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The Results of a Comprehensive Evaluation

Lois M. Davis, Jennifer L. Steele, Robert Bozick, Malcolm V. Williams, Susan Turner, Jeremy N. V. Miles, Jessica Saunders, Paul S. Steinberg

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Foreword

Each year, more than 2 million adults leave the nation's prisons and jails and return to their families and communities. While many successfully reintegrate into their communities, find jobs, and become productive members of society, others may commit new crimes and return to jail or prison. For juveniles involved in the juvenile justice system, the rate of youth incarceration in the United States is more than three times the highest rates in other developed nations. Although many factors account for why some formerly incarcerated adults and youth succeed and some don't, lack of education and skills is one key reason. This is why correctional education programs—both academic and vocational—are provided in correctional facilities across the nation. But do such correctional education programs actually work? We care about the answer because we want ex-prisoners to successfully reenter communities and because we have a responsibility to use taxpayer dollars judiciously to support programs that are backed by evidence of their effectiveness—especially during difficult budgetary times like these. Across this Administration, we are committed to investing in evidence-based programming, investigating promising practices, and making science a priority.

Fortunately, the passage of the Second Chance Act of 2007 gave us a chance to get at this fundamental question because it included a specific provision to improve education in U.S. prisons and jails. The Office of Justice Programs' Bureau of Justice Assistance within the U.S. Department of Justice, with input from the Office of Vocational and Adult Education, U.S. Department of Education, competitively awarded a project to the RAND Corporation in 2010 to comprehensively examine the current state of correctional education for incarcerated adults and juveniles, current and emerging trends in the field, and what can be done to improve the field moving forward. The study conducted a meta-analysis and systematic review to measure the effectiveness of correctional education for incarcerated adults and juveniles, respectively, and a survey of states' correctional education directors to understand concerns and emerging trends.

The results of the meta-analysis are truly encouraging. Confirming the results of previous meta-analyses—while using more (and more recent) studies and an even more rigorous approach to selecting and evaluating them than in the past—the study show that correctional education for incarcerated adults reduces the risk of post-release reincarceration (by 13 percentage points) and does so cost-effectively (a savings of five dollars on reincarceration costs for every dollar spent on correctional education). And when it comes to post-release employment for adults—another outcome key to successful reentry—researchers find that correctional education may increase such employment.

Because juvenile offenders have a right to a public education, all programs for incarcerated youth include a correctional education component. As such, effectiveness here has to focus on describing the balance of evidence favoring the *types of interventions* examined. Interventions,

methods, and outcomes of interest varied a great deal across the systematic evaluation, with studies ultimately falling into six categories: Corrective Reading (a packaged intervention); computer-assisted instruction (comprising three other packaged reading interventions); personalized instruction; other remedial instruction; vocational education; and GED completion. Though each category included only a few studies, and though the quality and size of these studies was very limited, two interventions showed particular promise: Read 180 (for reading improvement) and a personalized and intensive approach piloted at the Avon Park Youth Academy in Florida (for diploma completion and post-release employment).

Because the landscape in which correctional education occurs has been altered by the recent recession, researchers surveyed state correctional education directors to help get a pulse on what is going on and what concerns states face. Some key insights from the survey include the recognition that the 2008 recession and its long aftermath have had dramatic and negative effects on correctional education spending; that there is a growing emphasis on providing vocational education programming that will lead to industry or nationally recognized certifications; that the importance of computer technology in correctional education is growing but use of technology is mixed and access to the internet by incarcerated students is very limited; that states have significant concerns about how ready they are to implement the new 2014 GED exam and computer-based testing; and that while a large number of states are providing post-secondary education, most is paid for by inmates or their families, not by states or the Federal government.

Overall, this study shows that the debate should no longer be about *whether* correctional education is effective or *cost-effective* but rather on *where the gaps in our knowledge are and opportunities to move the field forward.* In that vein, the study argues for a need to fund research that both improves the evidence base that the study shows is lacking and that gets inside the "black box" of interventions to answer questions about the dosage associated with effective programs, the most effective models of instruction and curriculum in a correctional setting, and who benefits most from different types of correctional education programs. Having such knowledge is key to telling us which programs should be developed and funded—which programs will provide the greatest return on taxpayer dollars. The study also shows the field is ripe for larger-scale randomized trials and natural experiments that look at the impacts of correctional education provided to juveniles and that can shed much-needed light on what works in these settings.

And there is a need for research that investigates the impact of broader trends in corrections for correctional education in particular. These include the increasing use of privately operated facilities for adults and juveniles (particularly for juveniles), efforts by states to reduce the size of their state prison population at the "front end" (for example, by reducing prison admissions) and the "back end" (such as by parolee revocations), and the trend of keeping youth in the community if at all possible instead of placing them in correctional institutions and of keeping them at the local versus the state level.

While much still remains to be done, the results are encouraging, and the findings and recommendations in this study are intended to ensure that moving forward we understand how to best to leverage academic and vocational education programs to improve the reentry outcomes of incarcerated adults and juveniles. We are pleased to have been able to work cooperatively with the RAND staff to offer this important information.

Denise E. O'Donnell, J.D.
Director, Bureau of Justice Assistance
Office of Justice Programs
U.S. Department of Justice

Preface

The Second Chance Act of 2007 (Pub. L. 110-199) is a historic piece of legislation designed to improve outcomes for and provide a comprehensive response to the increasing number of individuals who are released from prisons, jails, and juvenile residential facilities and returning to communities upon release. The Second Chance Act's grant programs are funded and administered by the Office of Justice Programs within the U.S. Department of Justice. In 2010, for the first time, funding was set aside for a comprehensive study of correctional education. The Office of Justice Programs' Bureau of Justice Assistance awarded the RAND Corporation a cooperative agreement to undertake a comprehensive examination of the current state of correctional education for incarcerated adults and juveniles, where it is headed, which correctional education programs are effective, and how effective programs can be implemented across different settings. Our first report, published in 2013—*Evaluating the Effectiveness of Correctional Education: A Meta-Analysis of Programs That Provide Education to Incarcerated Adults*—presented a comprehensive review of the scientific literature and a meta-analysis that synthesized the findings from multiple studies on the effectiveness of correctional education programs in helping to reduce recidivism and improve postrelease employment outcomes for incarcerated adults (Davis et al., 2013).

This final report to the U.S. Attorney General first presents a summary of the findings from our earlier literature review and meta-analysis on the effectiveness of correctional education programs for incarcerated adults. It also provides three new sections. The first of these is a systematic review of correctional education programs for juveniles. The second is the results of a national survey of state correctional education directors, which provide an up-to-date picture of what the field of correctional education looks like today in the United States and explores the use of computer technology, preparations for the new 2014 GED exam, and the impact of the 2008 recession. We conclude with a set of recommendations, as part of our original charge for this study, on improvements needed to further the field of correctional education.

These results will be of interest to federal and state policymakers; administrators of state departments of corrections, public safety, and education; correctional educators and college educators; career technical training providers; and other organizations that provide educational services and training to the currently incarcerated or formerly incarcerated. These results will also be of interest to those in the U.S. Departments of Justice and Education who are committed to ensuring the availability and quality of correctional education programs for incarcerated adults and juveniles.

The RAND Safety and Justice Program

The research reported here was conducted in the RAND Safety and Justice Program, which addresses all aspects of public safety and the criminal justice system, including violence, policing, corrections, courts and criminal law, substance abuse, occupational safety, and public integrity. Program research is supported by government agencies, foundations, and the private sector.

This program is part of RAND Justice, Infrastructure, and Environment, a division of the RAND Corporation dedicated to improving policy and decisionmaking in a wide range of policy domains, including civil and criminal justice, infrastructure protection and homeland security, transportation and energy policy, and environmental and natural resource policy.

Questions or comments about this report should be sent to the project leaders, Lois M. Davis, Ph.D. (Lois_Davis@rand.org) and Robert Bozick, Ph.D. (Robert_Bozick@rand.org). For more information about the Safety and Justice Program, see http://www.rand.org/safety-justice or contact the director at sj@rand.org

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Introduction

Each year, more than 700,000 incarcerated individuals leave federal and state prisons; within three years of release, 40 percent will have committed new crimes or violate the terms of their release and be reincarcerated. Although a number of factors impede the ability of ex-offenders to successfully reintegrate into communities and, thus, affect recidivism rates, one key factor is that many ex-offenders do not have the knowledge, training, and skills to support a successful return to their communities. Research, for example, shows that ex-offenders, on average, are less educated than the general population: 37 percent of individuals in state prisons had attained less than a high school education in 2004, compared with 19 percent of the general U.S. population age 16 and over; 16.5 percent of state prisoners had just a high school diploma, compared with 26 percent of the general population; and 14.4 percent of state prison inmates had at least some postsecondary education, compared with 51 percent of the general U.S. adult population. Moreover, literacy levels for the prison population also tend to be lower than that of the general U.S. population.

This lower level of educational attainment represents a significant challenge for ex-offenders returning to local communities, because it impedes their ability to find employment. A lack of vocational skills and a steady history of employment also have an impact, with research showing that incarceration impacts unemployment and earnings in a number of ways, including higher unemployment rates for ex-offenders and lower hourly wages when they are employed. Also, individuals being released to the community face a very different set of job market needs than ever before, given the growing role of computer technology and the need for at least basic computer skills.

Given these gaps in educational attainment and vocational skills and the impact they have on ex-offenders, one strategy is to provide education to inmates while they are incarcerated, so that they have the skills to support a successful return to their communities. Historically, support for educational programs within correctional settings has waxed and waned over time as the nation's philosophy of punishment has shifted from rehabilitation to crime control.

Although there is general consensus today that education is an important component of rehabilitation, the question remains: How effective is it in helping to reduce recidivism and improve postrelease employment outcomes? The question is especially salient as the nation as a whole and states in particular have struggled with the need to make spending cuts to all social programs due to the recession of 2008 and its long aftermath. With funding from the Second Chance Act of 2007 (Pub. L. 110-199), the U.S. Justice Department's Bureau of Justice

Assistance awarded RAND a cooperative agreement in 2010 to comprehensively examine the current state of correctional education for incarcerated adults and juveniles, where it is headed, which correctional education programs are effective, and how effective programs can be implemented across different settings.

The study was designed to address the following key questions of importance to the field of correctional education:

1. What is known about the effectiveness of correctional education programs for incarcerated adults?
2. What is known about the effectiveness of correctional education programs for juvenile offenders?
3. What does the current landscape of correctional education look like in the United States, and what are some emerging issues and trends to consider?
4. What recommendations emerge from the study for the U.S. Department of Justice and other federal departments to further the field of correction education, and where are there gaps in our knowledge? What promising practices, if any, emerge from this review and evaluation?

