Postsecondary Transitions for Youth in Appalachia's Central Subregions: A Review of Education Research, 1995-2015

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This article reviews research on issues surrounding postsecondary transitions for youth in middle (North Central, Central, and South Central) Appalachia, a region that faces numerous education challenges because of its geography, poverty, and economy. Examining published research and data from 1995 to 2015, the review seeks to inform education policymakers, practitioners, and researchers about the current context, successes, challenges, and opportunities for students as they transition to adult life and to suggest directions for supporting postsecondary transitions. The review finds that high school graduation rates have improved, many youth are committed to the region, and numerous initiatives are underway to support successful postsecondary transitions. Challenges include limited job opportunities and possible misalignment with career preparation programs, high unemployment, and lack of postsecondary education experience and understanding among many adults. Implications include a need for more research on the nature and rigor of preparation in high schools and postsecondary institutions, development of place-based approaches, improved postsecondary transition awareness and support programs that involve parents, and more research on career choices of non-college-bound students.

Education issues in Appalachia are embedded in a culture where K-12 schools are respected institutions, relationships are highly valued, and many residents want to remain in the region and contribute to its development (Daniels, 2014; Harmon, 2001; Hlinka, Mobelini, & Giltner, 2015; Wright, 2012). At the same time, geographic isolation, poverty, and a depressed economy challenge the region's educators in preparing students for adult life (Elam, 2012).

These challenges are particularly daunting in the three subregions designated by the Appalachian Regional Commission (ARC)[1] as North Central, Central, and South

Central Appalachia—collectively referred to here as "middle Appalachia." Of 90 Appalachian counties designated by the ARC as "distressed," 75% are in these three subregions.[2] Central Appalachia, in particular—which encompasses 53 counties in eastern Kentucky and mostly contiguous counties in Tennessee, Virginia, and West Virginia—is said to represent "the place of poverty in the United States' consciousness" (Obermiller & Couto, 2004, p. 249).

The education challenges that spring from isolation and poverty are particularly salient in an era driven by the notion that all students need college-level skills to succeed in an increasingly globalized economy where technology advances have created career opportunities that did not previously exist (Barnett & Stamm, 2010; Borden, 2013; Hofmann, 2012). This focus on college and career readiness is currently at the core of education improvement efforts

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[1] See http://www.arc.gov/. Established by an act of Congress in 1965, the ARC is a regional economic development agency that represents a partnership of federal, state, and local governments. It funds projects to promote economic development across Appalachia and collects data relevant to the region.

[2] The ARC's economic status designations are derived from comparing each county in the nation with national averages on three economic indicators: three-year average unemployment rates, per capita market income, and poverty rates. Then, based on that comparison, the ARC classifies each Appalachian county with one of five economic status designations. The lowest classification, "distressed," is applied to counties that rank in the bottom 10% of counties nationwide. See http://www.arc.gov/distressedcounties.

nationally and in the six states that encompass middle Appalachia. The emphasis on college-level skills for all students presents particular difficulties in a region where jobs are limited and a college education has not been required for most available jobs.

This review of postsecondary transitions focuses on middle Appalachia because of these education and workforce challenges, and the related need for a current review of research that might provide direction for improving student transitions to adult life. In a search for such a review, we located relatively recent reviews on education challenges in rural America (Arnold, Newman, Gaddy, & Dean, 2005; Johnson, Showalter, Klein, & Lester, 2014; Johnson & Strange, 2009; Kannapel & DeYoung, 1999) and the larger Appalachia region (Pollard & Jacobsen, 2011, 2014) but no review of data and research on education conditions and needs specific to middle Appalachia since DeYoung's 1983 article "The Status of Formal Education in Central Appalachia."

The DeYoung (1983) article, however, was limited in scope, analyzing the association between student achievement and demographic/economic indicators using databases that were considerably less sophisticated and standardized than those available today. Reporting that Appalachian school districts generally performed more poorly than their non-Appalachian counterparts, DeYoung acknowledged that more research was needed to uncover factors that contribute to these disparities, and to generate solutions.

Other studies of broader scope have highlighted the particularly daunting challenges in the central subregions of Appalachia. A data overview of the entire Appalachia region, for example, showed that middle Appalachia has more students in poverty and with disabilities, lower levels of education attainment, fewer adults in the labor force, and higher unemployment rates than the rest of the United States or other parts of Appalachia (Pollard & Jacobsen, 2014). In addition, a 50-state review of education conditions for rural students reported that Central Appalachia was among the regions where conditions related to students' socioeconomic status, education policy, and education outcomes were in need of urgent attention (Johnson et al., 2014). With a recent decline in coal-based jobs in the region (Hodge, 2016), the need for current information on postsecondary opportunities and challenges is even more critical.

In response, we developed a report that reviewed published data and research from 1995 to 2015 on education in middle Appalachia around five topics: (a) college and career readiness, (b) educator effectiveness, (c) access to high-quality curriculum and instruction, (d) systemic capacity, and (e) health and wellness (Kannapel, Flory, Cramer, & Carr, 2015). The review focused on the last 20 years to capture recent education trends, specifically those

ushered in during the era of standards-based reform that began in the 1990s (Fuhrman, 2001) and expanded after 2000 to encompass college and career readiness policies and initiatives.

This article reframes and expands on the chapter on college and career readiness contained in the earlier review to inform education policymakers, practitioners, and researchers about the current context, successes, challenges, and opportunities for students in middle Appalachia as they transition to adult life. The review is framed around three topics: (a) high school outcomes, (b) career preparation and opportunities, and (c) postsecondary aspirations. We also describe current initiatives to support postsecondary transitions and discuss implications, including reasons for optimism; ongoing challenges; and directions for policy, practice, and future research.

Search Methods

For the larger report on which this article is based, we conducted a systematic literature search that began with seven Boolean searches using EBSCOhost for articles published between 1995 and 2015. We selected the EBSCOhost databases most likely to include relevant literature, including Academic Search Complete, EBSCO eBook Collections, ERIC, and PsychINFO. These databases inventory a variety of literature, including journal articles, research reports, and dissertations. Recognizing that the research base on middle Appalachia would be small, we used broad search terms to capture the available literature. We initially used the terms "*education* and *central* and *Appalachia*." Subsequent searches used the terms "*education* and *Appalachia*" plus the name of each of the six states with counties in middle Appalachia: Kentucky, North Carolina, Ohio, Tennessee, Virginia, and West Virginia. To supplement the EBSCOhost search, we searched archives of the *Journal of Appalachian Studies* (JAS) from 1995 to 2015, as well as the education section of the JAS annual bibliography. We also reviewed relevant reports on the ARC website. Additional relevant studies were identified through snowballing techniques.

Quantitative data on population, demographic characteristics, education statistics, and cultural indicators were taken from reports compiling U.S. Census data (Obermiller & Couto, 2004; Pollard & Jacobsen, 2011, 2014); Appalachia Regional Commission data reports (ARC, 2011, 2014); and the U.S. Department of Education, National Center for Education Statistics Common Core of Data.[3] We also searched literature on national and regional education improvement initiatives to set the context for postsecondary transitions in middle Appalachia.

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[3]The Common Core of Data (CCD) compiles from state education agencies annual fiscal and nonfiscal data about all public schools, public school districts, and state education agencies in the United States. See https://nces.ed.gov/ccd/

This search identified more than 275 potentially relevant studies of education in middle Appalachia over the past 20 years. In this article, we summarize the subset of over 40 studies specific to postsecondary transitions in middle Appalachia. The majority of this literature involved small-scale or qualitative research, such as case studies and interviews.

