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Case Study Two
DPP 902
May 2, 2017

Abstract

Most people recognize the positive power of higher education to transform lives, and many people strive to attend college. Yet, many college students lack the academic readiness to complete regular college classes so they are offered non-credit coursework instead. This paper examines some of the economic impacts on earnings that these classes create for community college students, particularly in the context of opportunity costs and student loan debt, create for community college students. It proposes that post-secondary community college courses should be better aligned with employment needs.

Keywords: community college, developmental education, earnings, income, poverty trap

I. Intro

Research from multiple sources suggests that between 40 to 66 percent of students entering college are not academically prepared for college-level work (Wellman & Vandal, 2011, p.12; Hodara & Xu, 2014, p.1). Holschuh and Paulson (2013) stated that the number for community college students is closer to 75%. Many of them attend special classes to boost their ability to do college-level work and hopefully improve their odds of graduating. In spite of the high number of students enrolling in special readiness classes, only about twenty percent pass the various benchmarks and tests that admit them to regular college courses, and an even smaller number graduate (Mangan, 2017). Hodara & Xu observe that since so many of the students drop out, for many these are the only postsecondary classes they will attend (p.1).

College readiness courses are often called developmental education programs. They are typically tuition based non-credit bearing courses used by post-secondary institutions to remediate knowledge gaps in their students. The students attending these are not likely to attain a degree; one study found that only 15% of students who took a developmental education class earned an associate's degree (Hodara & Xu, 2014, fig. 2, p.13). They also are more likely to lag behind their more credentialed contemporaries in income. Data from the Bureau of Labor Statistics (2016) shows that that people who attain an associate's degree earn eighteen percent more money than people with only a high school diploma. The same data found that there is a smaller increase for people who have some college, but no degree. However, this rise is not entirely present for persons who did not take traditional college classes, but took Dev. Ed. courses instead.

This paper will review the current state of developmental education offerings and reform efforts. These will be reviewed in the context of current employment trends. It will look at how well developmental education programs are aligned with the skills that are needed in the workplace. The research examined will look at the effect of

developmental education on income, when the typical outcome is to drop out before completing a degree. The possibility of a poverty trap created by college loans combined with low wages due to lack of educational attainment will be explored. It is important to understand whether or not having some college education is enough to significantly lift incomes, or do those who graduate only realize this gain. This paper will attempt to answer the question of whether or not students who take developmental education classes are typically behind their peers in terms of accumulating assets such as a house or a car that would enable them and their families to take advantage of economic opportunities versus those who did not attend college. It will also explore whether or not developmental education classes cause a positive or negative impact on earnings

A study will be proposed incorporating some promising new practices for support while better aligning curriculum with employment needs. The study will replace some of the traditional remedial work that is typically offered in developmental education with a more intensive support system, instruction in time management, and targeted computer skills that are often highly sought by employers. The study will be in the form of a Random Control Trial (RCT), and will examine outcomes for individuals placed in the new program versus those that take traditional developmental education classes.

II. Background & Literature Review

Higher education experts and policy makers have been trying to raise graduation rates for college students who start in developmental education classes. However, as noted above these efforts often fall short. This is due to several factors including a lack of appropriate instruction.

Developmental reading instruction is inadequate in that it tends to focus on broad-based strategies, rather than a discipline specific approach. Reading remediation has a long history in higher education in the United States. Holschuh and Paulson (2013) noted that the problem has existed since the nineteenth century, with some schools having more students enrolled in developmental reading programs than in regular college-level classes (p.3). The authors describe a mid twentieth century reading program and note that while advancements have been made, the pedagogy involved still resembles what is being offered today (p.7). Although a more formal analytic approach has been taken since the 1950's (p.4), much of what is being used is not supported by quantified data attesting to its effectiveness (p.5). One persistent idea is that students who cannot read at a college level need to be retaught to read (p.11) rather than learn new strategies entirely (p.7).

Developmental math instruction is also often criticized as being overly remedial and lacking in context (Grubb 2013, p.50, 52). Hodara & Xu (2014) found “a consistent negative impact of developmental math on wages” (p.3). Some of their findings point to a mismatch of topics covered and employer demand, noting that algebra was heavily emphasized while statistics would have benefitted the students more, particularly those planning on matriculating into liberal arts programs (p. 26).

The outcomes for students who take developmental education classes are varied. One study (Chen, 2016) showed that students taking developmental math tended to go on to complete more college level credits than students who did not take any developmental classes (vii), but this gain dissipated when regular students were compared to those who took only a few developmental classes (viii). In other words the difference was mainly

noted for students who needed the most remediation. By contrast Hodara & Xu (2014) showed that coursework in developmental English increased the likelihood of being employed, but developmental education in math had either no effect or a negative one (p.22). Another theme explored by Hodara & Xu was the opportunity cost for students. Opportunity cost is when time or money is committed to a particular activity or investment causing someone to miss the chance to join other more profitable ventures. For the students their time and money was tied up in tuition and class time. Hodara and Xu found that the longer the students stayed in developmental classes they experienced zero and even negative returns based on time lost in the labor market (p.4).

