

The Importance of Developmental Education in Rural Communities



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Abstract

American colleges have employed some degree of remedial education since their earliest days. In recent decades, the body of research on remedial or developmental education has expanded considerably, but the literature about developmental education in rural communities remains quite sparse. This paper examines this topic and asserts the importance of these learning opportunities in rural areas. A brief history of education in rural communities is presented, followed by an examination of current research on developmental education in these places and an exploration of the value developmental programs can have for education and training, employment and economic development, and personal health in rural communities. What becomes evident is that there are limited data available to study developmental education in rural communities, particularly outside of formal degree programs, and this, in turn, greatly limits the ability to conduct robust and impactful research. The paper concludes with key considerations regarding policy, research, and practice for those wishing to improve developmental education in rural communities.

Introduction

In some form or another, developmental or remedial education has existed since the early years of higher education in the United States. Early colonial colleges, where instruction was often conducted in Latin, would provide remediation for students who were not proficient in the language of instruction. Following the Revolutionary War, newly independent states began founding new colleges; however, because state support for these colleges was inconsistent or nonexistent, the ability to pay tuition was the primary admissions requirement and resulted in a number of students being underprepared for collegiate study (Boylan & White, 2014). The University of Wisconsin combatted the under-preparedness of students by establishing a preparatory department in 1849 that functioned in a manner similar to developmental education as it has come to be known today (Brier, 2014). Following the World Wars, postsecondary educational institutions experienced explosive enrollment growth, and community and junior colleges were founded at an unprecedented rate. This growth increased access to higher education, but also increased the need for colleges to provide learning assistance services to support a more diverse student population with more diverse academic preparation (Arendale, 2014). By the end of the twentieth century, the field of *developmental education* had been formally defined and was being conducted at many institutions across the country. Today, developmental education is practiced in some form at practically every community college in the country (National Center for Education Statistics [NCES], 2003).

The growth in developmental education corresponds with the broader expansion of educational opportunities in the United States. Although developmental

courses and services were available at rural colleges and universities, they were unavailable to rural students until they actually entered postsecondary education. Consequently, this expansion still left many rural Americans and communities behind. In places like rural Appalachia, high school graduation rates lagged behind the region and nation as a whole, with some rural counties having more than half their residents lacking a high school diploma (Couto, 1994). Educational opportunities were sometimes blocked by industrial interests (Duncan, 1999), and in the rural South, educational opportunities for African Americans were limited through *de jure* and *de facto* segregation (Bolton, 2000). These factors can be obstacles to gaining the basic skills and literacies needed to participate in modern society, especially as all industries become increasingly dependent on information technology. It is often overlooked that, despite their small size, rural communities are critically important to the United States, as these communities support the food, energy, and transportation infrastructures utilized by the entire nation. Therefore, it is essential to gain a deeper understanding of the role of developmental education in improving adult literacy skills and supporting economic development in rural places. This paper begins with a brief history of education patterns in rural communities, followed by a review of past research focused on developmental education in rural communities. Then the value of developmental education is examined, with a focus on education and training, employment and economic development, and personal health. The paper concludes by highlighting three key considerations when looking to improve developmental education in rural communities, including the pressing need for better data and more research on this subject.

Developmental Education, Adult Education, and Rurality

Before delving into these topics, a definitional note. When considering developmental education, ideally, it involves the integration of courses and support services governed by the principles of adult learning and development but, at most community colleges, it involves offering standalone remedial courses only loosely connected to support services (Boylan & Bonham, 2014; Grubb, 2013).

Alternatively, *adult education* more broadly encompasses the teaching and learning of adults in various settings. Of course, this can mean remedial instruction at a community college, but it also includes seminars on basic wellness, corporate training and development, community education or hobbyist courses, among many others (Knowles, Holton, & Swanson, 2012).

A great deal of adult education takes place in rural community colleges even though students in adult education programs still represent a relatively small percentage of the community population (Crandall, 2004). Both adult and developmental education co-exist and work collaboratively in many community colleges (Boylan, 2004). Because of their close linkage on a large number of campuses, the term “developmental education” is used in this paper to refer to both developmental and adult education programs. When we talk about the need for developmental education in rural areas, we are talking about access to courses designed to improve students’ basic skills either in adult education programs or curriculum courses. We are also talking about the integration of these courses with support services helping students adjust to college and understand the rules and expectations of academe.

