special education, career and technical education, English language arts, health education, library media specialist, literacy, mathematics, science, and special education, as reported by Zweig et al. (2021), with special education leading as the area with the most vacancies (NCES, 2022).

Exacerbating the problem, teacher shortages in urban, rural, and low socio-economic districts have shown to further widen achievement gaps (Garcia & Weiss, 2019; Dorn et al., 2020). High teacher turnover coupled with unprepared teachers affect student achievement (Cardichon et al., 2020; Kuhfeld et al., 2020) and the recruitment and education of new teachers is estimated to cost districts \$8 billion annually (Garcia

& Weiss, 2019). Low performing and high-poverty schools are particularly at risk when funds are already scarce and are being reappropriated to recruit new faculty (Garcia & Weiss, 2019). Traditionally, school districts that serve primarily students of color are more likely to hire uncertified teachers (Cardichon et al., 2020; Garcia & Weiss, 2019) and this practice disproportionately affects students of color with disabilities (Peyton et al., 2020).

Researchers have demonstrated that teacher preparation and certification positively correlate with student achievement (Boyd, et al., 2009; Darling-Hammond, 2000; Koh, 2022). Boyd, et al. (2009) found the teacher preparation programs that focus on the more practical classroom experiences, specifically those that prepare teacher candidates for their first year of teaching, positively correlated with pupils' test scores with gains shown in NYS Math and ELA exams. Alternatively, the teachers who are not well prepared are more likely to leave the field, given that 44% of teachers resign within their first five years of teaching (Koh, 2022). It is imperative that IHEs not only recruit candidates into TPPs now more than ever but they must also continue to support their practices even after graduation (Reitman & Dunnick Karge, 2019). Researchers have stressed the urgency of a nationally coordinated effort to not only recruit but also retain special educators by calling upon stakeholders for innovative solutions (Billingsley & Betinni, 2019; Mason-Williams et al., 2020).

Since the pandemic, President Biden has urged leaders to utilize the American Rescue Plan Act of 2021 (ARP), Governor's Emergency Education Relief (GEER), Elementary and Secondary School Emergency Relief (ESSER), and Higher Education Emergency Relief (HEERF) funds to address teacher shortages (U.S. Department of Educa-

tion, n.d.). At the state level, some states enacted laws as quick-fix solutions. California's Teacher Recruitment and Retention Act boosted teaching salaries while states like Tennessee and New Mexico amended pension restrictions to allow retirees to return to teaching (Will, 2022). Some states' measures, such as Florida's issuance of temporary teaching certificates for any military veteran with or without a degree (Bartov, 2022), have raised concerns across the nation. It might be a while before districts employ robots and artificial intelligence to teach students, as suggested by Edwards & Cheok (2018); however, innovative solutions continue to be a top priority for states and New York State is no exception.

New York State United Teachers (NY-SUT) estimates that 34% of New York's teachers will retire between 2020-2025 and lead to 180,000 teacher vacancies in the next decade (Saunders, 2022). Vacancies have already impacted New York's large districts, such as Syracuse City School District in upstate New York, where the 2022 school year began with 300 teacher vacancies (Saunders, 2022). In the short term, some districts in New York have offered sign-on incentives. Meanwhile, New York's Governor Hochul removed the income limit for retirees in hopes that many will return to the classroom. Although these efforts may address the immediate crisis, IHEs must be creative and develop initiatives that: (a) diversify the pipeline by encouraging students from all backgrounds to enter the field and (b) build professional learning communities that empower and retain existing teachers.

BUILD THE TEACHER PIPELINE INITIATIVE

Like many small colleges that have experienced a decline in enrollment, bold strategies and initiatives are being discussed across campus. Specific-

ly, solutions that not only recruit new educators but also engage and empower current teachers to address the shortage are urgently required. As a result, the *Build the Teacher Pipeline Initiative* was developed in the Summer of 2022. The four-pronged initiative aims to address the shortage and low enrollment through a holistic approach – incentivizing more undergraduate and graduate students to pursue the teaching profession while supporting current teachers and administrators in their work as a means of reducing burnout and attrition. Figure 1 represents the four prongs of the *Pipeline Initiative*. Next, the four prongs will be discussed in greater detail to include outcomes since the launch.