Reform

A movement for reform is underway. Several large non-profit organizations such as the Gates Foundation have launched a \$35 million program to improve degree attainment for community college students (Gatesfoundation.org, 2014). The Lumina Foundation has partnered with Kahn Academy to reform developmental math education with the stated goal of increasing the number of Americans with post-secondary credentials by 60 percent by 2025 (Harney, 2012a). Another multi-state initiative, The Center for Analysis of Postsecondary Education and Employment, funded by the Department of Education and led by Columbia University, is set to conclude a six-year study period on outcomes in April 2017 (Capsee.org).

There are a few promising models for reform. The changes seem to be focused on how the classes themselves are offered. Classes are sometimes accelerated so that they can be completed more quickly, at some schools they are taken in the same semester as credit bearing classes, and even made optional at others. These ideas might produce some interesting results. A shorter, more intense period of developmental education might sustain motivation and the compacted nature of it might provide for a more immersive remediation process. Taking developmental and regular college classes simultaneously might provide context that is otherwise missing from the standard model. Frequently called co-requisites, this idea is being adopted by the City University of New York (CUNY), and is already in use in Tennessee public colleges (Harris, 2017). Bunker Hill Community college in Boston offers courses in clusters; students earn credits for multiple classes from one multi-disciplinary themed bundle (Mangan, 2017). Making the classes optional is an interesting idea since there seems to be some agreement that students are already not always properly placed (Hodara & Xu, 2104, p.5; Chen, 2016, p.vi; Mangan 2017). In 2013 the state of Florida passed a law stating that students who earned a regular high school diploma can skip the classes (O'Connor, 2013). A statewide policy that affects a large number of people provides an opportunity to examine how effective this strategy is.

Other interventions include offering a better support structure to the student. It is noted that community college students are often the most likely to be in need of developmental education (Holschuh & Paulson, p.4), and that they are also the most likely to be lower income adults whose personal lives and other obligations often interfere with their plans for college (Mangan, 2017). Support interventions? typically include mentoring and frequent check-ins with an advisor, but some schools such as LaGuardia Community College in New York are extending the support system to include

“more tangible benefits, such as access to food pantries, textbook subsidies, and bus passes” and have seen a positive impact on graduation rates (Mangan, 2017). A nascent philosophy in these types of programs recognizes the role that behavioral economics plays in the temporal discounting that occurs when students have to make difficult financial decisions, and to fold life and time management lessons into the advising structure.

At a 2012 conference held by the New England Board of Higher Education college presidents described using various means to improve degree completion. At Housatonic College in Connecticut, students are offered an online math refresher course and then allowed to retake the entrance exam. After the refresher, 69% placed into regular education classes (Harney, 2012). Others are based on strategies from behavioral economics. Mount Ida College in Boston added financial literacy to their developmental math curriculum to make it feel less like a high school math class (Harney, 2012). They also use a commercial solution called Persistence Plus that describes itself as bringing “the idea of the nudge...to higher education” (Persistence Plus). Harney (2012) described the model being used by Persistence Plus as being similar to Weight Watchers and students are encouraged, or nudged, to meet their goals via their smartphones. In a letter to the New York Times, the president of Persistence Plus, described a random control trial (RCT) that showed a four to nine percent increase in persistence rates for adult learners who received nudges on their cell phones versus ones who did not. (Frankfort, 2017). Several schools have partnered with the Cambridge, Massachusetts company, but anyone can use a version of it through a free website called Collegepoint that is funded in part by Bloomberg Philanthropies.

Taking a cue from marketing science is a smart idea. For two of the schools compared above the difference in the results are obvious. Google searches reveal that Mount Ida Colleges has a graduation rate of 40 percent, while Housatonic’s is less than ten. Making use of automated nudging could also help solve an ongoing problem with interventions at many schools, that students often do not make use of them. Sometimes this is because the schools do not do not have enough counselors to help (Mangan, 2017). Phoenix College in Arizona addresses this problem in a low-tech way by training and employing student mentors to proactively reach out to students (Mangan 2017).

Reform should also include recognition of the changing nature of the job market. Developmental education is in many ways out of synch with marketplace needs. There is ample evidence of demand for workers with mid-level skills, defined as jobs requiring more than a high school diploma but less than a traditional four-year degree. A 2010 report on the state of Massachusetts found that while 45 percent of all jobs are classified as mid-level, only 32 percent of the state’s workers had the requisite skill set (New Report, 2010).