Limitations

Our search methods identified mostly journal articles, conference and white papers, research and data reports, and a few dissertations. Time and resources prevented a more comprehensive search, including exploration of all the sources identified through snowballing. The focus on education excluded possible relevant sources from other sectors (such as economics). The number of studies pertaining to a particular subtheme was often quite small, limiting generalizability of findings. In addition, many studies shared aggregated findings but did not disaggregate results into categories that may have provided additional insight (such as traditional vs. nontraditional students or city vs. county schools).

Finally, we limited the review to sources that directly addressed issues relevant to postsecondary transitions, thereby excluding literature on factors that may impact students' postsecondary readiness, such as the effectiveness of teachers and leaders in middle Appalachia schools; specific approaches to curriculum and instruction; and emerging barriers to student readiness in the region, such as nutrition, fitness, and substance abuse. These topics are covered more fully in the larger report from which this article was derived.

Middle Appalachia

The three central Appalachia subregions encompass 238 Appalachian counties or independent cities—comprising 371 school districts—in Kentucky, North Carolina, Ohio, Tennessee, Virginia, and West Virginia (Figure 1).

The student population in middle Appalachia is poorer and less ethnically diverse and has a higher proportion of special education students than the rest of the United States (Table 1).

Median household income in middle Appalachia, based on 2012 dollars, was less than $42,000, compared with about $53,000 nationwide. In addition, a lower percentage of adults is in the workforce—70% in middle Appalachia compared with 78% nationwide—and job loss during the recent recession was more severe in Appalachia (ARC, 2011; Pollard & Jacobsen, 2014). Among the employed, a higher percentage work in extraction industries and a lower percentage in professions that require a college degree (ARC, 2014). Household income, adults in the workforce,

Figure 1. The central subregions of Appalachia.

and jobs requiring college degrees are appreciably lower for Central Appalachia than for the other two subregions. These data highlight the daunting job market challenges faced by young adults in middle Appalachia, discussed in more detail later.

Middle Appalachia is predominantly rural—all six states rank in the top half of states deemed as having uniquely rural needs (Johnson et al., 2014). The isolation created by mountainous terrain has resulted in limited in-migration and a strong reliance on family and community support systems, as well as attachment and commitment to the region (Ali & Saunders, 2006; Browne-Ferrigno & Allen, 2006; Elam, 2012). The region's geography historically has fostered an economy reliant on coal and other extraction industries (Hodge, 2016). The boom-or-bust nature of these industries, coupled with limited alternative job opportunities, has kept income levels relatively low (Pollard & Jacobsen, 2014).

These geographic and contextual factors contributed to the development of a culture strongly focused on family, community, and egalitarianism, in contrast to modernist values that equate occupational and educational status with success (Howley, Harmon, & Leopold, 1996). These cultural values intersect profoundly with efforts of education systems in middle Appalachia to prepare the region's youth for life after high school.

Table 1

Student Characteristics

Region	Percent White Students (2012/13)	Living in Poverty (< age 18) (2008–2012)	Students Eligible for Subsidized Lunch (2012/13)	English Learner Students (2012/13)	Disabilities (< age 18) (2008–2012)	Students with Individual Education Plans (IEP) (2012/13)
United States	51.1%	20.8%	46%[a]	8.5%	4.0%	13.0%[b]
Middle Appalachia	85.9%	25.3%	55.2%	2.1%	5.2%	14.4%
North Central Appalachia	91.9%	23.5%	50.5%	0.6%	5.4%	15.2%
Central Appalachia	95.0%	32.0%	58.9%	0.5%	5.8%	15.5%
South Central Appalachia	78.5%	24.5%	56.0%	3.7%	4.9%	13.5%

Sources: Pollard & Jacobsen (2014); U.S. Department of Education, National Center for Education Statistics, Common Core of Data.

[a] SY 2009/10. http://nces.ed.gov/ccd/tables/2000_schoollunch_01.asp. Most recent data available.

[b] SY 2011/12, among students with disabilities. http://nces.ed.gov/fastfacts/display.asp?id=64. Most recent data available.

Table 2

Graduation Rate (SY 2008/09)

Region	Averaged Freshman Graduation Rate (Median)
United States	76.5%
Middle Appalachia	79.2%
North Central Appalachia	81.0%
Central Appalachia	76.5%
South Central Appalachia	78.5%

Source: U.S. Department of Education, National Center for Education Statistics (2010).

Postsecondary Transitions: Key Findings from the Literature

The six states that contain middle Appalachia have been strongly influenced by the national emphasis on college and career readiness. An analysis by the Education Commission of the States shows that all six states have enacted college and career readiness policies, with Kentucky showing national leadership by enacting comprehensive legislation that requires K-12 and postsecondary education systems to develop a unified strategy to ensure college readiness for all students (Glancy et al., 2014).[4] Policies in other middle Appalachia states incorporate a range of college and career readiness indicators into state accountability systems (North Carolina), connect college and career readiness definitions with specific assessments and with K-12 and postsecondary course standards and curriculum (Tennessee), aim to ensure that students are prepared for credit-bearing courses in college (Ohio, Virginia), and require programs that allow high school students to earn college credit (West Virginia) (Glancy et al., 2014).

To support the states' college and career readiness efforts, the U.S. Department of Education has awarded several federal grants in the region. The six states with middle Appalachian school districts have received nine Race to the Top grants amounting to nearly $1.5 billion.[5]

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[4]See Senate Bill 1 Highlights, 2009 Session of the Kentucky General Assembly, for details of the legislation: http://education.ky.gov/comm/ul/documents/senate%20bill%201%20highlights.pdf

[5]The Race to the Top program, initiated in 2009, encouraged states to implement systemic reform in four areas, including adopting standards and assessments geared toward college and career readiness.

Education agencies in middle Appalachia also have received five Investing in Innovation (i3) grants[6] totaling $30 million, all of which focus on college and career readiness.

This policy context should be considered as we summarize literature on three topics: (a) high school outcomes, (b) career opportunities and preparation, and (c) postsecondary aspirations. Additional information on initiatives in the region is provided later in this article.

High School Outcomes

As was true when DeYoung conducted his 1983 review, assessments differ across states, making it problematic to uniformly describe student achievement in middle Appalachia or to compare it with national data. Although all six states participate in the National Assessment of Educational Progress,[7] data are reported at the state level, not by district or subregion.

Rather than compare assessment scores between Appalachian and non-Appalachian school districts within each state (DeYoung's approach), we examined available data and research on high school graduation rates and ACT scores. Though limited, these measures are the cleanest currently available to describe high school student outcomes related to postsecondary preparation. Research and data from these indicators suggest that the region is performing as well as or better than the rest of the nation on key high school outcomes.

High school graduation rates. The most basic indicator of high school success is graduation rate, and recent data suggest reasons for optimism. Ziliak (2007) observed that graduation rates in middle Appalachia rose by around 20 percentage points between 1979 and 1999—from 40% to 62% in Appalachian Kentucky, from 60% to 78% in Appalachian Ohio, and from 56% to 75% in Appalachian West Virginia. National Center for Education Statistics data show that in 2008-2009, students in middle Appalachia graduated at rates at or above the national average (Table 2).

ACT scores. Many states now use ACT or SAT scores as indicators of college and career readiness. However, the percentage of students who participate in each test varies across states, making comparisons difficult. For instance, 2014 ACT participation rates among high school seniors were 100% in Kentucky, North Carolina, and Tennessee; 72% in Ohio; 65% in West Virginia; and 28% in Virginia.[8] ACT data specific to middle Appalachia's subregions were not available.