To address these questions, we used a mixed-methods approach. This report first presents a summary of the prior systematic literature review and meta-analysis of adult correctional education programs (Davis et al., 2013) which included studies completed between 1980 and 2011. It then presents three new sections: a systematic literature review of primary studies of correctional education programs for juveniles, and a nationwide web-based survey of state correctional education directors. We conclude with a set of recommendations for moving the field forward. For purposes of our study, we defined *correctional education for incarcerated* adults as including the following:

- Adult basic education: basic skills instruction in arithmetic, reading, writing, and, if needed, English as a second language (ESL)
- Adult secondary education: instruction to complete high school or prepare for a certificate of high school equivalency, such as the General Education Development (GED) certificate
- Vocational education or career technical education (CTE): training in general employment skills and in skills for specific jobs or industries
- Postsecondary education: college-level instruction that enables an individual to earn college credit that may be applied toward a two- or four-year postsecondary degree.

To meet our definition of correctional education, the program had to be administered at least partly within a correctional facility. Programs that also included a postrelease transition component remained eligible as long as part of the program was administered in a correctional setting.

For the juvenile program systematic review, we define *incarcerated youth* as individuals under age 21 who are legally assigned to correctional facilities as a result of arrest, detainment for court proceedings, adjudication by a juvenile court, or conviction in an adult criminal court

(Office of Juvenile Justice and Delinquency Prevention, 2013). We define *correctional education* as any academic or vocational education/CTE program provided within the correctional facility setting, regardless of jurisdiction. As with our adult review, we permitted eligible interventions for juveniles to include an aftercare (postrelease) component, but the interventions had to be delivered primarily in the correctional facility.

How Effective Are Correctional Education Programs for Incarcerated Adults?

In terms of the effectiveness of correctional education programs for incarcerated adults, early reviews in this area found inconclusive evidence to support their efficacy—a finding that contributed to the popular belief that "nothing works" in prisoner rehabilitation; however, this conclusion may have been premature, given that appropriate analytic techniques had not been developed. More recent reviews, using meta-analysis techniques, question the conclusions of the earlier work, finding evidence of a relationship between correctional education program participation before release and lower odds of recidivating after release (Wilson, Gallagher, and MacKenzie, 2000; MacKenzie, 2006; Aos, Miller, and Drake, 2006). However, the most recent meta-analyses (Aos, Miller, and Drake, 2006; MacKenzie, 2006) did not consider employment outcomes; thus, whether program participation is associated with postrelease success in the labor market remained unclear.

These earlier reviews provide the context for the current systematic review and meta-analysis. Our systematic review scanned the universe of potential documents to compile all available empirical research studies that examine the effect of correctional education programs on the three outcomes of interest—recidivism, postrelease employment, and reading and math scores. This search yielded 1,112 documents, of which 267 were identified as primary empirical studies. To be in our meta-analysis, the study needed to meet three eligibility criteria: (1) evaluate an *eligible intervention*, defined here as an educational program administered in a jail or prison in the United States published (or released) between January 1, 1980, and December 31, 2011; (2) measure the effectiveness of the program using an *eligible outcome measure*, which for our meta-analysis included recidivism, postrelease employment, and achievement test scores; and (3) have an *eligible research design*, which, for our purposes, is one where there is a treatment group comprising inmates who participated in or completed the correctional education program and a comparison group of inmates who did not.

Of the 267 primary empirical studies, 58 met all three eligibility criteria.[1] With respect to recidivism, based on the higher-quality research studies, we found that, on average, *inmates who participated in correctional education programs had a 43 percent lower odds of recidivating*

[1]Our recidivism analysis is based on 71 effect sizes from 50 studies, our employment analysis is based on 22 effect sizes from 18 studies, and our test score analysis is based on nine effect sizes from four studies.

than inmates who did not, thus indicating that correctional education is an effective strategy for reducing recidivism.[2] This estimate is based only on 9 effect sizes from studies that met higher levels of rigor (i.e., earned 4s or 5s on the Maryland Scientific Methods Scale), but the results were very similar even when the lower-quality studies were included in the analysis. *This translates to a reduction in the risk of recidivating of 13 percentage points* for those who participated in correctional education programs versus those who did not.

When aggregating across 18 studies that used employment as an outcome, we found that *the odds of obtaining employment postrelease among inmates who participated in correctional education (either academic or vocational/CTE programs) were 13 percent higher than the odds for those who did not*. However, the findings are only suggestive about whether correctional education is an effective strategy in improving postrelease employment outcomes because only one of the 18 studies were of higher quality (level 4 or higher), thus limiting our ability to make a more definitive statement.

When aggregating across four studies that used achievement test scores as an outcome, we found that *learning gains in both reading and in math among inmates exposed to computer-assisted instruction were similar to learning gains made by inmates taught through traditional (face-to-face) instruction methods*.[3]

Although doing a formal cost-effectiveness analysis was beyond the scope of this study, we wanted to provide some context for what the meta-analysis findings mean. Focusing on the outcome of recidivism and using a hypothetical pool of 100 inmates, we compared the direct costs of correctional education programs and of incarceration itself. We found that the *direct costs of providing correctional education far outweighed the direct costs of reincarceration*. More specifically, for a correctional education program to be cost-effective—or break-even—we estimated that it would need to reduce the three-year reincarceration rate by between 1.9 percentage points and 2.6 percentage points. Given that our findings indicate that participation in correctional education programs is associated with a 13-percentage-point reduction in the risk of reincarceration three years following release, *correctional education programs appear to far exceed the break-even point in reducing the risk of reincarceration*. We also note that the results are likely to be conservative, because they do not include the indirect costs of reincarceration.

How Effective Are Correctional Education Programs for Juvenile Offenders?

When it comes to assessing correctional education programs for juvenile offenders, we face a fundamental difference between juvenile and adult correctional policy: Juveniles in the United

[2] We define *recidivism* was defined a number of ways in the individual studies reviewed, including re-offending, re-arrest, re-conviction, re-incarceration, technical parole violation, and successful completion of parole. In our pool of 50 studies that had recidivism outcomes, the majority used re-incarceration as the outcome measure (n = 34).

[3] Three of the four studies, representing seven effect sizes, were of higher quality.

States have a right to a public education. Therefore, all programs for incarcerated youth include an educational component. This means that the question facing policymakers is not *whether* to provide education services for juveniles in correctional facilities, but *which types of programs are most effective*. The meta-analytic approach in our adult analysis included many types of correctional education, each of which was compared with a no-correctional-education scenario. However, that approach is less well suited to studying the effectiveness of juvenile correctional education programs, because correctional education programs are typically present in all juvenile facilities. Instead, our approach to synthesizing research on juvenile correctional education was to undertake a systematic review, in which we screened and evaluated articles using the same criteria as we used in our adult meta-analysis. But rather than aggregating estimated effect sizes across studies that are testing widely different hypotheses for treatment versus comparison groups, we focus on describing the balance of evidence favoring the *types of interventions* examined in the literature we reviewed.

Altogether, the document search process resulted in 1,150 citations for title-and-abstract screening, which, in turn, led to 157 manuscripts eligible for full-text screening. Of those, 18 studies were deemed eligible for the systematic review by having met three criteria: (1) be an *eligible intervention*, defined as any academic or vocational education/CTE intervention program, with an *eligible population*, defined as consisting primarily of individuals age 20 or below, in an *eligible setting*, defined as any facility regardless of jurisdiction (i.e., local, state) to which juveniles are confined because of arrest, court proceedings, or adjudication/conviction; (2) use *eligible outcome measures*, defined as any measure of recidivism (e.g., re-arrest, reconviction, or re-incarceration), postrelease employment, academic attainment (e.g., GED or high school completion), and academic performance (e.g., test scores in reading and mathematics); and (3) have an *eligible research design*. This includes a *comparison-group design* in which a group of incarcerated juveniles who received an intervention is compared with a group of incarcerated juveniles that did not, or who received a different version of the treatment. We also included a class of approaches called *single-case designs*, which involve systematically introducing an intervention with one or a few students in an effort to demonstrate causal effects on outcomes such as participant behavior or learning. These studies typically include a large number of pre- and post-intervention outcome measurements, allowing students to function as their own controls. Because these designs usually focus on only a handful of participants, they typically preclude traditional hypothesis testing. This means that their findings cannot be generalized to a larger, hypothetical population of interest.

Our systematic review reveals great heterogeneity in terms of interventions, methods, and outcomes of interest. Among the 18 eligible studies we identified (16 comparison-group studies and two well-executed single-case design ones), we classified the interventions into six categories—Corrective Reading (a commercially packaged curriculum), computer-assisted instruction, personalized instruction, other remedial education, vocational education, and GED completion. Studies in the first two categories focused on packaged and branded reading

interventions (Corrective Reading, Read 180, Fast ForWord, and Tune in to Reading) and focused on reading performance as the dependent variables of interest. Studies in the latter three categories focused on a broader set of outcomes, including not only reading and mathematics performance but also measures such as diploma completion, postrelease employment, and postrelease recidivism.

Given the small number of studies in each category, we cannot easily extrapolate the effects of differential dosages or implementation approaches. However, taken in conjunction with the broader research literature on each of the interventions examined, our systematic review does identify *two interventions that show particular promise: Read 180 (for reading improvement) and Florida's Avon Park Youth Academy (for diploma completion and postrelease employment)*. Both of these interventions are supported by a large and rigorous study within juvenile correctional settings, and the effectiveness of Read 180 is further substantiated by several large and well-executed studies outside of correctional facilities. Beyond these compelling studies, we find that evidence for two other packaged interventions, Corrective Reading and Tune in to Reading, is positive, but the underlying studies are too small to warrant generalization. Evidence concerning vocational education/CTE and GED completion is also positive, but the underlying research designs are vulnerable to selection bias. This limits the quality of conclusions that can be drawn about these programs.

What Is the Current Correctional Education Landscape and What Trends Are Important?

When we began the correctional education study, we recognized early on that the 2008 recession had a substantial effect on the field of correctional education, with many states reporting cuts in funding for programs and changes to their delivery models for educating incarcerated adults. This means that today correctional education in the United States likely looks very different from correctional education during the time that many of the studies in the meta-analysis and adult systematic review were undertaken. Understanding these differences helps us to put our review results in context and provides the basis for forward-looking policy recommendations.

In July 2013, we fielded the RAND Correctional Education Survey to help fill a critical void in our understanding of the organization and delivery of academic and vocational education/CTE to incarcerated adults. This web-based survey of correctional education directors in all 50 states provides us with insights into how states dealt with the recession of 2008, how correctional education is currently provided to incarcerated adults in the United States, what technology is being used, and how states fund correctional education. We also gathered information on preparations for the new 2014 GED exam. We classified the size of state by the adult prison population in 2012 and considered small states to have an adult prison population in the range (1–24,999); medium states, in the range (25,000–49,999); and large states, 50,000 or more adult prisoners. The overall response rate was 46 out of 50 states, or 92 percent. Of these 46, 42

completed the entire questionnaire, and four provided only partial responses to the survey. Forty of the respondents had responsibility for both adult correctional education and vocational training in their state; five respondents for academic education only; and one respondent for vocational training only.

