REL Appalachia Ask A REL Response

College and Career Readiness, Postsecondary
November 2020

Question:

What strategies can schools use to broaden participation from underrepresented student groups and promote gender equity in career and technical education (CTE) programs?

Response:

Thank you for your request to our REL Reference Desk regarding evidence-based information about recruiting underrepresented groups in career and technical education programs. Ask A REL is a collaborative reference desk service provided by the 10 Regional Educational Laboratories (RELs) that, by design, functions much in the same way as a technical reference library. Ask A REL provides references, referrals, and brief responses in the form of citations in response to questions about available education research.

Following an established REL Appalachia research protocol, we searched for peer-reviewed articles and other research reports on recruitment for CTE programs. We focused on identifying resources that specifically addressed strategies to recruit underrepresented groups and promote gender equity in CTE programs. The sources included ERIC and other federally funded databases and organizations, research institutions, academic research databases, and general Internet search engines. For more details, please see the methods section at the end of this document.

The research team did not evaluate the quality of the resources provided in this response; we offer them only for your reference. Also, the search included the most commonly used research databases and search engines to produce the references presented here, but the references are not necessarily comprehensive, and other relevant references and resources may exist. References are listed in alphabetical order, not necessarily in order of relevance.

References

Dalporto, H., & Tessler, B. (2020). *Voices from the field: How community colleges are advancing equity in career and technical education*. MDRC. https://eric.ed.gov/?id=ED604541

From the overview: "A changing economy and rapid advancements in technology have resulted in mismatches between employers' needs and workers' skills in a number of fields—and are likely to continue to generate new ones. Many people in postsecondary education and workforce development see community college career and technical education (CTE) as a

way to fill shortages in the labor market while providing a pathway to economic mobility for many Americans. CTE provides occupational preparation and training that often culminates in shorter-term credentials such as certificates; it may or may not provide credits that can be used for college degrees. One important question about CTE programs at community colleges is: Are they equipped to provide those pathways to economic mobility equitably (that is, regardless of individuals' races, ethnicities, genders, socioeconomic backgrounds, or geographic regions, or the intersection of these characteristics)? In 2019, MDRC's Center for Effective CTE conducted a scan of notable community college CTE programs across the country to identify promising practices and common challenges. During the conversations held as part of the scan, it became evident that as CTE programs try to address skill gaps in the labor market, many have also already begun to address equity in creative ways. MDRC's scan revealed that community college CTE programs are increasingly committed to achieving equity goals. It also revealed some common promising practices they are adopting to increase opportunity and reduce equity gaps (that is, differences in outcomes between social groups). These practices apply to various points along the education pathway, from outreach and recruitment to postemployment support. This brief discusses factors that can contribute to inequities in community college CTE programs and then provides examples of strategies that the colleges in MDRC's scan are using to try to address those factors. Where applicable, the brief also draws on evidence from the field. In the absence of clearer evidence specific to nontraditional students and students of color in community college CTE programs, evidence that shows positive effects on all students in a variety of community college programs is used."

Estes, A., & McCain, B. (2019). Four strategies to address equity in CTE. *State Education Standard*, *19*(3), 10–14. https://eric.ed.gov/?id=EJ1229646

From the introduction: "An evolution has taken place in career and technical education (CTE) over the past few decades. CTE students often go on to graduate high school, enroll in college, and secure high-wage employment at higher rates than their peers. Every learner should have the opportunity to benefit from CTE, but even today many students cannot access these high quality programs. According to state and national CTE leaders, high-quality CTE programs are more likely to prevail in areas with more concentrated wealth, where communities can afford to equip classrooms with state-of-the-art equipment and attract experienced teachers with competitive salaries. Furthermore, the CTE teacher workforce is overwhelmingly white, while the majority of the U.S. student population is not. Having improved the quality and relevance of CTE, state policymakers find themselves faced with an entirely new dilemma: ensuring access and success for all. Addressing equity in CTE requires first recognizing its conflicted history and taking steps to dismantle historical barriers and construct systems that help each learner access and complete a high-quality CTE program of study where they feel welcome and can participate fully. This article details some strategies CTE program administrators can implement to better serve marginalized populations; (1) Remove barriers to access; (2) Take steps to ensure learner success; (3) Make a path forward with the right policies, systems and attitudes; and (4) Members of state boards of education must ask the right questions of state agencies and encourage leadership to capitalize on the new opportunities in Perkins V. During planning, state boards should be asking the following questions: (1) How will Perkins V funds support increased access to

special populations to close equity gaps and increase attainment of industry credentials; (2) What is the right division of resources between secondary and postsecondary programs; and (3) How will the expanded reserve fund be used to incentivize high-quality CTE programs and encourage innovation?"