Two recent studies that described ACT scores in Appalachian portions of Kentucky and Tennessee (where the ACT is mandatory) suggested that students in these areas were performing as well, or nearly so, as their non-Appalachian peers within the states (Mokher, 2011; Mokher, Lee, & Sun, 2015). In 24 Central Appalachian Kentucky school districts, the percentage of students who met college readiness benchmarks in reading was nearly the same as the statewide average (43.5% vs. 44.0%, respectively), though fewer students met the state's math benchmarks than in the state as a whole (36.4% vs. 41.2%, respectively) (Mokher, 2011). In 30 northeast Tennessee high schools that are part of a consortium to improve college and career readiness, the mean composite ACT score was identical to the statewide average in 2013 (19.5) and nearly identical in 2014, with consortium schools averaging 19.9, compared with 19.8 statewide (ACT, 2014; Mokher, Lee, & Sun, 2015). These two studies suggest that students in middle Appalachia are achieving at or near the same level as their non-Appalachian peers. However, average scores are still low and the findings are limited to two states. Additional research is needed to understand ACT performance across middle Appalachia.

Career Opportunities and Preparation

As middle Appalachian students transition from high school, their college and career aspirations are influenced by available opportunities, which have historically been limited. Recent data indicate that employment opportunities in the region continue to be a challenge. Unemployment rates are higher in Central and South Central Appalachia, and middle Appalachia as a whole has a lower percentage of adults in the labor force (Table 3).

The Appalachia Regional Commission (2011) reports that the job loss rate during the recent recession was more severe in Appalachia than nationwide (-2.0% in Appalachia vs. -1.7% for the United States between 2007 and 2010). Job loss was most severe in North Central Appalachia, where the decline was -2.7%. In addition, the ARC (2011) reports that employment fell to 2004 levels nationally during the recession but that "Appalachia lost roughly 700,000 jobs, representing all of the jobs gained since 2000" (p. 1).

The industries with the highest employment rates in middle Appalachia are similar to those in the rest of the United States: retail trade; health and social services; state and local government; and food, hotel, and entertainment services (Table 4). Middle Appalachia relies more, however, on agriculture and natural resources (including farming, forestry, coal, gas, and mining), particularly Central Appalachia, where natural resources account for 4.8% of the labor market, or approximately 38,000 jobs. Even so, there have been significant declines in coal-based jobs between 2000 and 2015: as much as 50% in Kentucky and Virginia, with smaller declines in Ohio and Tennessee. West Virginia,

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[6]The Investing in Innovation (i3) competitive grant program provides funds to expand innovative practices that boost student achievement, close achievement gaps, decrease dropout rates, increase graduation rates, or increase college enrollment rates.

[7]See http://nces.ed.gov/nationsreportcard/about/stateparctic.aspx#rm

[8]See http://www.act.org/content/act/en/research/tableau/2014-act-participation-rate.html

Table 3

Employment Data

Region	Population (Age 25–64)	Persons in Labor Force (%)	Employment Rate (% of Labor Force)	Unemployment Rate (% of Labor Force)
United States	163,664,576	78.1	92.3	7.7
Middle Appalachia	4,782,881	70.1	92.1	7.9
North Central Appalachia	1,284,229	70.2	92.8	7.2
Central Appalachia	1,030,314	60.3	91.4	8.6
South Central Appalachia	2,468,338	74.1	92.0	8.0

Source: Pollard & Jacobsen (2014).

meanwhile, saw an overall increase in coal-based jobs since 2000 but a sharp decline since 2010 (Hodge, 2016). As has historically been true, jobs that require college degrees—in industries such as education and information services; professional or technical services; and finance, insurance, and real estate—account for a lower percentage of the labor market in middle Appalachia than in the rest of the United States.

This challenging economic context suggests a need for creative, strategic career guidance and preparation for middle Appalachian students. However, three studies, though limited in scope, suggested that students' career opportunities may be hampered by misalignment between K-12 career and technical education (CTE) programs and workforce needs in the Appalachian areas of Tennessee and Kentucky (Hargis, 2011; Mokher, 2011; Mokher, Sun, & Pearson, 2015). Mokher (2011) and Mokher, Sun, and Pearson (2015) found that a higher percentage of high school students participated in agriculture and health science programs, whereas a lower percentage participated in business technology, advanced manufacturing, and family/consumer sciences, compared with local employment needs. Similarly, Hargis (2011) reported that Appalachian Kentucky high schools may be emphasizing programs in automotive technology, construction carpentry, electricity, health science, horticulture, information technology, machine tooling, and welding that do not match the labor market, at the expense of higher-demand fields such as accounting and finance, industrial maintenance, office technology, and wood manufacturing.

Wright (2012) reported that community college students in Appalachian Kentucky intended to follow "predictable paths" (p. 6) in that female students were pursuing degrees and training in medical and education fields (for example, dental hygienists, nurses, teachers, social workers). Males were pursuing training and degrees in industry and service occupations (for example, welders, mechanics, heavy machine operators, law enforcement, and civil engineers).

These studies provide a limited picture of career preparation and choices in the region. More research is needed on alignment of the labor market with career preparation programs in middle Appalachia, effective career preparation programs, and students' career choices.

Postsecondary Aspirations

Although labor market data indicate a lower percentage of jobs in middle Appalachia that require a college degree, the declining coal industry, coupled with new requirements for advanced technical skills for many jobs in industry, has moved educators in the region to encourage more students to pursue postsecondary education. This endeavor is a challenge in a region where postsecondary education attainment of the adult population, particularly in Central Appalachia, lags behind other parts of Appalachia or the United States (Table 5). Data between 2008 and 2012 show that lower percentages of adults had college degrees, especially bachelor's degrees, across middle Appalachia than in the rest of the country (Pollard & Jacobsen, 2014).

The research suggests that these education attainment levels, driven by a historic reliance on jobs that do not require high levels of schooling, contribute to a complex set of beliefs about higher education and careers in middle Appalachia. These beliefs have received much study over the past 20 years. In fact, most research located for this review focused on attitudes and aspirations toward higher education and subsequent careers. Three intersecting subthemes emerged from the literature: (a) knowledge of and support for postsecondary education, (b) attitudes toward postsecondary education, and (c) attachment to place and family. Findings around these themes suggest that some families support students' college aspirations while others are wary, families often lack experience to help their children pursue postsecondary education, and strong attachment to family and place often shapes students' postsecondary aspirations.

Knowledge of and support for postsecondary education. Several studies noted that many students in middle Appalachia lack familial role models and guidance for pursuing postsecondary education because of parents' lack of experience with higher education (Bryan & Simmons, 2009; Hlinka et al., 2015; Lyttle-Burns, 2011;

Table 4

Percentage of Employment by Industry, 2010

Region	Total Employment (thousands)	Farming, Forestry (%)	Coal, Gas, Other, Mining (%)	Utilities (%)	Construction (%)	Manufacturing (%)	Wholesale Trade, Transportation (%)	Retail Trade (%)	Finance, Insurance, Real Estate (%)	Professional, Technical Services (%)	Education, Information Services (%)	Health, Social Services (%)	Food, Lodging, Entertainment (%)	Federal Government, Military (%)	State & Local Government (%)
United States	173,767	2.0	0.7	0.3	5.1	7.0	6.6	10.2	9.8	14.0	4.2	11.0	14.8	3.0	11.2
Middle Appalachia	4,377	3.6	1.7	0.4	6.1	8.9	5.9	11.5	7.2	10.4	2.8	11.6	14.7	2.3	13.1
North Central Appalachia	1,128	3.4	2.7	0.7	5.7	6.4	5.3	11.9	6.7	9.1	2.7	13.0	14.7	3.2	14.5
Central Appalachia	791	6.2	4.8	0.4	6.2	8.3	5.6	11.4	5.6	8.9	2.3	11.0	12.6	2.3	14.4
South Central Appalachia	2,458	2.9	0.2	0.2	6.2	10.2	6.2	11.4	7.9	11.4	3.0	11.2	15.4	1.8	12.0

Source: Appalachian Regional Commission (2014).