Variation in Correctional Education Programming Across the States

In 2013, most states offered adult basic education, GED courses, and vocational education/CTE programs, and most reported having special education courses available. Higher-level educational programming such as adult secondary education and postsecondary education was offered in 32 of the states, although smaller states were less likely to do so. Postsecondary education courses today in 28 states are primarily paid for by the individual inmate or by family finances; in 16 states, state funding is used to cover the costs of postsecondary education, and 12 states reported using college or university funds.

Participation in correctional education programs is mandatory in 24 states for adult inmates without a high school diploma or GED, and in 15 states it is mandatory for adults below a certain grade level, with smaller states less likely to require mandatory participation.

An emerging trend is a growing emphasis on providing vocational education/CTE programming that will lead to industry or nationally recognized certifications. Smaller states were more likely to emphasize vocational education/CTE training for state prisoners than medium-sized or large states.

Impact of the 2008 Recession

The effect of the 2008 recession was an overall 6 percent decrease on average in states' correctional education budgets between fiscal years (FYs) 2009 and 2012. The largest impact on budgets was felt by medium-sized and large states (on average, a 20 percent and 10 percent decrease, respectively). Overall, the mean dollars spent per student for correctional education was $3,479 in FY 2009, compared with $3,370 in FY 2012—this represented a 5 percent decrease on average in the dollars spent per student.

The result was a contraction in the capacity of academic education programs and an overall decrease of 4 percent on average in the number of adult students who participated in these programs, with medium-sized and large states experiencing somewhat larger decreases (10 percent and 8 percent, respectively, compared with a 1 percent decrease for small states). In addition, 20 states reduced the number of course offerings for academic programs during this time period.

The effect of the staffing and capacity cost-cutting measures on teachers for academic programs was particularly felt in medium-sized and large states. Overall, there was, on average, a 4 percent decrease in the number of academic teachers who were employees. The largest decrease occurred in medium-sized and large states (on average, 44 percent and 20 percent, respectively, compared with a 5 percent decrease for small states).

Vocational education/CTE programs seemed to have fared somewhat better during the recession than academic programs in terms of reductions in the number of students enrolled in vocational education/CTE programs and in the number of instructors. On average, there was a 1 percent increase in the number of students enrolled in vocational/CTE programs between FYs2009 and 2012. However, this appears to be largely driven by an increase, on average, of 7 percent within the smaller states. In comparison, the medium-sized and large states experienced a reduction in the number of students in vocational education/CTE programs, on average, of 4 percent and 11 percent, respectively. There also appears to have been a modest expansion of vocational education/CTE programs in small and medium-sized states during this time period, as evidenced by a modest increase between FYs 2009 and 2012 in the number of vocational education/CTE instructors who were employees (on average 8 percent and 24 percent, respectively for small and medium-sized states). Still, 38 percent of small states and 50 percent of medium-sized states reported that they had reduced the number of course offerings for vocational education/CTE programs in response to budget cuts.

Use of Information Technology

One of the major trends that will shape the future of work in the 21st century is the growing role of information technology in society, with technological change resulting in an increased demand for a skilled workforce (Karoly, 2013). Further, distance learning and online instruction are growing trends in the United States, with increasingly more educational courses being offered online either by colleges or virtual high schools. Computer-assisted instruction is also appealing in offering the opportunity to tailor instruction and coursework to the needs of the individual student.

The importance of computing skills for today's job market is recognized by state correctional education directors, as reflected by the fact that 24 states reported offering a Microsoft Office certification as part of their vocational education/CTE programs. However, our survey results indicate that the role of computer technology in correctional education is a mixed story. We found that the use of computers for instructional purposes is common, with 39 states reporting the use of desktop computers (either standalone or networked) and 17 states reporting the use of laptops. However, access to the Internet and the use of Internet-based instruction (one-way or interactive) is reported to be limited in states' correctional facilities. Thirty states reported that only teachers and instructors have access to live Internet technology. In 26 states, inmate students lack access to any Internet technology, and in only 16 states do inmate students have access to simulated Internet programs. In terms of instructional methods that use some type of technology, only ten states reported that they had closed-circuit television, and only a few states reported using it to provide one-way or interactive video/satellite instruction.

Readiness for the 2014 GED Exam and Computer-Based Testing

The GED is the predominant way that inmates earn their high school equivalency diplomas (Harlow, 2003), and GED completion is often a prerequisite for many vocational training programs. The 2014 GED exam not only represents a more rigorous test, being aligned with the Common Core State Standards (CSS), but it will also rely on a new test delivery model—namely, computer-based testing to replace the old paper-and-pencil exam (Lockwood et al., 2013). This represents a profound change to states and one that presents some key challenges.

GED completion rates were seen as an important outcome indicator to track by 40 states that took part in our survey. Yet, of the 31 states planning to implement the 2014 GED exam, 14 states expected that the more rigorous GED exam and the use of computer-based testing may have a negative effect on the number of adult inmates who will be prepared to take the new exam, and 16 states expected a negative effect on GED completion rates. This was particularly true for the medium-sized and large states.

All but two of the 31 states planning to implement the 2014 GED exam expressed concerns about the new exam and computer-based testing. Nineteen states were concerned about their teachers being adequately prepared to teach the new GED exam, and 24 of the states were concerned about the length of time it may take to prepare students for the more rigorous exam. In addition, 12 of the states reported concerns that limited access to computers may preclude some students from taking the new GED exam. Also, responding directors in 14 of the states reported concerns that their teachers may not be adequately prepared to implement computer-based testing. Other concerns expressed were the cost to the individual student and the cost of the new GED exam to their institutions, with some states considering the adoption of alternative high school equivalency exams. In general, smaller states expressed fewer concerns; however, our survey results suggest that states with the majority of the prison population (i.e., medium-sized and large states) expect to encounter a number of challenges in implementing the new GED exam and test delivery system.

What Are Some Key Recommendations for Moving Forward?

This study's key finding is that correctional education is effective in reducing recidivism for incarcerated adults and that there is some evidence that it also is effective, especially vocational education/CTE programs, in improving individuals' likelihood of postrelease employment. Also, our cost analysis showed that correctional education is highly cost-effective for incarcerated adults: For every dollar spent on correctional education, five dollars are saved on three-year reincarceration costs. As is the case for adults, our report also provides the most comprehensive systematic review we are aware of on what works in correctional education for incarcerated juveniles. Thus, the debate should no longer be about *whether* correctional education is effective or cost-effective; rather, the debate should focus on *where the gaps in our knowledge are and opportunities to move the field forward*.

We offer some recommendations and next steps—that are drawn from our evaluation results; while this report is to the U.S. Attorney General, these recommendations will also be of interest to other federal departments and agencies focused on reentry. These recommendations are intended to provide a roadmap for building on the gains made to-date in educating incarcerated individuals to improve their chances of success upon release and reentry into local communities.

Correctional Education for Adults

Our survey results provide solid evidence about the dramatic impact the 2008 recession had on correctional education in the United States. The recession and its long aftermath led to a reduction in correctional education spending and a decrease in the number of incarcerated adults who participate in these programs. This raises the question of whether the trade-offs we are making in terms of cost savings today with reductions in educational programming are worthwhile, considering the future costs of reincarceration and the effect that such lost opportunities may have on individuals' chances of finding employment and being successful in reintegrating back into society. State corrections directors want to know how they can modify their models of education to trim their budgets while still maintaining the effectiveness of their programs. The results of our meta-analysis (Davis et al., 2013) show that correctional education programs are dramatically effective in reducing recidivism, and there is some evidence of improvements to postrelease employment outcomes. We also showed that correctional education programs are highly cost-effective for incarcerated adults. But because of limitations in quality of the evidence base, we cannot answer the other critical questions needed to inform discussions about modifications to educational programming in a resource-constrained environment. We concur with MacKenzie's (2008) assessment that we still are unable to get at what is inside the "black box" of what works in correctional education, to answer such questions as:

- What dosage is associated with effective programs, and how does it vary for different types of academic programs and students?
- What models of instruction and curriculum delivery (e.g., one-on-one, traditional classroom lectures, computer-based learning) are most effective in a correctional environment?
- Who benefits most from different types of correctional education programs?
- What principles from adult education and learning may be applicable to correctional education?

Thus, **we recommend the following to help address these concerns**:

- Focus research and evaluation efforts at the federal and state levels to address these questions so that policymakers and state correctional education directors can make informed trade-offs in budget discussions.
- Have federal and state governments and philanthropy fund (1) evaluations of programs that illustrate different educational instructional models, with the goal of getting inside the black box; (2) evaluations of programs that are trying innovative strategies to implement technology and leverage distance learning in the classroom; and (3) an

analysis of what lessons from the larger literature on adult education may be applied to correctional education.

- Have the federal government monitor and assess the impact of the new GED and computer-based testing on correctional education implementation and outcomes. Consider opportunities to provide technical assistance to states in helping educators teach the material for the more-rigorous content in the new GED. In juvenile correctional settings, technical assistance for implementing the new Common Core State Standards, which have influenced the move toward a more-rigorous GED, is also likely to be needed.
- Conduct new research on instructional quality in correctional education settings, and on ways to leverage computer technology to enhance instruction in correctional settings.
- Given the changes in the U.S. economy and the shifting needs of the 21st century workforce, conduct an assessment at the federal and state levels about what such changes mean for the criminal justice–involved population. Consider a summit at the state and federal levels with private industry about what opportunities are available to formerly incarcerated individuals and what skills will be needed in the future.

Correctional Education for Juveniles

Based on our systematic review of the literature on education provided to juveniles in institutional setting, we believe that the field is ripe for larger-scale randomized trials. Two of the studies we reviewed, Loadman et al.'s (2011) Read 180 study and the National Council on Crime and Delinquency's (2009) Avon Park study, suggest that such studies, though challenging to undertake, are feasible. The literature is also ripe for rigorous evaluations of natural experiments, such as Aizer and Doyle's (2013) study of the effects of juvenile incarceration using naturally occurring random assignment to harsh judges. Studies that take advantage of rigorous causal methods in juvenile settings can shed much-needed light on what works in these settings. Several of the smaller randomized trials we include in our review have noted the difficulties of high student turnover in correctional facilities and of simply gaining permission to undertake research in these facilities (Shippen et al., 2012, Calderone et al., 2009). As such, **we recommend that the focus be on developing larger-scale randomized trials and rigorous evaluations of natural experiments**. Such research efforts will clearly take time to develop and execute. They will ideally be realized through long-term partnerships between researchers and correctional facilities. Because such partnerships take time to establish, there may also be a federal role in galvanizing them. The U.S. Department of Education Institute of Education Science's recent grant program for supporting research partnerships between school systems and researchers offers one potential model. Informed by such partnerships, facilities can make increasingly evidence-based decisions that not only improve their students' prospects but also reduce the social incidence of crime and delinquency.