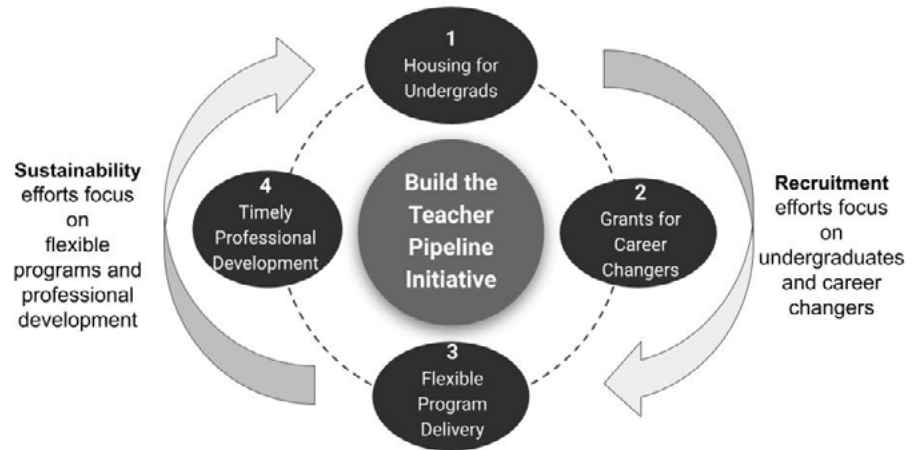
The initiative launched on October 27, 2022, with a news conference attended by state and local politicians and education leaders; the launch received widespread regional media coverage, highlighting the teacher shortage crisis and offering creative solutions to address it beyond government efforts to lower standards in order to entice more candidates into the pipeline.

Prong 1: Free Housing for Undergraduate Students

The American Association of University Professors points out that the cost of tuition has increased at a much higher rate than family income over the past ten years, making college unaffordable for many (Perna & Odle, 2020). Furthermore, some students experience housing insecurity (Smith & Knechtel, 2019), and the aim of this initiative is to further assist those students with on-campus housing difficulties.

The cost of on-campus housing is approximately 33% of an average student's educational expenses after financial aid is awarded (Office of Institutional Effectiveness, 2022). As part of the *Pipeline Initiative*, an on-campus housing grant is offered to new undergraduate students

FIGURE 1: The Four Prongs of the Build the Teacher Pipeline Initiative



who major in one of seven programs leading to teacher certification. Table 1 displays the programs with the corresponding New York certification area. Grants are available to new first-year and transfer enrollees in the 2023-2024 and 2024-2025 academic years, and students will receive the housing grant for up to four years, enabling them to complete their bachelor's degree program while living on campus for free.

In addition to the housing grant, 98% of the college's undergraduates receive financial aid, often a mix of institutional, federal, and state funds. For students with very low-income families, the College offers students in all majors the *It's Possible* program, which provides tuition gap funding for students whose Expected Family Contribution (EFC) on the Free Application for Federal Student Aid (FAFSA) equals \$0. The *Pipeline Initiative* also includes pledged support from philanthropist Charles Touhey, who is passionate about diversifying the teacher pipeline. Touhey has committed to covering out-of-pocket tuition costs for education majors who identify as students of color. This funding would mean tuition and housing costs will be fully covered for this population of education majors.

Goals and Outcomes of Prong 1

The purpose of the initiative is to reduce the barrier of costs for students who wish to pursue a career in teaching. The institution's goal is to double its undergraduate enrollment in teaching-related majors and address the nationwide decline since 2008 in students pursuing education degrees; thus, effectively helping to fill the pipeline. As of February 2023, education applications were up 46% year-over-year. By reducing the barrier of cost, highlighting the rewards of the field, and focusing on the plentiful job opportunities available as a result of the teacher shortage, the College anticipates it will meet its Fall 2023 goal of doubling education enrollment and possibly exceed that goal for the following cohort, the entering class in Fall 2024, as high school juniors are currently learning about the initiative.