Table 5

Education Attainment, Ages 25–64 (2008–2012)

Region	Population	Less Than High School Diploma (%)	High School Grad (%)	Associate's Degree (%)	Bachelor's Degree or More (%)
United States	163,664,576	12.3	48.9	8.5	30.2
Appalachian region	13,290,719	12.7	55.2	8.9	23.2
Middle Appalachia	4,782,881	14.7	56.9	8.1	20.3
North Central Appalachia	1,284,229	12.1	60.2	7.8	19.8
Central Appalachia	1,030,314	20.6	59.1	7.0	13.3
South Central Appalachia	2,468,338	13.6	54.3	8.7	23.4

Source: Pollard & Jacobsen (2014).

Note: Pollard & Jacobsen (2014) report a five-year estimate from the American Community Survey, rather than a snapshot from a single year.

Snyder, 2007). A survey of more than 3,000 parents of West Virginia middle school students participating in a college awareness program found that fewer than one-third were familiar with entrance requirements for postsecondary institutions. The majority of these parents said they had not talked with school counselors and needed more information about college requirements (Meehan, Cowley, Chadwick, & Whittaker, 2001). Similarly, most of 87 high school students surveyed in rural Central Appalachia said their parents had not attended college (Ali & Saunders, 2006). This presents a challenge because students report that parents are their main source of education information (Ali & Saunders, 2006; Meehan et al., 2001).

Several researchers reported that middle Appalachian students who successfully transitioned to college found information and support beyond their parents. Ten first-

generation, Appalachian Kentucky college students reported obtaining college information from awareness programs or family members who had attended college. They also credited successful postsecondary transitions to early intervention programs—including campus visits, ACT preparation, dedicated transition staff, and an on-campus summer bridge program (Bryan & Simmons, 2010). Another qualitative study of students in a rural Appalachian high school found that encouragement from school staff influences students' college decisions (Hendrickson, 2012). These findings suggest the need for strong support from high school staff, including career planning and college application workshops that include parents (Ali & Saunders, 2006).

Other researchers call for supports to help Appalachian students persist to graduation. Ali and Saunders (2006) suggested that high schools provide information about the basics of college life and the challenges students may face at the postsecondary level. Hlinka et al. (2015) urged community colleges to ensure that prospective high school students are on a first-name basis with someone at the community college, help students transition to four-year universities, and educate students and families about coursework expectations. Wilson and Gore (2009), who found that undergraduate students reported significantly better academic performance when they felt connected to the university, suggested that Appalachian college students may benefit from participating in learning communities that emphasize connections and place-based relationships.

Attitudes toward postsecondary education. A common stereotype is that Appalachian families devalue higher education, but research reveals that some families value higher education while others are wary of its benefits. Several studies shared student reports that parents and other adults encouraged college attendance. Educators in Appalachian schools are reported to play a key role in such encouragement (Bryan & Simmons, 2009; Hendrickson, 2012; Hlinka et al., 2015). In surveys of over 3,000 West Virginia middle school students, Meehan et al. (2001) reported that three-fourths of students thought their parents wanted them to attend college. Other studies of first-generation and community college students reported that families and former teachers took pride in the students' college pursuits, setting high expectations for success (Bryan & Simmons, 2009; Hlinka et al., 2015). In surveys of 664 West Virginia middle and high school students, Cowley (2008) found that having at least one parent who attended college increased students' college aspirations. Perhaps most encouraging, Ali and Saunders (2006) found that aspirations to attend college were associated more strongly with parental support than with parents' own education levels and occupational status.

At the same time, wariness about a college education persists among some segments of Appalachian society. A small number of studies shared educator perceptions of attitudes among adults from working-class or impoverished backgrounds. District and school administrators in Appalachian Kentucky believed their district was characterized by a working-class culture that devalued high levels of education (Browne-Ferrigno & Allen, 2006). Similarly, educators and high school graduates in a rural Appalachian Kentucky district stated that many students from impoverished backgrounds have parents who did not finish high school and provide no encouragement for further education (Lyttle-Burns, 2011).

A survey of 91 college students from Appalachian Ohio and Kentucky found that students received discouraging messages about higher education. A quarter or more of students reported being expected to do work that interfered with college assignments, accusations of "acting better" than those who did not attend college, being ignored when discussing college experiences, or being told that they should not waste time on college. Females reported more negative reactions than males, at a rate of nearly 3 to 1 (Wallace & Diekroger, 2000).

Snyder's (2007) interviews with 11 West Virginia parents with a high school education or less uncovered several negative conceptions of college, including that it was for the wealthy, less safe than remaining at home, characterized by partying, and less profitable than manual labor. Similarly, Hendrickson (2012) reported that parents of students in a rural Appalachian high school regularly encouraged them to forgo college and follow them into industry.

Even parents who vocalize support for college may not understand what it takes to succeed in college. Community college students in Kentucky reported feeling torn between the "push" of encouragement from parents to attend college and the "pull" of expectations that family needs should take priority over college attendance and studying (Hlinka et al., 2015).

First-generation college students interviewed by Bryan and Simmons (2009) reported that they established separate identities at home and school to hide conflicting behaviors and beliefs. Some students, for instance, reported feeling uncomfortable discussing at home what they were learning at college, and others felt disconnected from the "intellectual" group at school. Similarly, Daniels reported in her 2014 essay that she felt compelled to hide her Appalachian identity while attending a major university at a distance from her hometown.

These findings indicate that support for postsecondary education is growing among some sectors in middle Appalachia, but that wariness of higher education

persists, especially among working-class and low-income populations.

Attachment to place/family. Strong connections to family, community, and place also influence postsecondary decisions and career aspirations (Elam, 2012; Hand & Payne, 2008; Hlinka et al., 2015). Researchers note that attachments to place and "the good life" are valued as much as or more than modernist values such as education attainment, upward mobility, and economic gains (Bryan & Simmons, 2009; Howley et al., 1996; Wilson & Gore, 2009).

Because of these attachments, middle Appalachian youth may be less inclined than their non-Appalachian peers to attend postsecondary institutions located at a distance from home (Bryan & Simmons, 2009; Howley et al., 1996; Wilson & Gore, 2009). Wright (2012) reported that among 30 community college students in eastern Kentucky, many chose the local community college over a four-year university because of the ability to stay at home and continue working at an established place of employment. Researchers report that community college is viewed as a safe choice that offers a gradual initiation to college, as well as lower tuition and reduced rent (Hlinka et al., 2015; Wright, 2012).

Bryan and Simmons' (2009) interviews with first-generation college students revealed that strong connections to the home community created conflicting feelings as student interests diverged from those of family and friends back home. First- and second-year undergraduates experienced fewer such conflicts by returning home every weekend, where they felt more connected to friends and family with similar backgrounds.

Some researchers suggest that middle Appalachian students who transition successfully to four-year colleges are those with a high internal locus of control, relying more on their own opinions and values than on those of others. Researchers suggested that this willingness to stretch family and community ties makes these Appalachian students more likely than others to pursue four-year degrees (Hand & Payne, 2008; Wallace & Diekroger, 2000).

Attachment to place influences career aspirations, often related to college choices. Some middle Appalachian students report a desire to remain in or return to Appalachia and contribute to its development, while others believe they must leave the region to find desired employment. Hlinka et al. (2015) and Wright (2012) reported both perspectives among current and former students of Appalachian Kentucky community colleges. Female students appeared particularly inclined to stay close to home. Five of eight females interviewed for the Wright (2012) study—all community college students—were pursuing career options that would allow them to remain in the region, as were several students interviewed by Hlinka et al. (2015).