Improving the Evidence Base

In our meta-analytic report (Davis et al., 2013), we laid out a number of recommendations to improve the evidence base for adult correctional education. Those recommendations also pertain to juvenile correctional education and merit summarizing here. **We recommend that the federal and state governments and philanthropy invest in well-designed evaluations of correctional education programs and use funding and grant mechanisms to encourage improvements in four areas to further develop the evidence base for correctional education:**

- **Apply stronger research designs** to help establish a causal relationship between correctional education participation and successful outcomes for inmates to help rule out the possibility of selection bias. In this context, identifying the appropriate comparison groups is important, as is establishing a study registry to help sort out the different effect sizes found across studies.
- **Measure program dosage** to help put the findings from individual studies in their proper contexts. The lack of dosage information means that there is little to no empirical evidence that can help inform policymakers on "how much" correctional education is necessary to produce a change in the desired outcomes.
- **Identify program characteristics** to help policymakers identify promising or evidence-based programs that could be potentially replicated in other settings and specific exemplary programs.
- **Examine more proximal indicators of program efficacy** to help better refine the process through which correctional education helps shape how former inmates re-integrate into the community. This includes understanding how improving the skills and abilities of inmates (i.e., "human capital" in economics parlance) could, in turn, improve former inmates' chances of continuing education/training upon release and then finding gainful employment.

In addition, a study registry of correctional education evaluations would further aid in developing the evidence-base in this field to help inform policy and programmatic decisionmaking.

Implications of Broader Trends in Corrections for Correctional Education

Several trends in the field of adult and juvenile corrections have important implications for correctional education that merit further consideration. First, *many states are undertaking measures to reduce the size of their state prison population using a variety of means.* This includes both "front-end" strategies—such as reducing prison admissions, diverting offenders to county- rather than state-level institutions, or changing felonies to misdemeanors—and "back-end" strategies—such as reducing sentence lengths through earned credits or good time and revocations for probationers and parolees. All these changes in the correctional landscape have implications for how we think about providing academic education and vocational education/CTE to incarcerated adults. For example, there is California's Public Safety Realignment, where county jails now have some inmates serving sentences of two, three, or

more years instead of the typical length of stay of 2–3 months. However, county jails are not set up to provide rehabilitative services over the long-term, including academic programs and vocational/CTE programs. The result of various states' and localities implementing strategies to keep low-level offenders at the local level is that, in some instances, we may end up with a two-tiered system of education where, ironically, more serious offenders who serve their sentence in state prison may have better access to correctional education programs than low-level offenders who serve their sentences in county jails. Such policy changes also raise other questions: Are there differences in access to academic education and vocational education/CTE programs depending on the setting where one serves one's sentence? Are there differences in educational and employment outcomes for offenders who serve their time at the local level compared with offenders serving their sentence in state prison systems?

Second, *a long-term trend in the field of juvenile corrections is to keep youth in the community if at all possible instead of placing them in correctional institutions, and to keep them at the local versus the state level.* Our systematic review focused on what works with incarcerated youth in part because the broader literature on educational interventions for juvenile offenders outside of correctional facilities is even more nebulous. An important direction for future research is to identify interventions that improve juveniles' educational, employment, and recidivism outcomes in less-restrictive settings, such as alternative schools or traditional schools. To guide policy improvements, stronger federal reporting requirements about local correctional education practices could help facilitate improved state and local comparisons of program effects. Whether collected federally or privately, a central repository of such information (e.g., staffing levels and expertise, curriculum used, hours of instruction provided, types of programs offered) would provide a valuable tool to policymakers and researchers alike.

We recommend that policymakers seek to assess and understand the implications of these trends in the field of corrections with respect to their impact on correctional education.

Concluding Thoughts

There are more than 2 million adults incarcerated in the United States. This study demonstrates that education programs can help adults get back on their feet upon release from prison and help juveniles involved with the juvenile justice system to continue with their education. Education programs are also highly cost-effective in helping to reduce recidivism. States will continue to operate in a reduced funding environment for the near future. The findings and recommendations we present here are intended to ensure that, moving forward, we understand how best to leverage academic education and vocational education/CTE programs to improve the reentry outcomes of incarcerated adults and juveniles.

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Abbreviations

BJA	Bureau of Justice Assistance
GED	General Education Development
Maryland Scale	Maryland Scientific Methods Scale
RD	regression discontinuity
RYEF	Regional Youth Educational Facility
SCA	Second Chance Act
WWC	U.S. Department of Education's What Works Clearinghouse

1. Introduction

Overview

Each year, more than 700,000 incarcerated individuals leave federal and state prisons; within three years of release, 40 percent will have committed new crimes or violated the terms of their release and be reincarcerated. Although a number of factors impede the ability of ex-offenders to successfully reintegrate into communities and, thus, affect recidivism rates, one key factor is that ex-offenders do not have the knowledge, training, and skills to support a successful return to their communities. Research, for example, shows that ex-offenders, on average, are less educated than the general population:

- 37 percent of individuals in state prisons had attained less than a high school education in 2004, compared with 19 percent of the general U.S. population age 16 and over.
- 16.5 percent of state prisoners had a high school diploma, compared with 26 percent of the general population.
- 14.4 percent of state prison inmates had at least some postsecondary education, compared with 51 percent of the general U.S. adult population (Crayton and Neusteter, 2008).

Moreover, literacy levels for the prison population also tend to be lower than that of the general U.S. population. The 2003 National Assessment of Adult Literacy (NAAL) assessed the English literacy of 1,200 inmates (ages 16 and older) in state and federal prisons and a sample of 18,000 adults (ages 16 and older) living in U.S. households. On average, adult inmates had lower scores on all three literacy scales—prose, document, and quantitative—than the general U.S. population (Greenberg, Dunleavy, and Kutner, 2007).

This lower level of educational attainment represents a significant challenge for ex-offenders returning to local communities, because it impedes their ability to find employment. A lack of vocational skills and a steady history of employment also have an impact, with research showing that incarceration impacts unemployment and earnings in a number of ways, including higher unemployment rates for ex-offenders and lower hourly wages when they are employed.

The dynamics of prison entry and reentry make it difficult for this population to accumulate meaningful, sustained employment experience (Raphael, 2007–2008). For example, using data from the Fragile Families and Child Wellbeing Study, an analysis of the effects of incarceration on the earnings and employment in a sample of poor fathers found that the employment rates of formerly incarcerated men were about 6 percentage points lower than those for a similar group of men who had not been incarcerated (Gellar, Garfinkel, and Western, 2006).

The stigma of having a felony conviction on one's record also is often a key barrier to postrelease employment (Pager, 2003). Holzer, Raphael, and Stoll (2003) conducted a series of surveys of employers in four major U.S. cities and found that employers were much more averse

to hiring ex-offenders than they were in hiring any other disadvantaged group. Willingness to hire ex-offenders was greater for jobs in construction or manufacturing than for those in the retail trade and service sectors; employers' reluctance was greatest for violent offenders as opposed to nonviolent drug offenders.

Finally, individuals being released to the community face a very different set of demands for skill sets in today's job market than ever before, with the growing importance of information technology and the need for basic computer skills (Karoly, 2013).

Given these gaps in educational attainment and vocational skills and the impact they have on ex-offenders, one strategy is to provide education to inmates while they are incarcerated so that they have the skills to support a successful return to their communities. Prisoner education (or correctional education) in the United States dates back more than 200 years. Support for educational programs within correctional settings has waxed and waned over time as the nation's philosophy of punishment has shifted back and forth from rehabilitation to crime control.

Although the general consensus today is that education is a useful component of the rehabilitation process, the question remains, how useful is it? This question has been particularly salient as the nation as a whole and states have struggled with the need to make spending cuts to all social programs throughout the recession of 2008 and its long aftermath.

On April 9, 2008, the Second Chance Act (SCA) (Pub. L. 110-199) was signed into law. This important piece of legislation was designed to improve outcomes for individuals who are incarcerated, most of whom will ultimately return to communities upon release. The SCA's grant programs are funded and administered by the Office of Justice Programs within the U.S. Department of Justice. In 2010, funding was set aside under the SCA to, for the first time, conduct a comprehensive study of correctional education. The Office of Justice Programs' Bureau of Justice Assistance (BJA) awarded the RAND Corporation a cooperative agreement to comprehensively examine the current state of correctional education for incarcerated adults and juveniles, where it is headed, which correctional education programs are effective, and how effective programs can be implemented across different settings.

Our study was designed to address the following key questions of importance to the field of correctional education:

1. What is known about the effectiveness of correctional education programs for incarcerated adults?
2. What is known about the effectiveness of correctional education programs for juvenile offenders?
3. What does the current landscape of correctional education look like in the United States, and what are some emerging issues and trends to consider?
4. What recommendations emerge from the study for the U.S. Department of Justice and other federal departments to further the field of correction education and where are there gaps in our knowledge? What promising practices, if any, emerge from this review and evaluation?

To address these questions, we used a mixed-methods approach. This included systematically identifying, screening, and reviewing available evaluations of correctional education programs for incarcerated adults or juveniles completed in the United States between 1980 and 2011. Using eligible studies of correctional education programs for adults, we conducted a meta-analysis to synthesize the estimated effects of correctional education programs on three kinds of outcomes: recidivism, employment, and academic skills. We published the results of the literature review and meta-analysis of adult correctional education programs in an earlier report (Davis et al., 2013), and we summarize them in this report. This report also presents three new sections. First, for incarcerated juveniles, we systematically summarized the literature about the estimated effects of six types of programs on academic, employment, and recidivism outcomes, but we did not have enough studies testing common hypotheses to conduct a formal meta-analysis. Second, We also conducted a nationwide survey of state correctional education directors to gather information on how correctional education is provided today, and about the impact that the global financial recession has had on correctional education programs in the United States. Finally, this report presents our recommendations.

For this study, we define *correctional education* to include the following:

- Adult basic education: basic skills instruction in arithmetic, reading, writing, and, if needed, English as a second language (ESL)
- Adult secondary education: instruction to complete high school or prepare for a certificate of high school equivalency, such as the General Education Development (GED)
- Vocational education or career technical education (CTE): training in general employment skills and in skills for specific jobs or industries[4]
- Postsecondary education: college-level instruction that enables an individual to earn college credit that may be applied toward a two- or four-year postsecondary degree.

To meet our definition of correctional education, the program had to be administered at least partly within a correctional facility. Programs that also included a postrelease transition component remained eligible as long as part of the program was administered in a correctional setting. Although some may consider life skills programs a part of correctional education, in conjunction with BJA, we agreed to focus specifically on the four types of academic and vocational education/CTE programs summarized above. We also restricted our scope to focus on correctional education programs provided in the institutional setting, as opposed to postrelease or community-based programs.