Kantrov, I. (2017). *Achieving educational equity and justice in career academies: Challenges and promising strategies*. Ford Motor Company Fund. https://www.fordngl.com/media/k2/attachments/FordNGL_EquityReport2017.pdf

From the report: "Career academies are a model of career and technical education (CTE) that blend academic rigor, instruction that is relevant to students' lives, and strong relationships between students and adults (Brand, 2009). Shown to have positive impacts on high school students' motivation, graduation rates, postsecondary enrollment, and career outcomes (Brand, 2009; Dayton et al., 2011; Kemple, 2004; Kemple & Snipes, 2000; Kemple & Wilner, 2008; Maxwell & Rubin, 2000), career academies have also been seen as having great potential to reduce achievement gaps for underserved students (Dougherty, 2016; Kemple & Snipes, 2000). In an era in which there is increasing interest in preparing students for success in both postsecondary education and careers, as well as life, it is key to gain a better understanding of career academies' potential and challenges. This includes examining the extent to which the model increases opportunities and improves outcomes for students, and how to ensure that career academies increase educational equity and justice and do not perpetuate inequities."

Kohler, P. D., & Applegate, E. B. (2003). Creating pathways to information technology careers through high school career and technical education programs. *Proceedings of the National Science Foundation's ITWF & ITR/EWF Principle Investigator Conference*. National Science Foundation. https://www.researchgate.net/publication/267716655_Creating_Pathways_to_Information_Technology_Careers_through_High_School_Career_and_Technical_Education_Programs

From the text: "The Creating Pathways to IT Careers Project is a research partnership between Western Michigan University (WMU), the Illinois State Board of Education (ISBE), and a Research-to-Practice Team consisting of business and practitioner stakeholders. The purpose of this project is to determine factors that influence enrollment, completion, and employment experiences of high school females and other underrepresented groups in Career and Technical Education-Information Technology (CTE-IT) programs. Using population data collected by the Illinois State Board of Education regarding enrollment in secondary and postsecondary education and post-school employment, the project is investigating preparation for IT careers in the following areas: (a) counselor and teacher support strategies provided in high schools to recruit and retain students in CTE-IT programs; (b) student and school characteristics that influence CTE-IT program enrollment, school-directed work experience, and program completion; and (c) the influence of student and school characteristics and support strategies on employment and/or enrollment in postsecondary education in an IT field."

Lufkin, M. E., Wiberg, M. M., Jenkins, C. R., Berardi, S. L., Boyer, T., Eardley, E., & Huss, J. (2007). Gender equity in career and technical education. In S. S. Klein, B. Richardson, D. A. Grayson, L. H. Fox, C. Kramarae, D. S. Pollard, & C. A. Dwyer (Eds.), *Handbook for achieving gender equity through education* (pp. 420–442). Taylor & Francis Group. https://www.napequity.org/nape-content/uploads/ch20_9000_Klein_LEA.pdf

From the introduction: "This chapter first provides an overview of the federal public policy history related to gender equity in CTE, and then summarizes the current data on gender equity in CTE. A brief review of the root causes of gender inequity in CTE, both within and outside the control of educators, is followed by a discussion of strategies currently in place. The chapter continues by highlighting four excellent CTE gender-equity programs and concludes with recommendations for public policymakers, local schools and communities, and researchers."

Milgram, D. (2019). Intention to action: Recruiting women in CTE. *Techniques – Association for Career and Technical Education*, 40–43. https://par.nsf.gov/servlets/purl/10123939

From the report: "Is it possible to go from intention to action, to real increases in female participation in your career and technical education (CTE) programs in less than a year's time? Yes, it is possible and there has never been a better time, with the emphasis on equity in Perkins V, to take that step than right now. This Feature article by Donna Milgram, Executive Director of the Institute for Women in Trades, Technology & Science (IWITTS) and PI of the National Online WomenTech Project, highlights successful outcomes from community college CTE and STEM programs that participated in this Project's professional development. Donna shares the top three most common recruitment mistakes as well as best practices for moving the needle for women in STEM and CTE in one year or less. The article also showcases the WomenTech Gender Equity Self-Assessment."

Tate, S. C. (2017). Strategies for increasing female participation in technology-based CTE courses. *The CTE Journal*, *5*(2), 31–41. https://www.thectejournal.com/uploads/1/0/6/8/10686931/tate.pdf

From the abstract: "This paper details the history of female participation in science, technology, engineering, and mathematics (STEM) related career and technical education (CTE) courses, and reviews relevant peer-reviewed literature on the subject of increasing female participation at the secondary level. Despite females enrolling in STEM-focused college programs and securing STEM-based employment in ever-increasing numbers over the previous two decades, female enrollment in secondary CTE programs remains high primarily in cosmetology, nursing, dental assisting, and early childhood education programs. This research considers why this trend continues, whether females in middle school are interested in pursuing STEM-based careers, and what strategies might be implemented in guidance, recruiting, and instructional practices to reverse the trend."