This decision was made for two reasons. The first reason is of a functional nature; meaning, there are important adult education activities, such as learning to properly administer one’s own medication (Heathington, 1987), that may be less effective among populations with literacy issues or developmental education needs. Therefore, including these types of adult education issues under the same umbrella as developmental education maintains a strong conceptual connection while allowing for a slightly broader conversation. The second rationale is of a more practical nature, in that, the bodies of research on developmental education and adult education in/for rural communities are incredibly sparse on their own. Therefore, the literature search was expanded somewhat by including the aforementioned adult education topics that are not strictly about developmental education. However, this expansion was still constrained to research on activities that were at least impacted by developmental education needs, as opposed to adult education generally. This dearth of research on developmental education in/for rural communities, and especially developmental education not connected to a formal postsecondary credential program, is an issue that will be discussed in further detail later in the paper.

Historical Education Patterns in Rural Communities

Educational concerns in rural communities are especially pressing because of the way education intersects with employment, poverty, personal health, and many other life activities. When looking at education levels and attainment in these communities, rural-urban differences have been well documented. Using the kindergarten cohort of the Early Childhood Longitudinal Study, Durham and Smith (2006) found that there was a statistically significant relationship between early

literacy abilities and living in a non-metropolitan county. However, the direction and magnitude of the relationship varied based on socioeconomic status and ethnicity of the individual student, in addition to the economic conditions of the student's home county. Focusing specifically on the Appalachian region, Couto (1994) found that, in 1970, rural Appalachian counties had notably lower rates of adults who had completed high school compared to urban counties in the same region, as well as to the nation as a whole. These rates ranged from a low of 25.8% in rural counties in Central Appalachia to 47.9% in the rural counties of Northern Appalachia. By 1990, the share of rural Appalachian adults with a high school diploma had increased significantly, but still lagged behind urban areas and national figures (Couto, 1994).

Considering postsecondary education, Gibbs (1998) found that rural residence had a detrimental effect on attending college, even when controlling for individual and family traits, and this trend was confirmed by Adelman (2002) and Provasnik et al. (2007), who noted that rural students had the lowest postsecondary participation rates across several federal data sets. An analysis of data on a more recent cohort of youth uncovered that those from rural communities have decreased likelihood of attending any postsecondary institution for any amount of time, and that the benefits of higher socioeconomic status do not accrue equally for students from rural and non-rural communities (Koricich, Chen, & Hughes, 2018). In particular, this study found that increased socioeconomic status reduces the likelihood of first attending a two-year college versus a four-year college for all students, but this reductive effect is about 11 percentage points less for rural students, meaning that rural students do not enjoy the same effects of increased socioeconomic status. It should be noted,

however, that these outcomes do not tell the whole story. In fact, rural communities are exceptionally proficient at identifying and nurturing their most talented youth. The unfortunate implication of that nurturing, combined with limited postsecondary educational opportunities, is that many of these talented individuals leave for college and never move back, which causes a prolonged brain drain in the very communities that need an infusion of educated young people (Carr & Kefalas, 2009). These education patterns have historical roots in the years before and after the turn of the twentieth century. For example, because education represented a pathway to political change, coal operators and plantation managers attempted to intentionally limit educational opportunities in the mining towns that sprang up near mining operations, and even leading into the twenty-first century there were efforts to block literacy workers from reaching mine employees (Duncan, 1999). The rural-urban gap has closed over the years, especially with regard to high school graduation, but there remain rural communities across the country where high school graduation is not a given and adults still lack English and mathematical literacy skills. It is in these places where developmental education can make the greatest impact.

What We Know About Developmental Education in Rural Communities

An exhaustive review of the literature on rural communities and developmental education provides very little insight into the nexus of these two subjects. The previous section notes the education issues that are present in many rural communities, so it is somewhat surprising that there is not a corresponding body of research on how developmental education programs can serve, or have served, rural residents in the past. Of the research that does exist, much of the work focuses on

students from rural communities who take developmental education courses as part of their pursuit of a postsecondary degree. Given past work that shows rural youth are less likely to participate in any amount of postsecondary education (Koricich et al., 2018), focusing only on those who take these courses while seeking a degree omits a considerable number of rural residents who may not be pursuing formal degrees but still need access to developmental education to resolve specific literacy deficiencies. That said, there is still some insight to be gained when considering how rural students fare in developmental education as they pursue a degree.