For the juvenile program systematic review, we define *incarcerated youth* as individuals under age 21 who are legally assigned to correctional facilities as a result of arrest, detainment for court proceedings, adjudication by a juvenile court, or conviction in an adult criminal court

[4] Vocational education is now commonly called career technical education. "Vocational education" is the term we used in our adult meta-analysis (Davis et al., 2013), and it used in most of the studies we reviewed. We use the term "vocational education/CTE" throughout this report.

(Office of Juvenile Justice and Delinquency Prevention, 2013). We define *correctional education* to include any academic or vocational education/CTE program provided within the correctional facility setting, regardless of jurisdiction. As with our adult review, we permitted eligible interventions for juveniles to include an aftercare (postrelease) component, but the interventions had to be delivered primarily within the correctional facility.

Finally, our focus is on correctional education programs provided to incarcerated adults in state prison and to juveniles in the institutional setting at the state and local levels. These foci enable us to address the question of what is known about the effectiveness of correctional education—specifically, academic programs and vocational education/CTE programs—for incarcerated adults and juveniles in the United States.

In the remainder of this chapter, we provide an overview of the evolution of the field of correctional education in the United States and describe a roadmap for the remaining chapters.

The Evolution of Correctional Education in the United States

To understand where correctional education stands today, it is useful to briefly consider the history of correctional education in the United States. Educational programs for incarcerated individuals were first introduced in in the United States when clergyman William Rogers began offering instruction at Philadelphia's Walnut Street Jail in 1789 (Chlup, 2005). The first schools in prisons were known as "Sabbath schools," created by the Boston Prison Discipline Society in 1833 and focused on moral and religious instruction (Gehring, 1997).

Support for educational programs within correctional settings has waxed and waned over time as the nation's philosophy of punishment has shifted from rehabilitation to crime control and then back again. For example, during Andrew Jackson's presidency (1824–1837), Americans believed that crime was posing a fundamental threat to the stability and order of society (Chlup, 2005), and the general belief was that a primary purpose of punishment was rehabilitation to change an individual's behaviors (F. Allen, 1981; Chlup, 2005). The period between 1901 and 1920 (known as the Progressive Era) was a period of social activism and political reform in the United States, including a focus on prison reform and an emphasis on educating prisoners (Chlup, 2005).

In 1965, the Survey for the President's Commission on Law Enforcement and Administration of Justice, carried out by the National Council on Crime and Delinquency, found that many institutions did little to prepare prisoners for reentry (Chlup, 2005), that a high number of offenders were "severely handicapped educationally," and that many had dropped out of school (President's Commission on Law Enforcement and Administration of Justice, 1967). In addition, the survey found that offenders tended to have unstable work records and lacked a vocational skill. The commission recommended that correctional institutions upgrade educational and vocational training programs, extending them to all inmates who could profit from them, and that

states should, with federal support, establish programs to recruit and train academic and vocational instructors to work in correctional institutions.

One large-scale program, started in 1965 and continuing through the 1970s with funding support from the U.S. Department of Education, facilitated the development of plans and curricula for adult basic education in prisons in 45 states as well as the training of prison personnel on in the implementation and evaluation of correctional education (Ryan and McCabe, 1994).

In 1971, the inmate uprising at the Attica Correctional Facility in Attica, New York, resulted in the deaths of 11 prison employees and 32 unarmed prisoners (Chlup, 2005). The prisoners' demands for political rights and better living conditions included the provision of rehabilitative programming and access to educational programs.

The 1970s are often considered the "Golden Age" of correctional education (Ryan and McCabe 1994, p. 451). During this period, education was regarded as the most important tool for successful rehabilitation. Adult basic education and GED programs were being provided, vocational training programs were being given a high priority, and postsecondary education programs were being offered through prison release and correspondence courses (Ryan and McCabe, 1994). However, by the 1980s support among the public and policymakers for correctional education once again waned, and funding for education in prison suffered dramatic cuts (Lillis, 1994). Approximately half of correctional systems made cuts in inmate education programs, especially in vocational and technical training, with corrections officials citing state budget cuts as the main reason for most program reductions (Lillis, 1994).

In the 1980s, the Federal Bureau of Prisons (BOP) initiated mandatory education starting with the establishment of its first mandatory adult basic education program in 1982 and followed by a requirement in 1983 that each institution have its own qualified reading specialist or special educator instructor (Ryan and McCabe, 1994). By 1986, the standard for mandatory education in the BOP system was an eighth-grade achievement level. Subsequently, a number of states followed the BOP's example in requiring that inmates attend school for a minimum number of months if they did not have a specified reading level or had not received a high school diploma or GED (Steurer et al., 2010).

The Higher Education Act, passed in 1965, provided student loans via Pell college tuition grants to any qualified students (including incarcerated individuals) to help pay for their postsecondary education (Crayton and Neusteter, 2008). However, in the mid-1990s the Violent Crime Control and Law Enforcement Act of 1994 (Pub. L. 103-332) eliminated federal and state inmate eligibility for Pell college tuition grants, thus, affecting many college programs for inmates (Taylor, 2005). Additionally, limitations were placed on the amount of federal adult education and vocational education/CTE funds available for correctional education programs (Coley and Barton, 2006). Within one year of eliminating Pell Grant access to prisoners, participation in postsecondary correctional education programs dropped 44 percent (Marks, 1997).

In 2007, the Second Chance Act (SCA) (Pub. L. 110-199) was enacted to improve outcomes for and provide a comprehensive response to the increasing number of individuals who were released from prisons, jails, and juvenile residential facilities and returning to communities upon release. The SCA is a historic piece of legislation focusing on reentry programs as an interagency priority at the federal level. In 2010, the SCA for the first time set aside dedicated funding for correctional education, which led to this RAND study.

The 2008 recession deeply affected correctional systems. States were forced to curtail spending of all kinds, with correctional expenditures especially attractive targets for state belt-tightening. During FY2010, 31 of the 50 state departments of corrections had mid-year cuts, totaling $806 million (NGA/NASBO, 2010). Strategies to reduce correctional expenditures and achieve operational efficiencies included closing prisons, reducing staff, and curtailing services and programming. Correctional education (and other rehabilitative) programs experienced deep budget cuts in a number of states, resulting in some dramatic reductions in the number of programs offered, the size of classes, and in the number of inmates who participate in these programs, as well as changes to the models of delivery.

In 2012, anecdotal evidence suggests an uptick in funding for correctional education in some states based on informal reports from state correctional education directors citing either no further funding cuts or even some minor increases in funding—a situation that has enabled them in some cases to begin modestly rebuilding programs (authors' personal communications with the Correctional Education Association Leadership Forum). However, most state correctional education directors expect to face a reduced funding environment for correctional education programs and the continuing need to demonstrate a return on investment. In the face of budgetary pressures, and to inform future budget decisions, state legislatures and departments of corrections are asking fundamental questions: How effective are these programs? What return on investment do they provide?

Researchers have attempted to answer these questions before. In 1975, Lipton, Martinson, and Wilks published a systematic review of 231 studies of prisoner rehabilitation programs and concluded that there was no conclusive evidence that correctional education was beneficial. This assertion was later challenged by Wilson, Gallagher, and MacKenzie in 2000. In the next chapter, we provide a more up-to-date and comprehensive assessment.

Organization of This Report

The remainder of this report is organized to address the major research questions listed above. In Chapter Two, we summarize the results of our previously published meta-analysis (Davis et al., 2013) conducted as part of our BJA cooperative agreement examining the effectiveness of correctional education for incarcerated adults and present the results of a cost analysis. In Chapter Three, we present the results of a systematic review of the evidence about the effectiveness of educational interventions implemented within juvenile correctional facilities. In

Chapter Four, we present the results of a national survey of state correctional education directors that describes the current landscape of correctional education and explores the impact of the 2008 recession. A thorough explanation of the approach for the meta-analysis, systematic review, and survey are included in the relevant results chapters. In Chapter Five, we summarize our study's key findings and discuss their policy implications and directions for future research.

2. How Effective Is Correctional Education for Incarcerated Adults?

Introduction

As mentioned in Chapter One, the centerpiece of RAND's evaluation of correctional education for BJA entailed determining how effective correctional education is in improving outcomes for incarcerated adults. We focused on three outcomes of interest: reducing recidivism, promoting postrelease employment, and improving learning in reading and in math among adults. To measure effectiveness, we carried out a comprehensive systematic review of existing literature to identify relevant studies of correctional education effectiveness, followed by a meta-analysis of the relevant studies identified—a statistical method that synthesizes findings across multiple studies. Also, to put the effectiveness results in some context, we performed a basic cost-effectiveness analysis based on the assessed effectiveness of correctional education for reducing recidivism.

This chapter provides an overview of our review and synthesis of 58 identified and relevant studies published during the past three decades to assess what the existing research base has to say about the effectiveness of correctional education relative to the three outcomes. The full set of findings appears in our earlier report, *Evaluating the Effectiveness of Correctional Education: A Meta-Analysis of Programs that Provide Education to Incarcerated Adults* (Davis et al., 2013), which is available on the RAND website at www.rand.org/t/RR266.

In this chapter, we briefly describe the history of meta-analyses in correctional education to help readers understand how our work builds on previous efforts. Then, we discuss our approach to identifying and evaluating individual studies, followed by a summary of the main findings from the meta-analysis. We conclude with the results of our basic cost-effectiveness analysis. The earlier meta-analytic report (Davis et al., 2013) contains extensive technical information on the search process and the statistical underpinnings of the meta-analysis. Readers interested in those details are encouraged to read the earlier report.

Previous Meta-Analyses on Correctional Education

Understanding the role that correctional education plays in rehabilitating incarcerated adults and improving their reentry into society is a key goal of our study and of the meta-analysis we conducted. Given the long history of correctional education in the United States, previous studies have examined its effectiveness through meta-analyses of available evidence. As a backdrop to our study, we first synthesized findings from previous meta-analyses of correctional education programs in the United States. In keeping with our study goals, we synthesized only meta-

analyses that explicitly focused on education programs administered primarily to adult offenders in correctional facilities. According to our review, three major published meta-analyses meet these criteria: Wilson, Gallagher, and MacKenzie (2000); MacKenzie (2006); and Aos, Miller, and Drake (2006).[5] These studies differ in their parameters, methods, and conclusions. We review the findings from each in turn, focusing first on the systematic review of correctional education programs conducted by Lipton, Martinson, and Wilks (1975) that set the stage for the current policy discourse and research direction in the field.[6]

Lipton, Martinson, and Wilks (1975)

In 1975, Douglas Lipton, Robert Martinson, and Judith Wilks published a systematic review of 231 studies of prisoner rehabilitation programs spanning the years 1945 to 1967—a review that provided the first major effort to take stock of the potential efficacy of correctional education. Within their sample of 231 programs, Lipton and his team identified a subset of "skill-development programs," which consisted of academic and/or vocational training. They summarized comparisons of program participants and nonparticipants in studies that used recidivism and employment as outcomes. In their review, they discussed differences in methodological quality, highlighting (where appropriate) studies with carefully or poorly selected comparison groups. However, this variation in research design did not factor into how they tallied statistically significant program effects. As long as the study had a group exposed to correctional education (a treatment group) and a group that was not exposed to correctional education (a comparison group), it was included in their review. None of the studies reviewed employed random assignment.