Prong 2: Grants for Career Changers

In its own efforts to address the teacher shortage, New York State removed barriers for those who hold degrees unrelated to education but wish to pursue careers in teaching. One step includes removing the Graduate Record Examinations (GREs) requirement for

TABLE 1: Undergraduate Programs that Qualify for Funding and Corresponding New York State Certification

Undergraduate Programs	NYS Certification Levels
Inclusive Early Childhood	Birth-2 Early Childhood Birth-2 Special Education
Early Childhood and Childhood Education	B-2 Early Childhood 1-6 Childhood Education
Childhood and Special Education	1-6 Childhood Education 1-6 Special Education
English Adolescence Education	7-12 English
Social Studies Adolescence Education	7-12 Social Studies
English Adolescence/ Special Education (BA/MSED)	7-12 English Adolescence (BA) 7-12 Special Education (MSED)
Social Studies Adolescence/ Special Education (BA/MSED)	7-12 Social Studies Adolescence (BA) 7-12 Special Education (MSED)

Note. English Adolescence/ Special Education and Social Studies Adolescence/ Special Education are Dual Degree Programs that lead to a MSED in 5 years.

TABLE 2: Graduate Programs that Qualify for Funding and Corresponding New York State Certification

Graduate Programs	NYS Certification Level
Early Childhood and Childhood Education	Birth-2 General Education 1-6 General Education
Childhood and Special Education	1-6 General Education 1-6 Special Education
Adolescence Education	7-12 Adolescence Education
Adolescence and Special Education	7-12 Adolescence Education 7-12 Special Education

admission to graduate programs in education as this test was thought to create a barrier for busy professionals. As part of the *Pipeline Initiative*, administration and faculty sought to further incentivize career-changers and recent bachelor's degree graduates in unrelated fields to pursue the teaching profession by offering grants for graduate programs

leading to initial certification. The \$1,500 per-semester grant is available for up to five semesters for those enrolling in the College's Master of Education programs listed in Table 2. Like the undergraduate housing incentive, this prong of the initiative seeks to make education more affordable for aspiring teachers.

Goals and Outcomes of Prong 2

Career changers represent a small portion of the graduate enrollment in education programs, but the College seeks to double that population through this initiative with promotion via digital and social media ads, print advertising, and word of mouth advertising through its alumni base. At this point, graduate applications have not increased; however, prospective students often apply during the summer when there are fewer school responsibilities. Since the teacher education and special education programs accept students on a rolling basis (i.e., no application deadline), it is still too early in the graduate application cycle to indicate whether that goal will be achieved for Fall 2023.

The *Pipeline Initiative* targets both recruitment of preservice teachers and retention of veteran teachers. As millennials have become the dominant generation in the workforce, it is important to understand their employment mo-

tivations. Millennials are known for changing careers, and they tend to seek fulfilling, collaborative work environments (Rather, 2018). They also crave feedback (Norris et al., 2017), so pairing veteran and novice teachers provides an opportunity for job-embedded mentoring. In addition, both career changers and longstanding teachers cite social responsibility as the reason for entering the education profession (Alharbi, 2020; Balyer & Ozcan, 2014). Therefore, this partnership has the potential to combat educator burnout at both ends of the pipeline.

Prong 3: Flexible Delivery of Graduate Programs

The Online Learning Consortium defines *Flexible Mode Course* as courses that allow for multiple delivery modes, such as in-person with synchronous online meetings combined with online asynchronous learning activities, allowing for student choice (Sener, 2015). It is essential to deliver master's degree programs in formats that are both pedagogically sound and meet the flexibility needs of today's teachers (Wilson & Alexander, 2021). While many of these programs are delivered on-campus, the faculty also seek to address accessibility by working to move more of the education graduate programs into a hybrid or online format. This flexibility has shown to be especially important for career-changers, who may remain employed while pursuing their studies.

Goals and Outcomes of Prong 3

Several graduate education programs are already offered online, including the Master's of Science in Education (MSED) in Educational Psychology and MSED in Educational Leadership. Online Certificates of Advanced Study in Special Education and Teaching English as a New Language offer the ability for current teachers to earn

Highlighting the positive aspects of teaching is an essential part of encouraging high school students to pursue the field, as much of the narrative around the teacher shortage has focused on teacher burnout and low pay.

additional certifications and serve in expanded or much-needed roles in their schools.

In Fall 2023, pending New York State Department of Education (NYSED) approval, the College plans to move the MSED in Curriculum and Instruction, another program leading to professional certification for those who already hold a bachelor's degree in education, to an online format. Additionally, in September 2022, the New York State Board of Regents voted to establish the Students with Disabilities (All Grades) certificate. This certificate allows individuals to teach students with disabilities in pre-Kindergarten through grade 12 in New York State public schools. The currently registered programs for students with disabilities (Grades 1-6 or Grades 7-12) need to be phased out by September 1, 2029. Therefore, three new graduate special education programs are pending (NYSED) approval:

- dual certification in general education (B-6) and special education (Pre-K-12),
- dual certification in general education (7-12) and special education

(Pre-K-12)

- second initial certification in special education (Pre-K-12)

All of these certifications will be registered as online programs. Therefore, the courses in these programs will allow for flexible modes of delivery.