Application of Economic Theory

Many students borrow to finance their education. Of these many will leave school with debt before they attain a degree or credential. One analysis showed that households with student debt, but no degree have a net worth that is 90% less than households without a degree who have no college loan debt (Simmons-Duffin, 2014). Research by the Pew Center showed that that income levels were the same between groups of people

with no college and those with some college, but that those with student loan debt were more likely to have other types of debt as well (Fry & Caumont, 2014)

Some research (Hodara & Xu, 2014) shows that there are only modest gains to be made in terms of real income from developmental education. These gains are mainly due to the likelihood of being of employed and not because wages are higher (p.2). People with some college experience are less likely to be unemployed than are individuals who only have a high school diploma or less (p.22). This means that there is a particular risk to the students in developmental education who borrow money to finance their education. They are not likely to finish their degree, they accrue debt to finance their incomplete studies, and fall financially behind peers who do not have a degree. This is not only due to the debt burden, but also due to the opportunity cost and the loss of time from the workplace. Individuals who attend Dev. Ed. classes without moving on to complete a degree, and are able to avoid borrowing money for tuition are not at risk of a poverty trap due to their time spent pursuing a degree, but they do face the same opportunity cost. The only benefit gained for either group, however, is a statistical bump in income due to an increased probability of being employed. Appropriate goals for reform would be to have those students join the workforce at a higher wage level, in order to improve their return on investment.

III. Proposal

Students need to learn complex business software and other technology tools that are used in mid-level jobs that require more than a high-school diploma but less than a bachelor's degree. Coursework that includes both specific and conceptual instruction on ordering systems, inventory tracking, healthcare information and other service-based job functions would likely prove valuable to these students in lieu of traditional developmental education. Theoretical topics such as statistics and business concepts could be taught alongside database structures as well as specific software systems. This would incorporate the idea of co-requisites, but would replace the some of the developmental work in traditional subjects such as algebra and formal research papers with hands-on real world experience. However, enterprise-wide software systems that are used in business are often large and proprietary, and it is not likely that a community college would be able to easily provide this portion of the of instruction.

One solution would be to offer classes that teach these types of software programs through a public-private partnership. Hands-on classes could be modeled after the professional development classes that users of these large systems often attend to gain and maintain proficiency. Healthcare is one area where this type of program could be implemented. Santilli and Vogenberg (2015) stated that data analytics are creating new opportunities in the health industry and challenges in interoperability between systems are now beginning to be addressed (p.19). Santilli and Vogenberg also noted that there are financial incentives being offered to hospitals to upgrade to software systems that are compliant with current standards, as of 2015 only 59% were (p.19). These types of developments often create new career opportunities, and applying incentive money to developing coursework and providing grants for tuition is an avenue that could be explored.

Hodara & Xu (2014) pointed to the need for math instruction that is focused on real world problems, and suggests that there is an overreliance on teaching pure math skills when the students' needs would be better met by learning statistics (p.26). Utilizing software to perform advanced reporting functions involved in data analytics, inventory supply chains, and product management usually requires the use of arithmetic, but involves more computer and business knowledge than pure math. A career that is involved in the detailed administration of these types of activities is an appropriate goal for someone attending a community college.

Classes will be offered in themed pairs. A theme focused on healthcare might offer coursework in data analytics rather than traditional algebra while writing instruction could be incorporated into a seminar on privacy issues in medicine. A theme focused on retail management might include real world experience in using complex ordering and inventory tracking software in addition to social psychology classes that explore the nuances of customer relations. This is similar to a strategy currently in use at Bunker Hill Community College in Boston. Rather than use clusters of several classes however, pairs are proposed to better enable students who work full time.

Other types of strategies should be incorporated into the program as well. These include intensive student mentoring as well as counseling and classroom instruction in time-life management. The idea will be to build up relationships that will sustain student involvement and motivation. A 2015 Deloitte University study showed that positive relational benefits and satisfaction such as special treatment and social benefits caused people to stay in consumer relationships (Hogan & Murphy, fig.1, pg.5).

A successful short-term outcome could be used to justify a larger study. It is likely that a large sample would need to be studied due to attrition from the study, although there might be hesitation to implement it school-wide. The control group could be from a school that is similar in demographic makeup and graduation rates or just one school could be used. In the latter case enrollment would need to be by lottery. The control group would take traditional Dev. Ed classes. Outcomes could be measured on degree completion, but success should be rated on income, median income of neighborhood, marital status, education level of spouse, and rate of homeownership. A longer study could look at longevity rates and outcomes for the next generation. These statistics would need to be gathered on a regular basis over time in order to gauge the effectiveness of the program. It would also be necessary to share the plan with the school's Institutional Review Board and make sure to obtain informed consent from all participants.

Conclusion

Given the wage gap that exists between college graduates and non-college graduates, it seems likely that more people will want to enroll. However, as research shows, completion rates are poor for some groups and fundamental flaws in instructional design combined with the high cost of tuition increase the risk of zero or even negative returns to degree seekers. Proposed reform strategies should be examined in a quantified fashion to truly determine which ones have value and which ones do not.

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