Across eight studies that assessed recidivism, three showed significantly lower rates of recidivism among program participants, and one showed significantly higher rates of recidivism among program participants. The other four studies showed no differences between the treatment and comparison groups. In two studies that examined employment as an outcome, offenders who participated in vocational training programs *fared worse* than nonparticipants after being released. Overall, their review found *no conclusive evidence that correctional education was beneficial and that, in some cases, it might even be harmful*. Lipton et al.'s systematic review is

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[5] The studies included in these meta-analyses are largely based on studies of correctional education programs in the United States. However, a handful of international studies are also included.

[6] Since the publication of the landmark Lipton, Martinson, and Wilks study in 1975, there have been other systematic reviews of adult correctional education that do not apply meta-analytic methods (e.g., Gaes, 2008), and there have been meta-analyses of correctional education programs administered to juvenile offender populations (e.g., Lipsey, 2009). With the exception of the Lipton, Martinson, and Wilks study, which is important to acknowledge because of its seminal role in the field, we discuss only meta-analyses of adult correctional education programs, because their methods, findings, and conclusions are most relevant for providing context to our study. Additionally, readers should note that we are aware of two dissertations (Chappell, 2003; Wells, 2000) that have used meta-analytic techniques to assess the relationship between correctional education and recidivism. We do not review their analyses in depth here, but their findings, by and large, accord with those of Wilson, Gallagher, and MacKenzie (2000); MacKenzie (2006); and Aos, Miller, and Drake (2006).

notable, in part, because it set the tone for future research and policy discourse in the field—establishing the belief that "nothing works" in prisoner rehabilitation. However, the three more recent meta-analyses have turned that belief around.

Wilson, Gallagher, and MacKenzie (2000)

Twenty-five years after the Lipton et al.'s work, in 2000, David Wilson, Catherine Gallagher, and Doris MacKenzie (2000) at the University of Maryland revisited Lipton et al.'s work, conducting a meta-analysis that included 33 studies of correctional education programs administered to adults published after 1975—a time period that broadly covered the time since the Lipton et al. study was released. Wilson and his team sought to address some limitations in Lipton et al.'s work, in particular by using formal meta-analytic techniques (techniques that were not yet developed when the Lipton et al. study was conducted), which average findings of multiple studies into a single parameter of program or "treatment group" efficacy. Additionally, they rated each study using a scale that they and their colleagues at the University of Maryland developed specifically for systematic reviews of correctional programs (Sherman et al., 1997). This scale, referred to as the Maryland Scientific Methods Scale ranges from 1 to 5, and accords the highest rating (5) to well-executed randomized control trials and the lowest ranking (1) to studies that lack a comparison group. Wilson and his colleagues dropped all studies that lacked a comparison group and used the Maryland Scale rating as a statistical control in their analysis. Only three of the 33 studies included employed random assignment. *Whereas the Lipton et al. study documented mostly mixed results, the Wilson et al. study found that correctional programs were beneficial, by and large.* In their meta-analysis, they showed that participation in academic programs—including adult basic education, GED, and postsecondary education programs—was associated with an average reduction in recidivism of about 11 percentage points. Thus, Wilson and his team's findings, based on more recent programs and more rigorous methods of analysis, questioned the claim that "nothing works."[7]

MacKenzie (2006)

A few years later in 2006, Doris MacKenzie, a co-author of the Wilson study, updated the Wilson et al. study meta-analysis to include a handful of newer studies, to limit the sample to only those studies published after 1980, and to those studies that had stronger study designs. Specifically, to be included in MacKenzie's re-analysis, the study needed to employ one of the following three research designs: a well-executed randomized, controlled trial; a quasi-experimental design with very similar treatment and comparison groups; or a quasi-experimental design with somewhat dissimilar treatment and comparison groups, but reasonable controls for

[7] Since the publication of the Lipton, Martinson, and Wilks (1975) study, a number of criminologists and policymakers questioned the claim that "nothing works." However, it was not until the Wilson, Gallagher, and MacKenzie (2000) study's meta-analysis that a comprehensive evaluation of the literature was synthesized in a systematic way to directly challenge the conclusion of the Lipton, Martinson, and Wilks (1975) study.

differences. Only one of the 13 studies included employed random assignment. In her re-analysis, she again found that *academic program participation appeared beneficial*: The odds of not recidivating were 16 percent higher among academic program participants than nonparticipants. However, with the new sample parameters in place, she now found that vocational program participation was also associated with a reduction in recidivism: The odds of recidivating were 24 percent lower among vocational program participants than nonparticipants. She did not update the analysis of employment.

Aos, Miller, and Drake (2006)

Finally, also in 2006, Steve Aos, Marna Miller, and Elizabeth Drake of the Washington State Institute for Public Policy conducted a meta-analysis of 571 offender rehabilitation programs for adults and for juveniles, ranging from counseling to boot camps to education. They limited their sample to studies conducted from 1970 onward and, like MacKenzie's meta-analysis published the same year, included only studies that met the same design criteria as MacKenzie (listed above). The number of studies reviewed that employed random assignment is not clearly stated in Aos et al.'s documentation. In analyzing 17 studies of academic education programs and four studies of vocational education/CTE programs administered to adults, they found results that largely agreed with MacKenzie's: *On average, participants had lower rates of recidivism than their nonparticipant peers.* Specifically, they found that academic program participation was associated with a 7 percent reduction in recidivism, and vocational program participation was associated with a 9 percent reduction in recidivism.

In sum, then, early reviews of correctional education programs administered to adults found inconclusive evidence to support their efficacy—a finding that contributed to the popular belief that "nothing works" in prisoner rehabilitation; however, this conclusion may have been premature, given that appropriate analysis techniques had not been developed (Slavin, 1984). More recent reviews using meta-analysis techniques question the conclusions of the earlier work, finding evidence of a relationship between correctional education program participation before release and lower odds of recidivating after release. However, the most recent meta-analyses (Aos, Miller, and Drake, 2006; MacKenzie, 2006) did not consider employment outcomes; thus, whether program participation is associated with postrelease success in the labor market remained unclear.

Approach

In this section, we discuss the two-part approach we took to conducting our evaluation, starting the systematic review of the literature to identify and narrow down the relevant research from the published and grey literature and then turning to the meta-analysis of the relevant research results.

Approach to Conducting the Systematic Review of the Literature

As discussed in Chapter One, correctional education is a highly varied approach to rehabilitating inmates, the administration of which depends on state and federal resources, the infrastructure and staffing in place at the facility, and the skills and abilities of the inmate population (e.g., some inmates require basic literacy and quantitative skills, while some are able to take college-level courses). Given all these variables, practitioners take a variety of programmatic approaches to rehabilitation, which, in turn, means that researchers who seek to empirically study how effective correctional education is vary in their research designs and in their study foci.

To accommodate this variation in both programming and in research methods, we took as inclusive an approach as possible to evaluating the existing literature base so that our evaluation findings would generalize to the broadest set of programs. Thus, our analysis was intended to provide an *overall empirical examination of correctional education's effectiveness* based on the array of programs and systems in place during the past three decades, and was not a program-by-program evaluation. To be as informative as possible to policymakers and practitioners, we restricted our focus to correctional education programs administered to adults in the United States. There were not enough studies of correctional education administered to juveniles that met our methodological standards to produce a sound meta-analysis. Hence, we instead provide a systematic review of the juvenile correctional education literature, presented in Chapter Three of this report.

We began our search by scanning the universe of potential documents to compile all available empirical research studies that examine the effect of correctional education programs on the three outcomes of interest—recidivism, postrelease employment, and reading and math scores. This included a search of relevant research databases; a "grey literature" search of online repositories maintained by research organizations, think tanks, and universities; and a bibliographic scan of all major literature reviews, systematic reviews, thematic policy overviews, and existing meta-analyses of inmate rehabilitation programs. This search yielded 1,112 documents, of which 267 were identified as primary empirical studies. We define a *primary empirical study* as one in which the authors were directly responsible for the research design, data analysis, and the reporting of the findings.

To be included in our meta-analysis, the study needed to meet three eligibility criteria. First, it needed to evaluate an *eligible intervention*, defined here as an educational program administered in a jail or prison in the United States published (or released) between January 1, 1980, and December 31, 2011. We define an *educational program* as one that includes an academic or vocational curriculum taught by an instructor, designed to lead to the attainment of a degree, license, or certification. The instruction needed to occur while the participant was incarcerated; thus, postrelease/parolee-focused programs were not eligible. Also, instructional programs that did not explicitly address academic or vocational skills—for instance, life skill programs or cognitive-behavioral programs—were not eligible.

Second, the study needed to measure the effectiveness of the program using an *eligible outcome measure*, which for our meta-analysis included recidivism, postrelease employment, and achievement test scores.

Finally, the study needed to have an *eligible research design*, which, for our purposes, is one where there is a treatment group comprising inmates who participated in or completed the correctional education program and a comparison group of inmates who did not. Two doctoral students from the Pardee RAND Graduate School of Public Policy reviewed each study independently to determine whether studies met each of the three criteria. A project team member (Ph.D.-level) reviewed and reconciled cases where the students did not agree on their assessments.

Of the 267 primary empirical studies, 58 met all three eligibility criteria and were then subjected to a full scientific review conducted by a team of ten faculty members from various academic departments across the country who had substantive expertise in correctional education, criminal justice, and/or social services for at-risk populations. Each team member independently reviewed each study and extracted key pieces of information about the program being evaluated and about the study's setting, participants, and design. Two project team members reviewed and reconciled cases where the review team did not agree on their assessments. For additional quality control, in addition to the aforementioned external review, all outcome metrics were independently assessed and verified by two Ph.D. researchers who were members of the project team.

Once all data were abstracted and verified, each study was rated in terms of its scientific rigor. A key metric of scientific rigor is the degree to which the researchers who conducted the studies effectively mitigated the threat of selection bias. This form of bias occurs either when program participation is voluntary or when inmates are selected to participate by program officials based on objective measures of academic readiness (e.g., literacy level, Test for Adult Basic Education (TABE) scores, pre-incarceration grade level proficiency) and/or subjective perceptions of the inmate's competencies. When such nonrandom selection occurs, IF inmates receiving correctional education are more motivated, more academically prepared, and in better health than their peers who do not participate in the program; this means that any difference observed on outcomes between treatment and comparison groups may reflect the types of inmates who participate in the program and not necessarily the effect of the program on the inmate.