Using data from the National Education Longitudinal Study of 1988, Adelman (1998) found that 40% of college students from a rural high school required some amount of remediation, compared to 38% of those from suburban high schools and 52% from urban high schools. These findings came from nationally representative sample of students, but a study by Hodara and Cox (2016) looked at developmental education and college readiness among students at the University of Alaska System institutions, specifically. According to the 2010 United States Census, Alaska is the most rural state both in absolute area and by percentage, with 95.5% of Alaska's area classified as rural (United States Census Bureau, 2015), making it an important case for examining rural education. When considering bachelor's degree aspirants, Hodara and Cox (2016) found that enrollment rates in developmental English courses were highest for Alaska Native students from rural communities, who participated in these courses at a rate 23 percentage points higher than that of Alaska Native students from urban communities (58% vs. 35%, respectively). Interestingly, White students from rural communities had the second-lowest participation rate in developmental English, with only their

counterparts from urban communities taking these courses at a lesser rate. With regard to developmental mathematics, Black students from urban areas had the highest enrollment rate, followed by Alaska Native students from rural communities. Other racial minorities from rural communities actually had lower participation in developmental mathematics than their counterparts from urban communities, and White students from rural areas had the lowest enrollment rate. These figures become more interesting when considering those pursuing an associate degree at a University of Alaska System institution. The developmental English placement rate for Alaska Native students from rural communities is actually lower than for their peers seeking a four-year degree. The study results also indicate a similar pattern regarding developmental mathematics (Hodara & Cox, 2016), but it is unclear as to why some rural populations have a lesser need for developmental education when pursuing an associate's degree versus a bachelor's degree.

Value of Developmental Education in Rural Communities

The earlier sections highlight the persistent educational obstacles that face many youth and adults in rural communities. Although these trends point to an issue of broader educational equity, public funding for developmental education programs—especially those at community colleges—is under strain (Lambeck, 2017; Smith, 2017). Also, although there is currently little research regarding developmental education in rural communities, there is reason to believe these programs hold considerable value in these places. As state legislatures continue to look to higher education funding as a means to balance difficult budgets, some have questioned the need for developmental education funding when this level of education was already funded at the elementary and secondary level (Boylan,

Bonham, & White, 1999). Boylan et al. (1999) note that this is a flawed argument, given that not all high school students take a college preparatory track. However, it cannot be overstated how critical developmental education is to opening up new opportunities for enhancing the type of human capital that builds stronger communities. The 2003 National Assessment of Adult Literacy (NAAL) measured the literacy skills of a nationally representative sample of 19,000 adults in the United States. When looking at a predominantly rural state with pervasive poverty, such as Mississippi, the data revealed a statewide adult illiteracy rate of about 15%. This number increases sharply, to as high as 30%, in the state's poorest rural counties (Mader, 2013). In communities with high adult illiteracy rates, there is considerable value to be realized through the accessible provision of developmental education offerings.

Education and Training

An immediate benefit for individuals who increase their verbal and computational literacy is that additional educational opportunities become more viable, and many of these opportunities would be considered adult education activities. For some, this means the ability to successfully complete a high school equivalency program. Other students would have the ability to enroll, and be successful, in vocational training to begin a career in the skilled trades or in employer-based training to advance at their current employer. And for others, this would be the beginning of longer academic pursuits that ultimately lead to a baccalaureate or graduate degree. If education is meant to be a social equalizer, then the importance of developmental education programs to improve rural literacy rates is clear. It also should not be ignored that there is a long tradition of research demonstrating that, on average, increased

education leads to higher individual earnings (e.g., Bahr, 2014; Dadgar & Trimble, 2014; Jacobson & Mokher, 2009), as well as broad benefits to society in the form of lower criminal activity, increased civic participation, and better personal health (Lavin & Hyllegard, 1996; McCabe, 2003). Gallard, Albritton, and Morgan (2010) conducted an analysis to understand the cost-benefit proposition of developmental education. Using findings from Robison and Christopherson (2003) regarding the annual societal benefit gain per associate degree graduate, Gallard et al. (2010) found that developmental education produces a 2,104% societal return on investment that comes in the form of reduced crime, increased earnings, and better personal health, among other things. Given the persistent poverty in a number of rural communities, even a modest incremental increase in individuals' education levels could have considerable positive impact.

At its core, developmental education is key to expanding educational opportunity, because those who lack sufficient language and computational literacy will quickly be limited with regard to the complexity of subjects that can be studied. However, the research on the effects of developmental education on other postsecondary educational pursuits paints a murkier picture. There is an existing body of work that has found developmental education to actually decrease the chances of completing a postsecondary degree (Hawley & Chiang, 2017), among other non-ideal educational outcomes, but a number of these assertions overlook the practical role and function of developmental education, especially to adults who lack adequate literacy skills. Some studies have asserted that developmental courses are ineffective because they do not cause their participants to outperform students who did not need remediation in the first place (e.g., Calcagno & Long, 2008; Martorell & McFarlin,

2011); however, Goudas and Boylan (2012) refocus these interpretations to highlight that these same studies demonstrate that developmental education appears to be successful in getting students to perform equal to non-remedial students in gatekeeper courses. A study of 28,000 college students revealed that those who participated in remediation were more likely to persist in college and more likely to transfer to a higher-level institution compared to students with similar test scores who did not participate in remedial programs (Bettinger & Long, 2009).