Prong 4: Timely Professional Development

The intent of the fourth prong is to empower and support educators in this post pandemic landscape, particularly those who have recently graduated and need the most support (Reitman & Dunnick Karge, 2019). To take a pulse of the field and better understand the unique challenges of current educators, the College hired an external market research company to develop an online survey. In May 2022, 22,403 New York State school superintendents, principals, leaders of private schools, charter schools, and the College's education alumni received this survey. The introduction to the survey promised anonymity to the participants and the market research company kept any personal identifier information separate from the results (R. Wendeln, personal communication, June 20, 2023). The purpose of this non-research study was to gather educators' perceptions of their needs in terms of professional development topics and preferred delivery format (e.g., webinars, on-site programs, stackable courses that lead to a certificate or count toward a degree, discussion forums). The results of the survey poised the College to better design timely offerings that address educators' top priorities.

The online survey yielded a response rate of 3% – 659 respondents. While low, this rate mirrors the post-pandemic drop in response to national surveys (Krieger et al., 2023). Of those respondents, more than half, 51.8% percent, reported that they currently work in a

teaching capacity (e.g., classroom teacher, special education teacher, speech language pathologist). The next largest group of respondents, 28.5% percent, reported working in education, but in a non-instructional capacity (e.g., administrator, counselor, school psychologist). The majority of the respondents, 65.4%, are currently working in a public school system, with 95% of respondents holding at least a master's degree (Prescience Associates, 2022), which is a requirement to maintain teaching certification in New York State.

Most respondents (80% or more) ranked all topics of *Curriculum and Instruction* as important or extremely important. In an open-ended question, respondents offered 148 additional professional development topics, with the following topics as the highest priority:

- social emotional learning and development
- behavior management
- classroom management
- diversity and inclusivity practices
- teaching students with special needs

In terms of professional development format, respondents indicated they were most partial to webinars, with onsite programs and stackable courses ranking second and third in preference.

Goals and Outcomes of Prong 4

Beginning in January 2023, the Spring's webinar series included topics that directly align with the survey results (i.e., mental health, culturally responsive and sustaining practices, teaching English language learners, and social emotional learning). The webinars were scheduled after the school day during a common professional development time for teachers (i.e., 3:30-5:00 PM EST). Webinars featured not only education faculty but community experts and classroom teachers, sharing best practices and expertise.

These professional opportunities were marketed through an email and poster campaign to school leaders and education alumni, as well as targeted digital and social media ads to educators working in the field. The Office of Professional Development and Continuing Education verifies webinar attendance through the webinar hosting software, and the College completes New York State's *Completion of Approved Continuing Teacher and Leader Education (CTLE) Hour(s) Certificate* form as an Approved CTLE Sponsor to verify completion of CTLE hours. The College set a goal of 175 registrations with 100 live webinar attendees per session. The sessions were recorded, and the link distributed to those who were unable to attend live. For the first session in the series, *Surviving the Mental Health Crisis: A Toolkit for Teachers*, 221 participants registered with 119 in attendance. All registrants received a link to the recording and resources.

In addition to the webinar series, the education leadership program – for those seeking to become school building, school district, or school business leaders – have developed additional professional development targeted toward teacher retention through strong leadership. For the general school administrator population, the College has already offered a free webinar on managing generational differences in the workplace with 21 attendees; future webinars are planned to address additional mental health and diversity practices including rebuilding positive culture in schools post COVID-19 and supporting professionals of color in predominantly white schools. With its holistic bench of experts, the College aims to empower educators, school professionals, and school leaders with the tools they need to be successful, continue to feel fulfilled in their work, and persist in the profession.

RECOMMENDATIONS FOR APPLICATION

Highlight the Rewards of Teaching Through Extensive Marketing

Highlighting the positive aspects of teaching is an essential part of encouraging high school students to pursue the field, as much of the narrative around the teacher shortage has focused on teacher burnout and low pay. In its recruitment materials for education majors, the College is highlighting that New York State is one of the highest-paying states in the country, with an average teacher salary of \$87,069 (Walker, 2021). Video and print testimonials from teaching alumni who feel fulfilled in their careers is critical to the narrative shift as well. Additionally, through a series of social media and digital ads and organic social media posts that feature teachers sharing why they teach, recruitment materials may highlight that the field is challenging but also very rewarding.