To mitigate this form of bias as much as possible, we partitioned our findings two ways: (1) findings aggregated across all eligible studies, and (2) findings aggregated across only those studies with the most rigorous research designs. The former includes all studies that met our eligibility criteria, while the latter includes only those studies that used either a well-executed randomized controlled trial or a quasi-experimental design with very similar treatment and

comparison groups.[8] When possible, we focused our analytic attention on the latter set of studies, because they are least likely to be affected by selection bias, and thus, best positioned to estimate the true effect of participating in a correctional education program.

Approach to Conducting the Meta-Analysis

Meta-analysis is a statistical technique applied to data obtained from a systematic review in which findings of multiple studies are averaged into a single parameter that measures how much program participants (the treatment group) differ from nonparticipants (the comparison group) on pre-selected outcomes. We constructed our treatment and comparison groups as conservatively as possible, following an intent-to-treat approach. In an intent-to-treat approach, every subject who was assigned to the treatment group is analyzed on the outcome of interest as a member of the treatment group, regardless of whether or not they received the full dosage of the treatment through completion. We conducted three separate meta-analyses corresponding to our three outcomes of interest: recidivism, postrelease employment, and achievement test scores. Our recidivism analysis is based on 50 studies, our employment analysis is based on 18 studies, and our achievement test score analysis—which looks at reading and math score tests—is based on four studies.[9] These add up to more than the 58 studies that emerged from the systematic analysis, because some studies used both recidivism and postrelease employment as outcomes and, thus, contribute to both the recidivism and the employment meta-analysis. All four of the studies that used achievement test scores as the outcome variable evaluated the effects of computer-assisted instruction. Therefore, although our analyses of recidivism and postrelease employment outcomes look at a broad range of correctional education programs, our analysis of achievement test scores is narrowly focused on programs with computer-assisted instruction. For more information on the details of the meta-analysis and how it was conducted, see the meta-analysis report (Davis et al., 2013).

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[8] To classify studies according to how much they mitigated selection bias, we used the Maryland Scientific Methods Scale, a well-regarded rating scheme of research designs in the social sciences developed by criminologists at the University of Maryland (Farrington et al., 2006; Sherman et al., 1997). The scale has five levels: Level 5 indicates a well-executed randomized controlled trial with low attrition; Level 4 is a quasi-experimental design with very similar treatment and comparison groups; Level 3 is a quasi-experimental design with somewhat dissimilar treatment and comparison groups but reasonable controls for differences; Level 2 is a quasi-experimental design with substantial baseline differences between the treatment and comparison groups that may not be well-controlled for; and Level 1 is a study that does not have a separate comparison group receiving the treatment. In our partitioning of the findings, we consider those studies as having the highest degree of rigor if they received either a Level 4 rating or a Level 5 rating. More specific information on the properties of the Maryland Scientific Methods Scale and how we applied it to our 58 studies is included in the full companion report (Davis et al., 2013).

[9] Across the 58 studies, we were able to extract a total of 102 effect sizes. The number of effect sizes exceeds the number of studies, because a study could contain multiple treatment and comparison groups, and thus multiple comparisons. Our recidivism analysis is based on 71 effect sizes from 50 studies, our employment analysis is based on 22 effect sizes from 18 studies, and our test score analysis is based on nine effect sizes from four studies.

Meta-Analysis Findings

In this section, we present the results of our meta-analysis. Table 2.1 provides a summary of the findings across the outcome domains. In the table, we interpret the difference in each outcome between the treatment and comparison group for all studies regardless of the quality of the study design and then only for the most rigorous studies. We note the total number of studies that contributed to the finding (n) and whether the finding was statistically significant at conventional levels ($p < .05$) or not statistically significant (n.s.). We then summarize the overall effectiveness of correctional education for each outcome. In the remainder of this section, we discuss the recidivism, postrelease employment, and achievement score findings in the table in more detail.

Table 2.1. Summary of Meta-Analysis Findings by Outcome

	Summary of Meta-Analysis Results		
Outcome	**All Eligible Studies**	**Most Rigorous Studies**	**Overall Effectiveness**
Recidivism	Inmates who participated in correctional education programs had a ***36% lower odds of recidivating*** than inmates who did not n = 50 studies, $p < .05$	Inmates who participated in correctional education programs had a ***43% lower odds of recidivating*** than inmates who did not. n = 7 studies, $p < .05$	Correctional education is an ***effective strategy*** for reducing recidivism
Post-Release Employment	The odds of obtaining employment among inmates who participated in correctional education programs are ***13% higher*** than the odds of obtaining employment among inmates who did not. n = 18 studies, $p < .05$	The odds of obtaining employment among inmates who participated in correctional education programs are ***48% higher*** than the odds of obtaining employment among inmates who did not. n = 1 study, $p < .05$	Correctional education is ***potentially an effective strategy*** for improving the postrelease employment prospects of inmates.
	Achievement Test Scores		
Reading Achievement Test Scores	The overall effect of computer-assisted instruction relative to traditional instruction is ***0.04 grade levels, or about 0.36 months of learning in reading*** n = 4 studies, not significant	Not applicable	Learning gains in reading among inmates exposed to computer-assisted instruction are similar to learning gains in reading among inmates taught via traditional instruction methods
Math Achievement Test Scores	The overall effect of computer-assisted instruction relative to traditional instruction is ***0.33 grade levels, or about 3 months of learning in math***. n = 3 studies, not significant	Not applicable	Learning gains in math among inmates exposed to computer-assisted instruction are similar to learning gains in math among inmates taught via traditional instruction methods

The Relationship Between Correctional Education and Recidivism

Recidivism is one of the most commonly used measures of effective prisoner rehabilitation in criminal justice research, because it conveniently indicates how much individuals are able to successfully re-integrate back into their communities and desist from further criminal activity. Thus, it is not surprising that the majority (n = 50) of our eligible studies used recidivism as the primary outcome measure.

However, when we looked across studies, we found that recidivism was defined a number of ways; these definitions included reoffending, rearrest, reconviction, reincarceration, technical parole violation, and successful completion of parole. We used whatever form of recidivism the study authors reported so that we could be as inclusive as possible. In addition to how they defined recidivism, studies varied in the time period through which they followed the study participants after release from prison, ranging from six months to over ten years. When there were multiple outcomes and/or time periods reported, we gave preference to reincarceration (because this represents the modal definition of recidivism used by the authors of the studies; n = 34) and recidivism measured within one year of release or as close as possible to one year of release (because this represents the modal time period used by the authors of the studies; n = 13).

For our analysis of recidivism, the treatment group consisted of inmates who participated in or completed a correctional education program and the comparison group consisted of inmates who did not participate in or complete the correctional education program.

The top row of Table 2.1 summarizes the results of our recidivism meta-analysis. When we aggregated across all 50 studies—which represent 32 years of empirical assessments of the effects of correctional education and which have analyses ranging in methodological quality and rigor—we find that inmates who participated in correctional education programs had a 36 percent lower odds of recidivating than inmates who did not. This relationship is statistically significant at $p < .05$.

Because many correctional education programs select inmates to participate based on their level of academic preparedness or motivation, it could be the case that lower recidivism rates among treatment group members reflect preexisting differences between the treatment and comparison groups and not the effect of program participation—a selection bias that could be reflected in the studies with the least rigorous research designs. However, this relationship remained robust when we restricted our analysis to the seven studies with the most rigorous research designs: *Inmates who participated in correctional education programs had a 43 percent lower odds of recidivating than inmates who did not.* This relationship is statistically significant at $p < .05$. This suggests that selection bias is not driving our findings. Given that we find significantly lower rates of recidivism among treatment group members when looking at all

eligible studies as well as when looking only at those studies with the strongest research designs, we conclude that *correctional education is an effective strategy for reducing recidivism*.[10]

The Relationship Between Correctional Education and Postrelease Employment

Postrelease employment is an important measure of correctional education's effectiveness because it indicates how much the training and skills received while incarcerated prepare individuals to enter and succeed in the formal labor market. However, unlike the case with recidivism, fewer eligible studies used employment as the outcome (n = 18).

Like recidivism, postrelease employment was defined a number of ways, including having ever worked part-time since release, having ever worked full-time since release, having been employed for a specified number of weeks since release, and employment status at the time of data collection. Additionally, studies varied in the time period through which they followed the study participants after release from prison, ranging from three months to 20 years. When there were multiple outcomes and/or time periods reported, we gave preference to having ever worked full- or part-time since release (because this represents the modal definition of postrelease employment used by the study authors; n = 9) and employment measured within one year of release (because this represents the modal time period used by the study authors; n = 7).

For our analysis of postrelease employment, the treatment group consisted of inmates who participated in or completed a correctional education program, and the comparison group consisted of inmates who did not participate in or complete the correctional education program.

The second row of Table 2.1 summarizes the results of our postrelease employment meta-analysis. When aggregating across all 18 eligible studies, we find that the odds of obtaining postrelease employment among inmates who participated in correctional education programs are **13 percent higher than the odds of obtaining postrelease employment among inmates who did not**. This relationship is statistically significant at $p < .05$. Unlike with our analysis of recidivism, we cannot assess how much this finding is robust to the threat of selection bias, because there is only one study that can be classified as having a rigorous research design. Although this one study (which used matching to create a comparison group) did find statistically significant higher rates of postrelease employment among treatment group members, it assessed only one program, and, thus, it is not possible to generalize this finding to the array of programs in operation. Given that we find significantly higher rates of postrelease employment among treatment group members when looking at all eligible studies but cannot rule out the possibility of selection bias, the evidence is only suggestive that correctional education is

[10] In additional analyses not shown, we find that this relationship holds across academic (adult basic education, high school/GED programs, postsecondary) programs, and vocational certification programs.

potentially an effective strategy for improving the postrelease employment prospects of inmates.[11]

The Relationship Between Correctional Education and Test Scores

Test scores—reading and math—measure the immediate cognitive gains that result from exposure to educational programming and are common metrics used in studies that seek to measure educational effectiveness. Unfortunately, only four studies in our systematic review used test scores as an outcome. As mentioned earlier, these four studies specifically evaluated the effects of computer-assisted instruction; as such, they provide evidence about the effectiveness of this particular instructional approach, one that is becoming increasingly common in correctional facilities. Three of the four studies used rigorous research designs (specifically, randomization), but because there are so few studies, we pool them all together and do not disaggregate by the quality of the research design. All four studies used reading test scores as an outcome, and three of the four studies used math test scores as an outcome, as shown in Table 2.1.

We converted the outcomes into grade equivalents, where one unit is equal to a single nine-month academic year of learning in a particular content area. This metric typically refers to a standard scholastic setting rather than a correctional education setting, in which students receive approximately one hour of instruction in each of six to seven content areas for five days per week. Unlike the studies of recidivism and employment, the treatment groups for these four studies include those who were taught through computer-assisted instruction and the comparison groups included those who were taught through traditional face-to-face methods.