Considering credential completion, developmental education appears to offer some benefit. In an older study, Bettinger and Long (2004) found that, although participation in developmental mathematics can influence transfer or drop-out patterns, it does not necessarily lower the likelihood of completing a bachelor's degree; however, it does increase the amount of time needed to finish the degree. In their 2009 study, Bettinger and Long found that participation in remedial education appeared to increase the likelihood of completing a bachelor's degree, compared to students with similar test scores who were not required to take remedial coursework. Attewell, Lavin, Domina, and Levey (2014) found that taking a remedial course at a community college does not, in itself, reduce the chances that a student will complete a two-year or four-year degree, but those who take the course at a four-year college do experience decreased likelihood of completing a bachelor's degree. This same study found that students who took a developmental reading course were more likely to graduate than were otherwise equivalent students who did not complete such a course (Attewell et al., 2014). The work of Adelman (1998) also provides a valuable perspective: students in this study who did not take remedial courses had a 60% graduation rate compared to 35% for those who took at least five remedial

courses, meaning that even those needing the most remediation were able to achieve a graduation rate 58% of that for those needing no remediation at all. The alternative for those degree-completers who took five or more classes, had they not undertaken remedial coursework, would likely have been a 0% graduation rate (Merisotis & Phipps, 2014).

Furthermore, the position of Bailey, Jagers, and Scott-Clayton (2013) that developmental education participants should perform better in gatekeeper academic courses than their non-remedial peers does not acknowledge that increased literacy makes possible a number of non-credit education and training opportunities that can be particularly relevant in rural communities. This is an important point and one that is often missed in the discussion of developmental education's impact. Little research critical of developmental education follows students through the entirety of their careers to understand whether students do ultimately get credentialed, which is needed to account for inconsistent enrollment patterns and gaps between schooling, nor do these works consider incremental employment gains as a result of increased literacy or non-credit instruction. Additionally, studies that focus on postsecondary educational outcomes, such as persistence, transfer, and completion, do not account for those who access developmental education outside of a formal degree or credential program with no intention of pursuing one. Notably, neither critical nor commendatory studies focus specifically on a rural context to understand whether their findings apply to populations with high poverty, lower population density, and a diversity that is often overlooked (Koricich, 2012).

For example, in rural areas, the boom-and-bust nature of various resource

extraction industries can leave residents unexpectedly looking for new employment (Brown & Schafft, 2011; Stoll, 2017), which can often necessitate the development of new skills. Therefore, many workers, displaced or otherwise, turn to rural community colleges for the non-credit instruction that can provide skills for new employment opportunities (Chesson & Rubin, 2003), and access to these lifelong learning opportunities is limited for individuals lacking the English and/or mathematical literacy to understand and master more complex subjects. As such, it should be a priority for rural municipal and state governments to promote literacy and developmental education as a pathway into new learning and training opportunities that can improve economic circumstances for the individual, as well as the community at-large.

Employment and Economic Development

Before highlighting the value of developmental education in improving employment and economic development in rural communities, it is important to have context around rural economies. Across a number of indicators, non-metropolitan counties across the country face greater socioeconomic struggles than metropolitan counties, acknowledging that a metro/non-metro scheme does not perfectly align with urban/rural definitions. The United States Department of Agriculture's Economic Research Service (USDA-ERS) periodically publishes County Typologies

that classify all counties in the U.S. by a number of industrial and socioeconomic factors, with breakdowns between metropolitan and non-metropolitan counties. A look at the most recent classification can be found in Table 1, which contains a breakdown of county-level socioeconomic indicators by metropolitan status.

This table shows that non-metropolitan counties are facing considerably greater socioeconomic struggles. The prevalence of all indicators is more than twice as concentrated in non-metropolitan counties as compared to metropolitan ones, and these differences have practical implications for education, employment, and economic development. The USDA-ERS (2017) data show that more than one-quarter of non-metropolitan counties have a considerable child population living in persistent poverty, and more than one-third of non-metropolitan counties are plagued by low employment. These figures highlight the critical need for improving local education levels by any amount so as to lead to better employment opportunities that can, over time, combat persistent poverty, unemployment, and population loss. Against this backdrop, it is difficult to argue against the value that developmental education can add to rural communities, even when disjoined from formal degree programs.