Extensive marketing efforts also include television and streaming services across New York State. College search portals utilized by students also showcase information about the initiative. Additionally, email and printed marketing posters have targeted high school juniors and seniors, as well as the College's 28,000 plus education alumni. An exhaustive social media and digital ad campaign, newspaper ads, a feature in the College's magazine, Search Engine Optimization (SEO) and paid search result efforts round out the promotional campaign.

Strategically Target Donors and Aid Strategy

As a small private IHE, the College relies on outside funding. Offering free on-campus housing to new undergraduate students, grants to career-changers who pursue master's degrees, and free professional development opportunities

AUTHOR BIOS

Julienne Cuccio Slichko, Ph.D.

Julienne Cuccio Slichko, assistant professor at The College of Saint Rose, is permanently certified in special education (K-12) and childhood education in New York State. Her research interests include the efficacy of educational technologies and cognitive strategies, teacher preparation, and disability advocacy. Dr. Slichko serves on local advisory boards, is an advisor to professional student groups, and consults on topics related to special education and technology including accessible online course design.

Frances M. Ihle, Ph.D.

Frances Ihle, associate professor of special education, has taught special education and literacy at the College of Saint Rose since 2011; previous experience includes a doctoral fellowship at the University of Kansas, and being a high-school special-education teacher in Minneapolis, Minnesota. She presently works to prepare students with disabilities for postsecondary success through Project ASPIRE and Project THRIVE, two federally funded grants awarded in 2010 and 2019. Her research projects and activities focus on academic discourse and teaching adolescents how spoken and written language patterns differ, and executive function coaching to help college students tutor their peers in self-regulation strategies such as planning, organization, and time management.

Jennifer Gish

Jennifer Gish is the associate vice president of marketing and communications for The College of Saint Rose. She is an award-winning communications professional with more than two decades of experience, having worked as a journalist, including as an education reporter for a daily newspaper in south central Pennsylvania, and as a higher education marketer. A first-generation college graduate, Gish is passionate about the power of education to transform lives.

is a significant investment. To fund the initiative, the College pursued individual, private foundation, and corporate donors. Fortunately, media coverage of the teacher shortage has helped the public to better understand the need to recruit additional teachers. The College secured individual donors, who opted to remain anonymous in their gift commitments, as well as private foundation support. The “asks” outlined the College’s longstanding position as a top education degree-granting institution, explained the nationwide decline in students who are pursuing degrees in teaching, and laid out how removing financial barriers helps to incentivize more students to pursue the field.

In December 2022, the Hearst Foundation notified the college it would be awarded a \$250,000 grant to support the *Pipeline Initiative*. In addition to the four-prong plan, the Touhey Foundation pledged to provide tuition gap funding to encourage more students of color to enter the pipeline, recognizing that diverse educator voices are critical for all of our children (Gish, 2022). Enrollment for the Fall 2023 class is still in process, and the amount of funding will vary by each student’s need, so it is not yet known how much the support provided for these students by the Touhey Foundation will total. Meanwhile, pursuit of corporate partners continues, and the College’s Office of Institutional Advancement has identified the *Pipeline Initiative* as a focus of its fundraising work.

Provide Support to Alumni and Field Partners

IHEs rely upon their education graduates and school districts for field experience and student teaching placement, but graduates could also benefit from continued support after graduation as they continue to develop their learning community. IHEs may serve as the center of the professional learning community, particularly among new-

ly hired teachers and those who have recently graduated. The authors suggest surveying alumni to gather professional development needs, developing targeted professional development across modalities (e.g., webinars, newsletters, lectures) that address their needs, and leveraging community experts. IHEs can work with their Office of Professional Development and Continuing Education to offer continuing education credit or possibly micro credentialing for little cost.