Several studies shared accounts of students who hoped to use their education to help transform the community. Examples included using an arts degree to develop a community arts center, pursuing an agricultural degree to replant farmlands recovered from abandoned mines, becoming a teacher to improve education in the region, going into medicine to improve medical care, and using a counseling degree to help Appalachian youth understand their history and foster commitment to the region (Daniels, 2014; Hlinka et al., 2015; Wright, 2012). Wright (2012) concluded that Appalachian colleges might focus on place-based education, investing "in those who choose to stay" rather than concentrating "on those who achieve to leave" (p. 10).

Not all Appalachian students, however, aspire to stay close to home. Bryan and Simmons (2009) reported that most of the 10 first-generation college students they interviewed did not plan to return home or felt they could not do so because of a lack of career opportunities. Only three students pursuing medical careers planned to return home immediately after college.

Initiatives to Improve Postsecondary Transitions

The research summarized above reveals improved high school outcomes; ongoing challenges in preparing students for jobs in a depressed, changing economy; and mixed attitudes toward postsecondary education. Many local, state, regional, and federal initiatives are underway to address these challenges. Research on outcomes of these initiatives was limited at the time of this review. Nevertheless, we provide an overview of several initiatives to convey a sense of how the region is working to improve students' postsecondary opportunities and transitions and to bookmark efforts for which research may soon emerge.

Race to the Top

Beginning in 2009, the U.S. Department of Education set aside over $4 billion for competitive grants to state departments of education through the RTTT program, part of the larger American Recovery and Reinvestment Act (ARRA).[9] This program encouraged states to implement systemic reform in four areas, including college and career readiness. Several middle Appalachian states and agencies received RTTT grants, with funds totaling nearly $1.5 billion (Table 6). Some of these grants focus on Appalachian areas, and many include components aimed at improving postsecondary preparation and transitions. For instance, the Kentucky Valley Educational Cooperative RTTT grant supports the Appalachian Renaissance Initiative (ARI), an effort among 17 high-poverty districts to improve student

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[9]See http://www2.ed.gov/programs/racetothetop/index.html

learning through six interrelated projects, one of which is college and career readiness.[10] ARI efforts include improving educator skills, increasing student agency through student senates, encouraging classroom innovation through teacher mini-grants, and investing in a technology infrastructure. The RAND Corporation is evaluating the initiative, but no publicly available research on ARI or other RTTT initiatives surfaced in our literature search.

Investing in Innovation

The U.S. Department of Education also administers the i3 competitive grant program, which provides funds to expand innovative practices that boost student achievement, close achievement gaps, reduce dropout rates, increase high school graduation rates, or increase college enrollment and completion rates.[11] In middle Appalachia states, 17 agencies received i3 grants totaling nearly $221 million (Table 7). Five such grants totaling $30 million focus on Appalachian areas. Grant titles such as "College and Career Readiness" (Kentucky), "Validating Early College Strategies" (North Carolina), and "Northeast Tennessee College and Career Ready Consortium" (Tennessee) show the focus on postsecondary preparation or transition.

Earlier we summarized preliminary findings from the evaluation of one of these i3 grants, the Niswonger Foundation's Northeast Tennessee College and Career Readiness Consortium. This consortium of 30 high schools

and five colleges across 15 counties in northeast Tennessee aims to improve college and career readiness by increasing student access to, participation in, and completion of advanced courses in high school through distance education and college and career advisors and counselors. Mokher, Lee, and Sun (2015) found small, positive impacts on composite ACT and AP participation and exam performance relative to a set of matched comparison schools. No other research was located on i3 initiatives in the region through 2015.

Regional and Local Initiatives

Through this literature review and conversations with contacts in middle Appalachia, we identified additional regional, state, and local initiatives to support postsecondary transitions. These include the Shaping Our Appalachian Region (SOAR) initiative, the Rural Community College Initiative (RCCI), and several college preparation initiatives.

Shaping Our Appalachian Region (SOAR). This initiative was launched in 2013 by U.S. Representative Hal Rogers and former Kentucky Governor Steve Beshear to diversify the economy and improve the quality of life in Appalachian Kentucky, with potential regional connections across state lines.[12] SOAR organizes public meetings and workgroups to develop strategies and recommendations in areas such as education and retraining, health, agriculture, business recruitment, and tourism. The education and retraining workgroup developed 17 recommendations

[10] See http://www.kentuckyvalley.org/ for more information.

[11] See http://www2.ed.gov/programs/innovation/index.html

[12] See www.soar-ky.org/

Table 6

Race to the Top Grants in Middle Appalachia States

State	Agency	Grant	Year	Award	Appalachia focus
KY	Department of Education	RTTT	2011	$17 million	Statewide
KY	Green River Regional Educational Cooperative	RTTT-District	2012	$40 million	Yes
KY	Kentucky Valley Educational Cooperative	RTTT-District	2013	$30 million	Yes
KY	Office of Early Childhood	RTTT-Early Learning Challenge	2013	$44 million	Statewide
NC	Department of Education	RTTT	2010	$400 million	Statewide
NC	Guilford County Schools	RTTT-District	2012	$30 million	No
NC	Iredell-Statesville Schools	RTTT-District	2012	$20 million	No
OH	Department of Education	RTTT	2010	$400 million	Statewide
TN	Department of Education	RTTT	2010	$500 million	Statewide

Source: http://www2.ed.gov/programs/racetothetop/awards.html, http://www2.ed.gov/programs/racetothetop-earlylearningchallenge/awards.html, and http://www2.ed.gov/programs/racetothetop-district/awards.html

Table 7

Investing in Innovation Grants in Central Appalachian States

State	Agency	Grant title	Year	Award	Appalachia focus
KY	Jefferson County Public Schools	Making Time for What Matters	2010	$5 million	No
KY	Council for Opportunity in Education	Using Data (DICAP)	2010	$20 million	No
KY	Berea College	Accelerating Academic Achievement in Appalachian KY	2011	$3 million	Yes
KY	Kentucky Valley Educational Cooperative	College and Career Readiness Transformations	2011	$3 million	Yes
KY	Green River Regional Educational Cooperative	Get the Picture?! Guiding and Engaging Exceptional Teens	2014	$3 million	Yes
NC	Iredell-Statesville	Collaborative Organizational Model to Promote Aligned Support Structures	2010	$5 million	No
NC	North Carolina New Schools Project	Validating Early College Strategies	2011	$15 million	No
NC	Montgomery County Schools	ACCESS	2014	$3 million	No
NC	Cabarrus County	INSPIRE (STEM)	2013	$3 million	No
OH	Ohio State University	Reading Recovery Scale Up	2010	$50 million	No
OH	KnowledgeWorks	Corridor of Innovation	2011	$3 million	No
TN	Niswonger Foundation	Northeast Tennessee College and Career Ready Consortium	2010	$18 million	Yes
VA	George Mason University	VA Initiative for Science Teaching & Achievement	2010	$28 million	No
VA	Harvard College	Project READS	2010	$13 million	No
VA	New Teacher Project	TEACH Initiative	2010	$21 million	No
VA	Old Dominion University	Scale Up of Proven Model of Math Instruction in High Need Schools	2011	$25 million	No
VA	VA Advanced Study Strategies (South Boston)	Rural Math Excel Partnership	2012	$3 million	Yes

Source: http://www2.ed.gov/programs/innovation/awards.html.

grouped into three themes: (a) equip the workforce with skills to support a revitalized region, (b) connect education and training to the workplace and increase access to education, and (c) ensure effective education and regional leadership (Rural Policy Research Institute, 2014). No research on the progress of these recommendations was located.