One of the primary benefits of utilizing developmental education to improve rural literacy rates is that there are a

Table 1 – County-Level Socioeconomic Indicators by Metro/Non-Metro Status

Socioeconomic Indicator	Metropolitan (N = 1,167)	Non-metropolitan (N = 1,976)
Low education	100 (8.5%)	367 (18.6%)
Low employment	186 (15.9%)	720 (36.4%)
Population loss	62 (5.3%)	467 (23.6%)
Persistent poverty	52 (4.4%)	301 (15.2%)
Persistent child poverty	150 (12.9%)	558 (28.2%)

Source: USDA-ERS County Typologies (2017)

number of likely economic benefits to the individual and the community. For individuals, increased literacy in reading, writing, and math can open up new employment opportunities, especially as it enables the individual to better complete the application and interview process (Heathington, 1987). Kirsch, Jungeblut, Jenkins, and Kolstad (2001) found that lower levels of adult literacy can lead to fewer work hours, more frequent unemployment, and lower wages when compared to adults with higher literacy. As the national economy continues to shift toward service and technology industries, even in areas such as advanced manufacturing, the number of jobs available to individuals lacking adequate English and mathematical literacy will continue to decline. Some research has found that completing developmental education courses does not have a significant effect on earnings (Martorell & McFarlin, 2011); however, such studies overlook the financial realities of going from lacking basic literacies to having attained them, such as being able to access consumer credit, apply for jobs, or complete reports and forms. Furthermore, researchers have discovered that taking developmental reading and writing credits contributes to increased employability and earnings (Hodara & Xu, 2016).

It must also be noted that improved financial circumstances do not always come in the form of wages; they can also come in the form of better medical benefits that reduce out-of-pocket expenses or as increased job-scheduling flexibility that can reduce childcare costs. As increased literacy opens up new employment opportunities, individuals may improve their personal financial situation even without a significant increase in hourly wage. Duncan (1999) documented life in three very different rural communities, and a theme common across contexts was that residents saw illiteracy as

a significant barrier to employment, with a number of individuals who were illiterate having to rely upon public assistance in the absence of employment.

Considering economic development more broadly, the Great Recession provides some useful insight into the importance of improving basic education and literacy skills in rural communities. This recession from 2007 to 2009 saw non-farm employment positions decrease by 6.3%, and it took about five years after the official end of the recession for these jobs to reach their pre-recession levels (Hertz, Kusmin, Marré, & Parker, 2014). Rural communities across the country were hit hard by this downturn, although the effects were not felt equally across regions. States in the northern Great Plains fared better during the recession, in part, because of a slightly higher proportion of college-educated residents in the average county in those states (Hertz et al., 2014). This trend emerged among non-metropolitan counties across the country, wherein those with a higher proportion of college-educated residents saw the greatest job growth during the recovery period. Given these connections, it seems logical that improving literacy rates and providing other relevant postsecondary educational opportunities can act as a buffer during future periods of economic turmoil.

There is also an important connection to make between improving developmental education in rural communities and the growing skilled-labor shortage playing out across the country. It appears that these shortages are most acute in *middle-skill* occupations, which require some postsecondary training but less than a bachelor's degree. Such middle-skill occupations facing labor shortages include construction (inclusive of carpenters, plumbers, electricians, masons, etc.), advanced manufacturing, and computer/network technicians (Kochan,

Table 2 – County-Level Industry Indicators by Metro/Non-Metro Status

Industry Indicator	Metropolitan (N = 1,167)	Non-metropolitan (N = 1,976)
Farming-dependent	53 (4.5%)	391 (19.8%)
Mining-dependent	37 (3.2%)	184 (9.3%)
Manufacturing-dependent	153 (13.1%)	348 (17.6%)
Government-dependent	168 (14.4%)	239 (12.1%)
Recreation-dependent	104 (8.9%)	229 (11.6%)
Non-specialized	652 (55.9%)	585 (29.6%)

Source: USDA-ERS County Typologies (2017)

Finegold, & Osterman, 2012; West, 2013). Fields such as medical/lab technician, nurse assistant, rail transportation, and machining are projected to be especially vulnerable to the aging of the Baby Boomer generation (Levanon & Erumban, 2016). Labor demand in the medical field is projected to increase as Baby Boomers require greater amounts of medical care, whereas rail transportation and machining are impacted by their aging workforce coupled with traditionally low numbers of new workforce entrants. There are also serious concerns regarding an aging agricultural workforce that also lacks the necessary infusions of new workers and how a labor shortage would impact food infrastructures (West, 2013). Although labor supply-demand gap estimates range in size, predictions indicate labor-supply shortages totaling in the millions, which will have a constricting effect on national economic growth (Levanon & Erumban, 2016).