CONCLUSION

Initiatives to address the teacher shortage crisis require a multi-pronged approach across various stakeholders that leverage federal, state, and private funding sources. The authors acknowledge it is not enough to recruit a diverse population into teaching by marketing the profession as a rewarding and fulfilling career; it is imperative that IHEs secure funding to make the degree affordable while offering flexible graduate courses. Furthermore, IHEs should also serve as a center for timely, professional development that empower education professionals especially during the critical first five years of teaching. Professional development may just be one aspect of supporting new teachers, but it could lead to actionable practices and possible mentor/mentee relationships. It is imperative to develop initiatives that simultaneously recruit new teacher candidates into education programs while addressing teacher retention, particularly in the most imminently needed positions.

REFERENCES

- Alharbi, A. S. (2020). Transitioning into teaching as a second career: Skill carry-over, professional experience, and classroom performance. *International Education Studies*, 13(12), 88–101. <https://doi.org/10.5539/ies.v13n12p88>
- Balyer, A., & Özcan, K. (2014). Choosing teaching profession as a career: Students’ reasons. *International Education Studies*, 7(5), 104–115. <http://dx.doi.org/10.5539/ies.v7n5p104>

- Bartov, S. L. (2022, July 28). *Florida teachers slam bill allowing veterans to teach with no degree*, Newsweek. <https://www.newsweek.com/veteran-wife-teaching-no-degree-florida-bill-viral-reddit-1728814>
- Billingsley, B., & Bettini, E. (2019). Special education teacher attrition and retention: Review of the literature. *Review of Educational Research*, 89(5), 697–744. <https://doi.org/10.3102/0034654319862495>
- Boyd, D. J., Grossman, P. L., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher preparation and student achievement. *Educational evaluation and policy analysis*, 31(4), 416–440.
- Cardichon, J., Darling-Hammond, L., Yang, M., Scott, C., Shields, P. M., & Burns, D. (2020). *Inequitable opportunity to learn: Student access to certified and experienced teachers*. Palo Alto, CA: Learning Policy Institute. https://learningpolicyinstitute.org/media/392/download?inline&file=CRDC_Teacher_Access_REPORT.pdf
- Darling-Hammond, L. (2000). Teacher quality and student achievement. *Education Policy Analysis Archives*, 8, 1. <https://doi.org/10.14507/epaa.v8n1.2000>
- Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2020). COVID-19 and student learning in the United States: The hurt could last a lifetime. *McKinsey & Company*. <https://www.mckinsey.com/industries/education/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime>
- Edwards, B., and Choek, A., (2018) Why not robot teachers: Artificial intelligence for addressing teacher shortage. *Applied Artificial Intelligence*, 32(4), 345–360. <https://doi.org/10.1080/08839514.2018.1464286>
- Garcia, E. and Weiss, E. (2019). The teacher shortage is real, large and growing, and worse than we thought. *Economic Policy Institute*. <https://www.epi.org/publication/the-teacher-shortage-is-real-large-and-growing-and-worse-than-we-thought-the-first-report-in-the-perfect-storm-in-the-teacher-labor-market-series>
- Gish, J. (2022, October 27). *Saint Rose launches Build the Teacher Pipeline Initiative, including free housing for new education majors, to address teacher shortage*. The College of Saint Rose. <https://www.strose.edu/2022/10/27/saint-rose-launches-build-the-teacher-pipeline-initiative-including-free-housing-for-new-education-majors-to-address-teacher-shortage/>
- Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., and Liu, J. (2020). Projecting the potential impacts of COVID-19 school closures on academic achievement. EdWorkingPaper: 20-226. Retrieved from Annenberg Institute at Brown University. <https://doi.org/10.26300/cdrv-yw05>
- Koh, M. (2022) An exploration of precursors for at-risk American public schools: The comparative behavioral profiles between children with and without disabilities, Preventing School Failure: *Alternative Education for Children and Youth*, 66(3), 247-255 <https://doi.org/10.1080/1045988X.2022.2059430>
- Krieger, N., LeBlanc, M., Waterman, P. D., Reisner, S. L., Testa, C., & Chen, J. T. (2023). Decreasing survey response rates in the time of covid-19: Implications for analyses of population health and health inequities. *American Journal of Public Health*, 113(6), 667–670. <https://doi.org/10.2105/AJPH.2023.307267>