Rural Community College Initiative (RCCI). RCCI, funded by the Ford Foundation from 1994 to 2007, worked through rural community colleges to improve education and economic opportunities in economically distressed areas of the nation (Baldwin, 2001; Eller et al., 2003; Kennamer & Katsinas, 2011; Salant & Kane, 2007).[13] Twenty-four

community colleges from four persistently poor U.S. regions participated, including six in Appalachian Kentucky and Virginia (Eller et al., 2003; Kennamer & Katsinas, 2011). The initiative brought together small but diverse teams at each college, including representatives from business, government, and education. Under guidance of a coach, teams collected data that informed development of strategic plans for their communities (Baldwin, 2001; Eller et al., 2003).

RCCI projects in middle Appalachia focused on economic and community development as well as education access. For instance, Kentucky's Southeast Community

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[13]See also Southern Rural Development Center for information from 2002 to 2007: http://srdc.msstate.edu/rcci/

College helped form the Appalachian Development Alliance, which pooled resources and accessed new capital to encourage business development in the region. Virginia's Danville Community College developed recruitment strategies to increase college access for poor students. Kentucky's Somerset Community College offered a theater program to high school students to provide cultural experiences and expose high school students to the college (Eller et al., 2003).

A national assessment of RCCI's impact reported that several colleges leveraged other grants, redefined their goals, and developed internal capacity, and that collaboration with the community increased (Eller et al., 2003). A qualitative reflection on the initiative emphasized the benefit to community college staff of networking and capacity building (Kennamer & Katsinas, 2011). On more quantitative measures, however, the study reported that although college enrollment and capture rates (percentage of service area population enrolled for credit at the college) rose across RCCI colleges, enrollment in the Appalachian colleges declined slightly, and capture rates were unchanged during the study period. In addition, unemployment rates fell across RCCI communities but rose in Appalachia (Eller et al., 2003).

College preparation programs. A number of regional and local programs aim to develop leadership and college readiness among high school students in middle Appalachia. For example, the Rogers Scholars program at the Center for Rural Development in Kentucky provides leadership and scholarship opportunities to help high school juniors in Appalachian Kentucky develop skills to become the region's next generation of business and entrepreneurial leaders. Since its inception, 996 high school students have completed the program and been offered scholarships worth more than $7.2 million from 17 participating postsecondary institutions.[14]

The University of Kentucky's Robinson Scholars Program awards scholarships to first-generation college students in eastern Kentucky, covering the full costs of between 8 and 10 semesters at the University of Kentucky and associated community colleges. Additionally, the program addresses the needs of student participants while they complete high school and assists in the transition to college life (Carter & Robinson, 2002).

Radford University in Virginia operates the privately-funded Appalachian Arts and Studies in the Schools (AASIS) program to encourage "college-able, but not college-bound" students to pursue higher education and to help students learn more about the region's culture.[15] Annually, approximately 80 Radford students mentor high school students to provide information about attending

[14]See http://centeryouthprograms.com/rogers-scholars/

[15]See http://www.radford.edu/content/cehd/home/appalachian-studies/programs/aasis.html

college, while teachers at participating high schools teach lessons about middle Appalachian culture. Between 2002 and 2007, 65% of participating high school students enrolled in higher education, and college mentors reported changing their views of Appalachia, with several pursuing Appalachian Studies in graduate school (Edwards, 2007).

Many more initiatives are likely underway in middle Appalachia, but time and resources did not permit a thorough search. Many of the efforts described above include practices recommended by the research literature, including mentoring, support, and early exposure to college. Potential drawbacks include the limited reach of many programs, as well as reliance on temporary grant funding. A related challenge is to institutionalize support programs so that they are available to all students over time. In addition, more research is needed on student outcomes from initiatives to improve postsecondary preparation and success in the region.

Discussion and Implications

This literature review reveals reasons for optimism as well as ongoing challenges to improving postsecondary transitions for youth in middle Appalachia. Below we summarize key findings from the review and suggest implications for policy, practice, and future research.

Reasons for Optimism

Available data on high school outcomes show that graduation rates in middle Appalachia meet or exceed national averages. Further, where data are available, high school students in the region score comparably on ACT exams to other students in their states.

Students in middle Appalachia generally are committed to remaining in and improving the region. Many choose colleges and careers that allow them to remain close to home and/or bring knowledge and skills back to the region. Some students are thinking entrepreneurially about careers that might improve economic opportunities in the region. Further, many students reported strong support from families and educators for pursuing postsecondary education.

This literature review also identified numerous initiatives underway in the region to improve postsecondary transitions. By and large, these initiatives are implementing programs and practices that are consistent with data and research on the region's needs. For instance, Kentucky's SOAR initiative focuses on diversifying the region's economy. The Northeast Tennessee College and Career Readiness Consortium, Rogers Scholars and Robinson Scholars, and Radford University's AASIS program offer college awareness, preparation, and transition support to middle Appalachian students. Initiatives such as RCCI and AASIS capitalize on students' attachment to place by

engaging students in place-based education or community development efforts. These findings indicate momentum for improved postsecondary opportunities and outcomes in the region.

Challenges

In the midst of promising initiatives and improved high school graduation rates, the career aspirations of students in middle Appalachia continue to be challenged by unemployment and underemployment in the region. Moreover, studies of limited scope suggest that high school career education programs may not align well with available and future job opportunities.

The percentage of adults with college degrees remains much lower for middle Appalachia than elsewhere, resulting in fewer information sources for students who wish to attend college. In addition, research suggests that a lingering wariness toward higher education among some adults presents psychological and practical challenges for students with college aspirations.

Implications for Policy, Practice, and Research

The findings from this research and data review suggest a number of implications pertaining to (a) elementary and secondary education and preparation, (b) postsecondary transition programs, (c) postsecondary education and supports, and (d) career choices.

Elementary and secondary education and preparation. Although available research suggests that high school outcomes have improved, the findings rely on limited academic indicators, with few common measures of student readiness. Not much is known about how academically, socially, or financially prepared middle Appalachian students actually are for college and careers when they leave high school. More research is needed on what is happening in K-12 classrooms and how effectively this education prepares students for adult life.

Given the strong cultural values around family, community, and place, and the corresponding commitment of many students to remain in the region, policymakers, practitioners, and researchers should consider what a rigorous K-12 education rooted in Appalachia might look like, where it is occurring, and how it could be fostered more widely. Place-based education offers one pathway for developing rigorous curricula integrated with the community context (Wright, 2012). This approach has long been a mantra of rural education research (see, for example, Haight & González-Espada, 2009; Haleman & DeYoung, 2000; Johnson, Thompson, & Naugle, 2009; Rural School and Community Trust, 2014). Offering rigorous curricula that challenge students to tackle community issues might

prepare students for careers both inside and outside the region that enable them to put entrepreneurial ideas into practice. No studies were found, however, that examined the effectiveness of these efforts in equipping Appalachian students with knowledge and skills needed for adult life locally or beyond.

This review highlighted several initiatives aimed at improving postsecondary readiness. Evaluation of some of these initiatives is underway, but a more exhaustive review of current initiatives is needed, as well as research on their implementation and effectiveness. Particular attention should be given to the relative effectiveness of specific components of college readiness initiatives so that educators and policymakers can more fully understand what works and for whom. More research is also needed on how these initiatives intersect with local values and knowledge, the uses of technology to improve access to high-quality K-12 instruction, integrated services that address barriers to readiness, and the nature and impact of family and community partnership efforts. Data on these improvement initiatives should be disaggregated to understand how Appalachian regions compare with non-Appalachian regions.

Postsecondary transition programs. This review indicates that middle Appalachian students and families would benefit from more information about postsecondary education to support transitions. Given that students rely strongly on parents for such information, school districts might develop postsecondary education awareness and support programs that students and families participate in jointly, including assistance with the college enrollment process.