One strategy for combatting these shortages is to make postsecondary training opportunities possible for those who would otherwise be unable to participate, including those in need of developmental education courses. The middle-skill jobs noted above do not require four-year degrees, but the vocational training needed to secure these jobs still requires a level of language and computational literacy that some residents in rural communities may lack. By offering developmental education courses either separate from a formal credential program or

co-curricularly with vocational training, rural residents with lower literacy can take the first steps toward filling much-needed job vacancies.

Table 2 uses USDA-ERS county data to show the difference in local industry structure between metropolitan and non-metropolitan counties. When reviewing this table, a few important points emerge. First is that non-metropolitan counties are economically specialized to a much higher degree than metropolitan counties, with nearly 56% of metro counties being non-specialized, compared to just 30% of non-metro counties. This difference is meaningful because economies are like investment portfolios: diversity serves as a buffer during downturns. Locales that are supported by one primary industry are highly susceptible to the boom-and-bust cycles that have been common in rural areas. When viewed against the backdrop of middle-skill labor shortages, it would appear that rural places are poised to capitalize on labor demand increases in agriculture and manufacturing if residents can be adequately skilled. Of course, the corollary to this is that, if rural communities do not provide appropriately skilled workers, they are vulnerable to employers relocating to areas where skilled labor is more readily available.

Research connecting developmental education to labor market outcomes is sparse. Hodara and Xu (2016) present

perhaps the most robust study of this relationship and find that completing developmental English increases earnings by way of increasing the likelihood of employment. This effect is largest for those who do not ultimately complete a credential, which supports the idea that developmental education can yield economic returns absent a formal credential. This same study found negative labor market returns to developmental math, but the authors connected this to the greater opportunity costs associated, especially for older students and those students in need of the most remediation. This longer time in developmental math increases forgone earnings and decreases long-run earnings by limiting the accumulation of work experience (Hodara & Xu, 2016). Taken as a whole, most of the research on the labor market returns of developmental education faces a severe limitation in that the analytic samples focus on traditional-age undergraduate students (see Bettinger & Long, 2009; Caclagno & Long, 2008; Martorell & McFarlin, 2011). Because adult students also need developmental education opportunities, particularly those not connected to a formal credential program, there is much that remains unknown about the potential benefits developmental education may afford older students.

Personal Health

Finally, with regard to personal health, research has shown that adults with lower literacy face challenges in accessing health services and taking medications properly (Heathington, 1987). This extends to having poorer overall health, as well as being more likely to lack health insurance and work in hazardous jobs (Baker, Parker, Williams, Clark, & Nurss, 1997). Given higher rates of chronic illness and adult illiteracy, these concerns are greatest among older individuals (Baker et al., 2002). In a study of older patients, Preston (1995)

concluded that greater than 40% of participants were unable to read instructions for medication, and significant percentages were unable to understand or complete various medical forms. Overall, this creates greater social costs, as the cost for the public health services more likely to be used by low-literacy adults is typically higher than through private healthcare services (Baker et al., 2002). It is also possible that increasing literacy among older adults can serve as a buffer to diseases such as Alzheimer's (Fotuhi, 2003). Therefore, the availability and affordability of developmental education programs at rural community colleges should be a key strategy in reducing illiteracy and its effects among older individuals in these communities.

Key Considerations

When taken as a whole, the preceding sections demonstrate that the provision and efficacy of developmental education in rural communities are not well-understood. From this discussion emerge three key considerations regarding the improvement of developmental education in these places. Those involved with designing and delivering developmental education programs must consider how the specifics of the rural context correspond to curricular and instructional approaches, and it is critical for state legislatures to appropriate adequate funding to deliver effective developmental programming. Finally, this paper highlights the severe lack of public data available to conduct high-quality research that accurately describes the value and efficacy of developmental education across geographic contexts.

Aligning Developmental Education with the Rural Context

One important consideration when delivering developmental education programs in rural communities is to find

ways to connect the education to the community. Rural communities are home to historical sites, state and national parks, farms, shorelines, forests, and more, creating opportunities to bring classroom instruction into the students' daily lives. In essence, the community becomes a "learning laborator[y] for the local school" (Bauch, 2001, p. 216). Research examining a summer literacy program in West Virginia schools notes how the specifics of an individual rural community shape the way the program is implemented, in an effort to be most effective (Butera, McMullen, & Phillips, 2000). This notion of connecting curriculum and pedagogy to the local community has conceptual ties to connecting developmental education content to related academic or vocational disciplines, or contextualization.