Additional Ask A REL Responses to Consult

Ask A REL Midwest at American Institutes for Research. (2019). *What is the available research on measuring the return on investment for recruitment, enrollment, and retention strategies among higher education institutions?* https://ies.ed.gov/ncee/edlabs/regions/midwest/askarel/2019/strategic-enrollment-management.aspx

Additional Organizations to Consult

American Association of University Women: https://www.aauw.org/

From the website: "We fight to remove the barriers and biases that stand in the way of gender equity. We train women to negotiate for pay and benefits and to pursue leadership roles. And we advocate for federal, state and local laws and policies to ensure equity and end discrimination."

- Career & Technical Education: https://www.aauw.org/resources/article/career-and-technical-education/

Association for Career and Technical Education: https://www.acteonline.org/

From the website: "[ACTE's mission is] to provide educational leadership in developing a competitive workforce. ACTE strives to empower educators to deliver high quality CTE programs that ensure all students are positioned for career success."

- Professional Development – Gender Diversity/Nontraditional Participation: https://www.acteonline.org/professional-development/high-quality-cte-tools/access-and-equity/

Career and Technical Education Research Network: https://cteresearchnetwork.org/

From the website: "Some 8 million secondary and 4 million postsecondary students are enrolled in career and technical education (CTE), with the support of more than $1.1 billion in federal and state investments. CTE prepares students with academic knowledge and technical and employability skills for credentials and careers. CTE also serves as an opportunity to strengthen the connection and coherence among K–12 education, postsecondary education, and workforce development efforts. However, more rigorous research—studies designed to show a causal impact—on CTE programming is needed. To expand the evidence base, the CTE Research Network is conducting and promoting high-quality studies examining the impact of CTE."

National Institute for Women in Trades, Technology, and Science: https://www.iwitts.org/

From the website: "IWITTS has developed and managed numerous multi-site national demonstration projects, National Science Foundation (NSF) projects and research projects, working in partnership with educators to close the gender gap in STEM and CTE classrooms."

National Women's Law Center: https://nwlc.org/

From the website: "The National Women's Law Center fights for gender justice—in the courts, in public policy, and in our society—working across the issues that are central to the lives of women and girls. We use the law in all its forms to change culture and drive solutions to the gender inequity that shapes our society and to break down the barriers that harm all of us—especially those who face multiple forms of discrimination, including women of color, LGBTQ people, and low-income women and families. For more than 45 years, we have been on the leading edge of every major legal and policy victory for women."

- How to promote gender equity in career and technical education: A primer for schools: https://www.nwlc.org/sites/default/files/pdfs/Final%20CTE%20Fact%20Sheet.pdf

Methods

Keywords and Search Strings

The following keywords and search strings were used to search the reference databases and other sources:

- (recruit* OR partcipat* OR enroll*) AND (CTE OR "career and technical education" OR "career academ*" OR "career pathway" OR "career and technical education program*") AND (minority OR underrepresented OR wom*n OR female OR girl OR "gender equity" OR "gender disparit*") AND ("best practice" OR "strateg*")

Databases and Resources

We searched ERIC, a free online library of more than 1.6 million citations of education research sponsored by the Institute of Education Sciences (IES), for relevant resources. Additionally, we searched the academic database ProQuest, Google Scholar, and the commercial search engine Google.

Reference Search and Selection Criteria

In reviewing resources, Reference Desk researchers consider—among other things—these four factors:

- Date of the publication: Searches cover information available within the last 10 years, except in the case of nationally known seminal resources.
- Reference sources: IES, nationally funded, and certain other vetted sources known for strict attention to research protocols receive highest priority. Applicable resources must be publicly available online and in English.
- Methodology: The following methodological priorities/considerations guide the review and selection of the references: (a) study types—randomized controlled trials, quasi experiments, surveys, descriptive data analyses, literature reviews, policy briefs, etc., generally in this order; (b) target population, samples (representativeness of the target population, sample size, volunteered or randomly selected), study duration, etc.; (c) limitations, generalizability of the findings and conclusions, etc.
- Existing knowledge base: Vetted resources (e.g., peer-reviewed research journals) are the primary focus, but the research base is occasionally slim or nonexistent. In those cases, the best resources available may include, for example, reports, white papers, guides, reviews in non-peer-reviewed journals, newspaper articles, interviews with content specialists, and organization websites.

Resources included in this document were last accessed on November 2, 2020. URLs, descriptions, and content included here were current at that time.

This memorandum is one in a series of quick-turnaround responses to specific questions posed by education stakeholders in the Appalachia region (Kentucky, Tennessee, Virginia, and West Virginia), which is served by the Regional Educational Laboratory Appalachia (REL AP) at SRI International. This Ask A REL response was developed by REL AP under Contract ED-IES-17-C-0004 from the U.S. Department of Education, Institute of Education Sciences, administered by SRI International. The content does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.