Postsecondary institutions also can support college transitions. Research suggests that community colleges play a central role in helping students ease into postsecondary life because of their proximity to home and the perception that they offer a safe alternative to four-year colleges and universities (Eller et al., 2003; Hlinka et al., 2015). In particular, adult contacts or mentors whom students know by name can help students feel more comfortable obtaining the information and support they need to complete the application and enrollment process.

As postsecondary transition programs are implemented, research is needed on the nature and outcomes of these programs, along with policy recommendations for how to institutionalize such programs beyond grant funding. It would be valuable, as well, to disaggregate findings on postsecondary preparation, transitions, and outcomes for subgroups such as students from rural, town, and urban settings of Appalachia; students in special education programs, including gifted and talented; traditional college-age students and nontraditional students; and English learners.

Postsecondary education and supports. Research indicates that middle Appalachian students experience challenges and conflicts once they enroll in college—particularly students who attend four-year colleges and universities far from home. As suggested by Hlinka et al. (2015), community colleges can help students persist in college by ensuring a rigorous education that prepares them for university work, helping students transition to four-year universities, educating students and families on what it takes to complete college coursework successfully, providing career counseling based on local labor market data, and promoting a sense of civic duty through in-class and extracurricular activities.

Four-year postsecondary institutions in or near the Appalachian region might support Appalachian students through learning communities for first-generation college students, some of which focus specifically on Appalachian students. Given the research on attachment to place and Appalachian students' preference for working toward community goals, these efforts might use a cohort approach in which students move through the four-year program together, culminating with a group or individual capstone projects or theses aimed at addressing local or regional issues. In addition, regional, state, and local education agencies might consider developing virtual support communities for students who wish to attend postsecondary institutions outside the region. These programs might begin in high school, linking students across Appalachian school districts and continuing once they enter college.

Beyond ensuring that Appalachian students persist in college, more research is needed on the quality of education in Appalachian postsecondary institutions. Hlinka et al. (2015) emphasize the responsibility of community colleges to ensure students leave with the academic skills and knowledge necessary to succeed at the next level. Research on whether two-year and four-year Appalachian colleges and universities are achieving this goal would be a valuable contribution to the literature.

Career choices. The bulk of research located for this review focused on college preparation and aspirations. No studies were found of the actual career choices of students from middle Appalachia. The literature on students who do not intend to pursue college is especially lacking. Future research might explore who these students are, factors that influence their career choices, their education experiences, and the outcomes of their career choices. Such research might explore in greater depth how these young adults define and measure career and life success. Additional research is also needed that expands on the Kentucky and Tennessee studies to examine current career and technical education programs, including the nature of the programming and the extent to which these programs prepare students for careers.

Conclusion

Middle Appalachia mirrors the rest of the country in its current emphasis on preparing students for college and careers. This research and data review highlights positive trends and strengths within the region that might serve as a basis for ongoing efforts to help the youth of middle Appalachia transition to adult life. It also highlights data showing that persistent poverty, unemployment, and widespread lack of understanding about possible careers and the education needed to pursue them continue to present challenges for educators, students, and families. We hope that this review stimulates discussion about next steps needed in policy, practice, and research to ensure that students from middle Appalachia are equipped with the knowledge, skills, and dispositions they need to succeed in adult life, wherever they may choose to live it.

References

ACT. (2014). *ACT profile report – State: Graduating class 2014 Tennessee*. Retrieved from https://www.act.org/content/dam/act/unsecured/documents/Natl-Scores-2014-Tennessee.pdf

Ali, S. R., & Saunders, J. L. (2006). College expectations of rural Appalachian youth: An exploration of social cognitive career theory factors. *Career Development Quarterly*, *55*(1), 38-51. doi:10.1002/j.2161-0045.2006.tb00003.x

Appalachia Regional Commission. (2011). *Appalachian region employment report – 2011*. Retrieved from http://www.arc.gov/assets/research_reports/EmploymentReportSept2011.pdf

Appalachia Regional Commission. (2014). *Appalachian region industry report – 2014*. Retrieved from http://www.arc.gov/assets/research_reports/AppalachianRegionIndustryReport2014.pdf

Arnold, M. L., Newman, J. H., Gaddy, B. B., & Dean, C. B. (2005). A look at the condition of rural education research: Setting a direction for future research. *Journal of Research in Rural Education, 20*(6). Retrieved from http://jrre.vmhost.psu.edu/wp-content/uploads/2014/02/20-6.pdf

Baldwin, F. D. (2001). Colleges and communities: Increasing local capacity. *Appalachia, 34*(1), 2-9. Retrieved from http://www.arc.gov/magazine/articles.asp?ARTICLE_ID=31

Barnett, E., & Stamm, L. (2010). *Dual enrollment: A strategy for educational advancement of all students*. Retrieved from Blackboard Institute Web site:www.blackboardinstitute.com/pdf/bbinstitute_dualenrollment.pdf

Borden, V. M. H. (2013). *Dual credit in U.S. higher education: A study of state policy and quality assurance practices*. Retrieved from Higher Learning Commission Web site: https://downloadna11.springcm.com/content/DownloadDocuments.ashx?aid=5968&Selection=Document%2Ce3823bc3-3c88-e211-ad6c-0025b3af184e%3B

Browne-Ferrigno, T., & Allen, L. W. (2006). Preparing principals for high-need rural schools: A central office perspective about collaborative efforts to transform school leadership. *Journal of Research in Rural Education, 21*(1), 1-16. Retrieved from http://jrre.vmhost.psu.edu/wp-content/uploads/2014/02/21-1.pdf

Bryan, E., & Simmons, L. E. (2009). Family involvement: Impacts on post-secondary educational success for first-generation Appalachian college students. *Journal of College Student Development, 50*, 391-406. doi:10.1353/csd.0.0081

Carter, C. S., & Robinson, R. (2002). *"Can we send some of the money back home to our families?" Tensions of transition in an early intervention program for rural Appalachian students*. Paper presented at 2002 annual meeting of the American Educational Research Association, New Orleans, LA. Retrieved from http://files.eric.ed.gov/fulltext/ED464787.pdf

Cowley, K. S. (2008). *Investigating West Virginia students' perceptions of the factors affecting their educational aspirations* (Unpublished doctoral dissertation). Marshall University, Huntington, WV.

Daniels, S. (2014). Stay here anyway. *Journal of Appalachian Studies*, *20*, 136-138. doi:10.5406/jappastud.20.2.0136

DeYoung, A. J. (1983). The status of formal education in Central Appalachia. *Appalachian Journal, 10*, 321-334.

Edwards, G. T. (2007). Educating to sustain in Appalachia. *Appalachian Journal, 34*, 364-369.

Elam, C. (2012). Culture, poverty, and education in Appalachian Kentucky. *Education and Culture, 18*(1), 10-13. Retrieved from http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1484&context=eandc

Eller, R., Jensen, J. M., Robbins, R. L., Russell, J., Salant, P., Torres, V., Viterito, A., & Barnett, L. (2003). *Opportunities in place: National assessment of the Rural Community College Initiative*. Retrieved from http://files.eric.ed.gov/fulltext/ED479829.pdf

Fuhrman, S. H. (2001). Introduction. In S. H. Fuhrman (Ed.), *From the capitol to the classroom: Standards-based reform in the states*: One hundredth yearbook of the National Society for the Study of Education, part II (pp. 1-12). Chicago, IL: University of Chicago Press.