Boylan (2002) noted a growing trend in which developmental education was being integrated into community and workforce education programs as a means to better link developmental content with subjects most relevant or important to adults in the community. Perin (2014) asserts that contextualizing developmental education content within the academic or vocational subject matter can promote better learning and transferability of knowledge and skills. In the context of laboratories, developmental education passage rates were higher when the classrooms and laboratories were fully integrated (Boylan, Bonham, Claxton, & Bliss, 1992; Boylan & Saxon, 1998), which also underscores the value of practical application in improving outcomes. Chesson and Rubin (2003) note that literacy programs taught within vocational instruction that articulates to a degree-granting program makes it easier for students who complete remediation to continue with their formal education. This is confirmed with the example of the Integrated Basic Education and Skills Training (I-BEST) program that was

implemented at community and technical colleges in Washington State with the purpose of improving success rates of adult basic skills students as they pursue postsecondary vocational and occupational training. Students who participated in the I-BEST program had increased persistence and credential completion compared to adult basic skills students who had non-contextualized instruction (Jenkins, Zeidenberg, & Kienzl, 2014). Such strategies can be essential in rural communities, whose young people will sometimes forego completing high school or attending college because they do not see how the knowledge is relevant in their everyday lives (Corbett, 2007).

State Funding

Another important note is one of state funding. If improvements are to be made to developmental education opportunities in rural communities, it is imperative that states reaffirm their support of these efforts (Chesson & Rubin, 2003). Some states place such value on these educational activities that they actually fund developmental education at a higher rate than that of general education. Most states, however, have reduced their financial commitment to postsecondary education, thus creating a particular burden for low-income, rural students (Mortenson, 2012), and this has been especially true regarding developmental education. In 2017, Florida legislators proposed a \$30 million cut in state funding for developmental education programs at community colleges (Smith, 2017). In the same year, the Connecticut General Assembly passed a budget that would eliminate developmental education courses within the Connecticut State Colleges and Universities System and cut \$93 million in state funding to the system over a two-year period; however, the proposed budget sparked a partisan battle between the legislature and the governor

(Lambeck, 2017). These are not the only states to attempt limiting funding for developmental education. Turk, Nellum, and Soares (2015) note that, between 1995 and 2015, at least seven states enacted legislation that limited state support of developmental education programs.

The irony of such cuts, of course, is that they are occurring at the same time as increased calls for improved student outcomes, including persistence and credential completion. Essentially, colleges are being asked to accomplish more with less, which has become the new normal for many public institutions in recent years. Perhaps the most troubling aspect of these cuts is that they can disincentivize developmental educators and program administrators from designing or implementing new curricular or instructional approaches that could benefit students. Furthermore, it is crucial bear in mind the diversity of rural communities. Koricich (2012) underscores the diversity of these places that can be summed up best by a quote from distinguished rural scholar, Daryl Hobbs, “When you’ve seen one rural community, you’ve seen *one* rural community” (Swanson & Brown, 2003, p. 397). Therefore, it is critical that developmental education innovations be fostered at the local level. For example, in Mississippi, developmental educators note the value of one-on-one tutoring, especially when working with students who have the greatest literacy deficits. However, some colleges must rely on volunteer tutors to work with these students, and these volunteers can be hard to come by. The end result is colleges having to turn away adults who wish to improve their literacy skills (Mader, 2013). This is just one example in one state of how insufficient state support of developmental education leaves some adults unable to get the literacy instruction they desperately need and want.

The Need for Better Data and More Research

The most-concerning takeaway that became apparent through the writing of this paper is that there is a dire need for better public data regarding developmental education, which then enables higher-quality scholarship in this area. It is crucial to achieve a better understanding of developmental education programs, curricula, and outcomes writ large, but especially for rural communities. With regard to available data, some proprietary data sets capture developmental education data as part of broader community college research initiatives, but this fails to include students in developmental education programs at four-year colleges (including individuals who do not have access to a public community college for these remedial opportunities). The United States Department of Education also provides state-level reports on the status of adult education through the National Reporting System (available at <http://www.nrsweb.org>), but these reports do not allow for greater segmentation by locale and other factors.