- Mason-Williams, L., Bettini, E., Peyton, D., Harvey, A., Rosenberg, M., and Sindelar, P. T. (2020). Rethinking shortages in special education: Making good on the promise of an equal opportunity for students with disabilities, *Teacher Education and Special Education*, 43(1), 45-62. <https://doi.org/10.1177/0888406419880352>
- National Center for Education Statistics (NCES) (2021). Impact of the coronavirus pandemic on elementary and secondary education system. *Condition of Education*. U.S. Department of Education, Institute of Education Sciences. <https://nces.ed.gov/programs/coe/indicator/tcb>
- National Center for Education Statistics (NCES) (2022, March 3). U.S. schools report increased teacher vacancies due to COVID-19 Pandemic, new NCES data show. U.S. Department of Education, Institute of Education Sciences. [press release] https://nces.ed.gov/whatsnew/press_releases/3_3_2022.asp
- Norris, S., Sitton, S., & Baker, M. (2017). Mentorship through the lens of servant leadership: The importance of accountability and empowerment. *NACTA Journal*, 61(1), 21–26. <https://www.nactateachers.org/attachments/article/2516/8%20%20Norris.pdf>
- Office of Institutional Effectiveness. (2022). *The College of Saint Rose Factbook 2021-2022* [Data Set].
- Perna, L. W. & Odle, T, K. (Winter 2020). Recognizing the reality of working college students. *American Association of University Professors*. https://www.aaup.org/comment/7801#_Y_uN3OzMKWY
- Peyton, D., Acosta, K., Harvey, A., Pua, D., Sindelar, P., Mason-Williams, L., Dewey, J., Fisher, T., and Crews, E. (2020) Special education teacher shortage: Differences between high and low shortage states. *Teacher Education and Special Education*, 44(1), 5-23. <https://doi.org/10.1177/0888406420906618>
- Prescience Associates. (2022). *The College of Saint Rose Online Survey: Professional Education* [online survey].
- Rather, B. A. (2018). Millennial generation: Redefining people policies for changing employment trends. *The Researchers' International Research Journal*, 4(2), 27-41. <https://doi.org/10.21276/tr.2018.4.2.AN5>
- Reitman, G. C. & Dunnick Karge, B. (2019). Investing in teacher support leads to teacher retention: Six supports administrators should consider for new teachers. *School Administration, Multicultural Education, & Inclusion*. 27(1), 7-18. <https://files.eric.ed.gov/fulltext/EJ1250205.pdf>
- Saunders, S. (2022, August 30). Staff shortages plague many districts. NYSUT. <https://www.nysut.org/news/nysut-united/issues/2022/september/staff-shortages>
- Sener, J. (2015, July 7). Updated e-learning definitions. *OLC Insights*. <https://online-learningconsortium.org/updated-e-learning-definitions-2/>
- Smith, R. & Knechtel, L. (2019). When student housing is a car: In college and homeless. *Journal of Student Affairs Research and Practice*: 57(3). DOI:10.1080/19496591.2019.1671854
- Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2016). A coming crisis in teaching? Teacher supply, demand, and shortages in the U.S. Palo Alto, CA. *Learning Policy Institute*. <https://doi.org/10.54300/247.242>.
- U.S. Department of Education. (n.d.). Teacher shortage areas. Retrieved March 13, 2020, from <https://tsa.ed.gov/#reports>
- U.S. Department of Education, Office of Postsecondary Education (OPE), (2022). *Preparing and Credentialing the Nation's Teachers: The Secretary's Report on the Teachers Workforce*, Washington, D.C. https://title2.ed.gov/Public/Title_II_Secretary's_Report_508.pdf
- Walker, T. (2021, April 26). *Teacher pay rises modestly: 'Now isn't the time to rest.'* neaToday. <https://www.nea.org/advocating-for-change/new-from-nea-teacher-pay-rises-modestly-now-isnt-time-rest>
- Will, M. (2022, October 11). *Could retired teachers be the answer to shortages? It's complicated*. Education Week. <https://www.edweek.org/leadership/could-retired-teachers-be-the-answer-to-shortages-its-complicated/2022/10>
- Wilson, T. J. & Alexander, M. (2021). HyFlex course delivery: Addressing the change in course modality brought on by the pandemic. *Journal of the International Society for Teacher Education*, 25(2). <https://doi.org/10.26522/jiste.v25i2.3668>
- Zweig, J., Lemieux, C., Shakman, K., O'Dwyer, L., & Schillaci, R. (2021). *Teacher shortages in New York State: New teachers' certification pathways, certification areas, district of employment, and retention in the same district* (REL 2022–109). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. <http://ies.ed.gov/ncee/edlabs>