Glancy, E., Fulton, M., Anderson, L., Zinth, J. D., Millard, M., & Delander, B. (2014). *Blueprint for college readiness: A 50-state policy analysis*. Retrieved from Education Commission of the States Web site: www.ecs.org/docs/ECSBlueprint.pdf

Haight, A. D., & González-Espada, W. J. (2009). Scientific literacy in Central Appalachia through contextually relevant experiences: The "Reading the River" project. *International Journal of Environmental & Science Education, 4*, 215-230. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.532.681&rep=rep1&type=pdf

Haleman, D. L., & DeYoung, A. J. (2000). A reflective essay concerning something better: The experiences of Appalachian Rural Trust schools. *Journal of Research in Rural Education, 16*(1), 3-7. Retrieved from http://jrre.vmhost.psu.edu/wp-content/uploads/2014/02/16-1_2.pdf

Hand, C. & Payne, E. M. (2008). First-generation college students: A study of Appalachian student success. *Journal of Developmental Education, 32*(1), 4-15.

Hargis, K. B. (2011). *Career and technical education program alignment with local workforce needs*

(Doctoral dissertation). Eastern Kentucky University, Richmond. Retrieved from http://encompass.eku.edu/cgi/viewcontent.cgi?article=1047&context=etd

Harmon, H. (2001). Education issues in rural schools of America. Paper presented at the Appalachian Rural Systemic Initiative Conference, Lexington, KY. Retrieved from http://files.eric.ed.gov/fulltext/ED455987.pdf

Hendrickson, K. A. (2012). Student resistance to schooling: Disconnections with education in rural Appalachia. *The High School Journal*, *95*(4), 37-49. doi:10.1353/hsj.2012.0011

Hlinka, K. R., Mobelini, D. C., & Giltner, T. (2015). Tensions impacting student success in a rural community college. *Journal of Research in Rural Education, 30*(5), 1-16. Retrieved from http://jrre.psu.edu/wp-content/uploads/2015/03/30-5.pdf

Hodge, D. (2016). *Appalachian coal industry, power generation and supply chain.* Retrieved from Appalachian Regional Commission Web site: https://www.arc.gov/assets/research_reports/CoalIndustryPowerGenerationandSupplyChainReport.pdf

Hofmann, E. (2012). Why dual enrollment? *New Directions for Higher Education*, *158*, 1-8. doi: 10.1002/he.20009

Howley, C., Harmon, H., & Leopold, G. (1996). Rural scholars or bright rednecks? Aspirations for a sense of place among rural youth in Appalachia. *Journal of Research in Rural Education, 12*(3), 150-160. Retrieved from http://jrre.vmhost.psu.edu/wp-content/uploads/2014/02/12-3_5.pdf

Johnson, J., Showalter, D., Klein, R., & Lester, C. (2014). *Why rural matters 2013-2014: The condition of rural education in the 50 states*. Retrieved from Rural School and Community Trust Web site: http://www.ruraledu.org/user_uploads/file/2013-14-Why-Rural-Matters.pdf

Johnson, J., & Strange, M. (2009). *Why rural matters 2009: State and regional challenges and opportunities*. Retrieved from files.eric.ed.gov/fulltext/ED516650.pdf

Johnson, J., Thompson, A. & Naugle, K. (2009). Place-conscious capacity-building: A systemic model for the revitalization and renewal of rural schools and communities through university-based regional stewardship. *Rural Society*, *19*, 178-188. doi:10.5172/rsj.19.2.178

Kannapel, P. J., & DeYoung, A. J. (1999). The rural school problem in 1999: A review and critique of the literature. *Journal of Research in Rural Education, 15*(2), 67-79. Retrieved from http://jrre.vmhost.psu.edu/wp-content/uploads/2014/02/15-2_4.pdf

Kannapel, P., Flory, M., Cramer, E., & Carr, R. (2015). *Appalachia rising: A review of education research.* Retrieved from CNA Web site: https://www.cna.org/cna_files/pdf/CRM-2015-U-011063.pdf

Kennamer, M., & Katsinas, S. G. (2011). An early history of the Rural Community College Initiative: Reflections on the past and implications for the future. *Community College Journal of Research and Practice*, *35*, 234-251. doi:10.1080/10668926.2011.526056

Lyttle-Burns, A. (2011*). Factors that contribute to student graduation and dropout rates: An in-depth study of a rural Appalachian school district* (Doctoral dissertation). Eastern Kentucky University, Richmond. Retrieved from http://encompass.eku.edu/cgi/viewcontent.cgi?article=1012&context=etd

Meehan, M. L., Cowley, K. S., Chadwick, K. L., & Whittaker, D. (2001). *Academic aspirations of Appalachian seventh graders and their parents*. Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA. Retrieved from http://files.eric.ed.gov/fulltext/ED451998.pdf

Mokher, C. (2011). *Aligning career and technical education with high-wage and high-demand occupations in Tennessee* (REL 2011–No. 111)*. Retrieved from U.S. Department of Education, Institute of Education Sciences Web site: http://ies.ed.gov/ncee/edlabs/regions/appalachia/pdf/REL_2011111_sum.pdf

Mokher, C., Lee, S., & Sun, C. (2015). *Preliminary findings from impact and implementation analyses of the northeast Tennessee i3 consortium*. Retrieved from CNA Web site: https://www.cna.org/CNA_files/PDF/IRM-2015-U-2015-009660.pdf

Mokher, C., Sun, C., & Pearson, J. (2015). *The CTE equation in Tennessee*. Retrieved from CNA Web site: https://www.cna.org/cna_files/pdf/CIM-2015-U-011930.pdf

Obermiller, P. J., & Couto, R. A. (2004). Appalachia counts: The region in the 2000 Census: Introduction. *Journal of Appalachian Studies*, *10*(3), 245-254.

Pollard, K., & Jacobsen, L. A. (2011). *The Appalachian region in 2010: A census data overview*. Retrieved from Appalachian Regional Commission Web site: http://www.arc.gov/research/researchreportdetails.asp?REPORT_ID=94

Pollard, K., & Jacobsen, L. A. (2014). *The Appalachian region: A data overview from the 2008-2012 American Community Survey*. Retrieved from Appalachian Regional Commission Web site: http://www.arc.gov/assets/research_reports/dataoverviewfrom2008-2012acs.pdf

Rural Policy Research Institute. (2014). *2014 regional working group priorities: Final report to the Executive Board.* Retrieved from Shaping Our Appalachian Region Web site: www.soar-ky.org/sites/default/files/SOAR-Rupri-FullReport-092314.pdf

Rural School and Community Trust. (2014). Place-based learning offers a variety of resources. *Rural Policy*

Matters. Retrieved from http://www.ruraledu.org/articles.php?id=3217

Salant, P., & Kane, S. (2007). *An evaluation of the Southern Rural Community College Initiative (2002-2007)*. Retrieved from Mississippi State University, Southern Rural Development Center Web site: http://srdc.msstate.edu/rcci/files/rcci_prog_evaluation.pdf

Snyder, T. D. (2007). The Webster County blues: An exploration of the educational attitudes of a poor Appalachian community. *Community Literacy Journal*, *2*(1), 91-105.

Wallace, L. A., & Diekroger, D. K. (2000). *The ABCs in Appalachia: A descriptive view of perceptions of higher education in Appalachian culture*. Paper presented at the annual conference of the Women of Appalachia: Their Heritage and Accomplishments, Zanesville, OH. Retrieved from http://files.eric.ed.gov/fulltext/ED464796.pdf

Wilson, S. & Gore, J. (2009). Appalachian origin moderates the association between school connectedness and GPA: Two exploratory studies. *Journal of Appalachian Studies*, *15(*1), 70-86.

Wright, C. J. (2012). Becoming to remain: Community college students and postsecondary pursuits in Central Appalachia. *Journal of Research in Rural Education*, *27*(6), 1-11. Retrieved from http://jrre.vmhost.psu.edu/wp-content/uploads/2014/02/27-6.pdf

Ziliak, J. P. (2007). *Human capital and the challenge of persistent poverty in Appalachia*. Retrieved from http://files.eric.ed.gov/fulltext/ED505652.pdf