In the past, the National Center for Education (NCES) statistics has produced data sets that focus on adult literacy. In 1992, the National Adult Literacy Survey (NALS) surveyed a nationally representative sample of 13,600 individuals age 16 and older regarding literacy skills, demographics, and other relevant areas. This survey also included 1,147 federal prison inmates and included state-level surveys for 11 states administered to 1,000 respondents. (NCES, 2001). The next NCES study regarding adult literacy came two decades later, in 2003, with the previously mentioned NAAL that surveyed 19,000 individuals in a nationally representative sample. NAAL included assessments of three types of literacy and

also included demographic and geographic information (NCES, 2009). NCES collected data on adult education as part of the National Household Education Survey (NHES) in 1991, 1995, 1999, 2001, 2003, and 2005, and these surveys did collect some useful information about adult basic skills course-taking, English as a second language course-taking, and alternative high school diploma completion. However, the NHES did not include adult education in the 2007 and 2012 data collections (NCES, 2018). The 2016 NHES included the Adult Training and Education Survey, but a review of the public-use data codebook indicates that developmental or remedial education may not have received any greater attention in this round of data collection.

Beyond these previous adult literacy studies, NCES produces a number of large, comprehensive data sets covering elementary, secondary, and postsecondary education. Many studies are longitudinal and follow students for a number of years to collect very rich data. However, there appear to be some gaps with regard to detailed data on developmental or remedial education. There is considerable opportunity to design studies focusing more deeply on this type of education. Survey administration to respondents with low literacy would be expensive and time-consuming, but their responses would represent an important component of a longitudinal study that focuses exclusively on developmental education and adult literacy in the U.S. Such a study could be structured over a long enough period of time to perhaps capture postsecondary credential completions that occur many years after passing a developmental education course, as well as labor market outcomes, which may give a better picture of developmental education's impact on educational and employment outcomes over the life course. It would also be possible to place students geographically to better understand the

efficacy of developmental education in rural, urban, and suburban communities.

By making better and more comprehensive data available, it becomes possible for researchers to design and execute studies on developmental education that are more inclusive of the various ways in which students access developmental education, as well as conduct more granular analyses by locale and other important characteristics. It is likely that part of the reason some states are disinvesting in developmental education is because the research that exists has reached mixed conclusions. Increasing the overall body of research in this area, as well as the complexity within it, will provide a more complete and accurate picture of how developmental education improves educational and labor outcomes, personal health, and many other aspects of life. This additional research can build upon structural, curricular, or funding elements that prove effective in certain institutional, geographic, and cultural contexts. By conducting and disseminating more research in this area, influence is diluted for the handful of recent studies that have had an outsized effect on public and professional perceptions of developmental education, its efficacy, and its critical import in communities across the country. In the end, instructors, administrators, potential students, lawmakers, and the public would have a clearer picture of the importance of developmental education in their communities and, perhaps, in their individual lives. However, research can only be as good as the data available, meaning that the creation of data sets about adult literacy and developmental education is of critical importance.

Conclusion

Taken as a whole, the information presented above reveals a complex picture.

The need for developmental or remedial education in rural communities has been necessitated by decades of exploitation by corporate and political interests, and the value of developmental education in these communities is clear, especially as rural economies continue to shift in directions that will necessitate greater literacy skills. One of the key obstacles to improving and understanding the role of developmental education in these places is the limited research base upon which conclusions have been drawn in the past. The research that does exist does not capture the long-term effects of developmental education that accrue throughout the life course or the benefits experienced by communities at-large when citizens increase their literacy skills. Research has documented the societal benefits of increased education, usually in the form of degree-completion, but there is little work noting the effects of improved adult literacies. In order to right past wrongs that took the form of deprived opportunities and corporate exploitation, as well as position rural regions for better adaptability to future economic changes, it is critical to have the ability to understand how developmental education improves rural communities and the lives of rural residents. Such limitations in the literature are due, in large part, to concordant limitations in

available data, and, so, the key takeaway of this examination is the need to build better state and federal data sets that can be used to answer questions about developmental education. If investments are made to support expanded data collection and research in this area, it will be possible to understand the critical role developmental education plays in rural communities, as well as the instructional and curricular practices that best meet the needs of rural learners.

In addition to being home to nearly 20% of the United States' population, rural communities are the backbone of many critical national infrastructures, including food, energy, and transportation. It will be necessary to ensure a higher level of basic skills for adults in the communities that support these industries, as they are continually evolving through technological advances. Because rural places support the people and economies in major cities across the country, and it is incumbent upon elected officials, educators, administrators, and the general public to advocate for their revitalization. It is not only the right thing to do, it is the necessary thing to do for our shared prosperity in the future.

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