The third row of Table 2.1 summarizes the results of our reading test score meta-analysis, and the fourth row of Table 2.1 summarizes the results of our math test score meta-analysis. In both sets of analyses, we find that inmates receiving computer-assisted instruction have greater gains than inmates receiving traditional face-to-face instruction. Specifically, we find that the *overall effect of computer-assisted instruction relative to traditional instruction is equivalent to about 0.36 months of learning in reading and three months of learning in math*. However, because neither of these gains is statistically significant, we conclude that *learning gains in both reading and in math among inmates exposed to computer-assisted instruction are similar to learning gains made by inmates taught through traditional instruction methods*.

Because computer-assisted instruction can be self-paced and can be supervised by a person other than a licensed classroom teacher, it may be less costly to administer and could even allow correctional facilities to expand their instructional course offerings. For these reasons, the finding of no statistically significant difference between computer-assisted and traditional (face-to-face) instruction suggests that, based on current evidence, computer-assisted instruction may be a

[11] In additional analyses not shown, we find that this relationship holds across academic (adult basic education, high school/GED programs, postsecondary) programs, and vocational certification programs.

reasonable alternative to traditional, face-to-face classroom instruction in correctional facilities. It is also true that the technology underlying computer-assisted instruction has improved (and will continue to improve) over time relative to the four studies assessed; this suggests that the effect of computer-assisted technology relative to traditional instruction methods may be larger than it appears in our assessment. Given that we only had four studies, the most recent of which was published in 2000, more research is needed to understand the efficacy of this instructional approach as it is currently being implemented.

Results of Comparing Correctional Education and Reincarceration Costs

Although our meta-analysis shows that correctional education is effective at reducing recidivism, is it cost-effective? For example, it could be that the gains in reduced recidivism are outweighed by the costs of providing the correctional education programs. Although a formal cost-effectiveness analysis was beyond the scope of our study, to place our meta-analytic findings into context, we undertook a basic cost analysis using estimates of the costs of correctional education and those of incarceration.[12] The cost analysis is done for a three-year window after release from prison. The detailed methodology of how we created the cost estimates can be found in Chapter Three of our earlier report (Davis et al., 2013).

To estimate the *direct costs* of providing education to inmates, we obtained three inputs. First, we derived an estimate of the cost per year per inmate for correctional education. We used data from Bazos and Hausman (2004), who calculated the average cost of correctional education programs per inmate participant using information from the Three States Study, which assessed the relationship between correctional programs and recidivism in Maryland, Minnesota, and Ohio for approximately 3,170 inmates (Steurer, Smith, and Tracy, 2003). We also used data from the 2007 Corrections Compendium Survey Update on Inmate Education Programs (Hill, 2008). These two sources estimated that the average annual cost of correctional education programs per inmate participant was $1,400 and $1,744, respectively.

Second, the reincarceration rate affects the cost-effectiveness of the intervention: The higher the reincarceration rate, the greater the potential cost savings. We used the three-year reincarceration rate estimates for correctional education participants and nonparticipants. Specifically, we used the most conservative reincarceration rate estimates based on the Pew Charitable Trust's most recent national estimate of reincarceration based on 41 states: 43.3 percent for individuals who *did not* receive correctional education, and 30.4 percent for who those *did*—a risk difference of 12.9 percentage points, as estimated from our meta-analysis (Pew Center on the States, 2011).

[12] Although our meta-analysis incorporated a range of indicators to construct our measure of recidivism (e.g., reincarceration, rearrest, parole revocation rates), here we are able to base our cost analysis on estimates of cost for three-year reincarceration rates.

Third, we used data on the average annual cost per inmate of incarceration from the Bureau of Justice Statistics' (Kyckelhahn, 2012) analysis of state corrections' expenditures[13] and the Vera Institute of Justice's study on the price of prisons (Henrichon and Delaney, 2012), which collected cost data from 40 states using a survey; these two studies estimated the average annual cost per inmate to be $28,323 and $31,286, respectively.[14] Assuming a mean incarceration length of stay of 2.4 years (Pastore and Maguire, 2002), we calculated the average incarceration costs as between $67,975 and $75,086, respectively, based on the two studies. For more information on the details of the cost analysis and how it was conducted, see the meta-analysis report (Davis et al., 2013).

Focusing on a hypothetical pool of 100 inmates, the *direct costs* of correctional education programs and of incarceration itself, and using a three-year reincarceration rate, we estimate that the direct costs of providing education to inmates range from $140,000 to $174,400 for the pool of 100 inmates (or $1,400 to $1,744 per inmate) using the two sources mentioned above. The three-year reincarceration costs for those who did not receive correctional education would be between $2.94 million and $3.25 million, versus $2.07 million and $2.28 million for those who did. Reincarceration costs are thus $870,000 to $970,000 less for those who receive correctional education. Thus, *the direct costs of providing correctional education appear to far outweigh the direct costs of reincarceration*.

Another way to look at the cost-effectiveness of providing correctional education is to calculate the break-even point—defined as the risk difference in the reincarceration rate required for the cost of correctional education to be equal to the cost of incarceration. For a correctional education program to be cost-effective—or break even—we estimated that a program would need to reduce the three-year reincarceration rate by between 1.9 percentage points and 2.6 percentage points. In fact, our meta-analytic findings indicate that participation in correctional education programs is associated with a 13 percentage-point reduction in the risk of reincarceration three years following release. Thus, *correctional education programs appear to far exceed the break-even point in reducing the risk of reincarceration.* Given that some programs appear more effective than others, the exact ratio of costs to benefits will naturally depend on the effectiveness of a particular program. Future investments in correctional education would ideally be designed to allow for rigorous identification of effective programs' features.

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[13] Expenditure data were extracted from the U.S. Census Bureau's Annual Survey of State Government Finances. It is available on the U.S. Census Bureau's website at http://www.census.gov/govs.

[14] Ideally, one would use marginal costs rather than average costs in this calculation, but the extent to which marginal cost differs from average cost is likely to depend on the scale of the intervention, and there is no natural scale here—depending on the intervention, one could apply a correctional education program to a very small number of inmates or throughout an entire state prison system. For simplicity in what follows, we imagine an intervention of sufficient magnitude so as to allow for shifts in quasi-fixed factors such as the amount of housing needed for inmates or the number of prison staff, in which case average costs might offer a good approximation for marginal costs.

Because the analysis above accounts only for direct costs and not for indirect costs, such as the financial and emotional costs to crime victims and costs to the criminal justice system as a whole, this is a conservative estimate of the broader effect correctional education could yield.

Summary

In this chapter, we provided an overview of our systematic review and meta-analysis of studies of correctional education programs administered to adults. As part of our review, we identified 58 studies of educational programs administered in a jail or prison in the United States published (or released) between January 1, 1980, and December 31, 2011 that used recidivism, postrelease employment, or achievement test scores as outcome measures and that had adequate treatment and comparison groups.

Based on the higher-quality research studies, we found that, on average, inmates who participated in correctional education programs had 43 percent lower odds of recidivating than inmates who did not. This translates to a reduction in the risk of recidivating of 13 percentage points, suggesting that correctional education is an effective strategy for reducing recidivism.

When aggregating across 18 studies that used employment as an outcome, the odds of obtaining employment postrelease among inmates who participated in correctional education (either academic or vocational education/CTE programs) were 13 percent higher than the odds for those who did not. However, only one of the 18 studies had a high-quality research design, limiting our ability to draw conclusions about the effectiveness of correctional education in this area.

Lastly, when aggregating cross four studies that used achievement test scores as an outcome, we found that learning gains in both reading and in math among inmates exposed to computer-assisted instruction are similar to learning gains made by inmates taught through traditional (face-to-face) instruction methods.

Our meta-analysis of correctional education builds off a series of past meta-analyses. While the first meta-analysis in the field had mixed results and led to the belief that "nothing works" in the field of prisoner rehabilitation, it had some limitations. Three more recent meta-analysis, including newer studies and better meta-analytic techniques, reverse those earlier results, showing that providing correctional education to inmates does reduce recidivism and improve other outcomes. Our meta-analysis, which uses more recent studies and an even more rigorous approach, confirms what the past three meta-analyses have shown about the effectiveness of correctional education.

Finally, although doing a formal cost-effectiveness analysis was beyond the scope of this study, a basic cost comparison of the direct costs of providing correctional education to inmates and applying those costs to a hypothetical pool of 100 inmates and the direct costs of incarceration. We found that providing correctional education to prisoners is cost-effective

compared with the direct costs of reincarceration. We also note that the results are likely to be conservative, because they do not include the indirect costs of reincarceration.

3. A Systematic Review of Correctional Education Programs for Incarcerated Juveniles

Introduction

In 2011, about 61,000 individuals below age 21 were incarcerated on any given day in the United States. This figure represents roughly a quarter of 1 percent of the population age 15–20 in the United States (U.S. Census Bureau, 2011; Sickmund et al., 2013). By comparison, roughly 1 percent of the U.S. adult population was being held in prisons and jails in the same year (Glaze and Parks, 2012, U.S. Census Bureau, 2011), so the rate of juvenile incarceration is markedly lower than that for adults. In addition, the number of incarcerated youth in the United States has declined steadily in the past decade and a half, dropping from about 105,000 in 1997 (Sickmund et al., 2013). Despite this promising trend, incarceration rates among juveniles are still far higher in the United States than in other developed nations. In 2002, the proportion of incarcerated juveniles among 12 developed nations ranged from a hundred-thousandth of a percent in Japan to about seven-hundredths of a percent in New Zealand and South Africa (Hazel, 2008).[15] The rate of youth incarceration in the United States is therefore more than three times the highest rates in other developed nations.

In this chapter, we define *incarcerated youth* as individuals under age 21 who are legally assigned to correctional facilities as a result of arrest, detainment for court proceedings, adjudication by a juvenile court, or conviction in an adult criminal court (Office of Juvenile Justice and Delinquency Prevention, 2013). It is important to note, however, that correctional facilities are themselves a heterogeneous category. As of 2011, the largest share of incarcerated youth were housed in short-term detention centers (34 percent), followed by group homes (30 percent) and long-term secure facilities (27 percent).[16] A smaller proportion were confined in ranch or wilderness camps (4 percent), shelters (2 percent), reception centers (2 percent), and boot camps (1 percent) (Sickmund et al., 2013). Importantly, these proportions exclude a nontrivial number of juveniles tried in adult criminal courts or confined in adult facilities. As of 2011, an estimated 10,000 youth on any given day were being held in adult jails and prisons (National Juvenile Justice Network, 2011).

Among individuals incarcerated in juvenile correctional facilities in the United States in 2011, about 86 percent were male, and the population included a marked overrepresentation of

[15] In terms of nations similar to the United States, the rate was reported to be about five-hundredths of a percent in England and Wales and about half that in Australia. Data for Canada were not reported.

[16] Long-term secure facilities included training and reform schools as well as other juvenile correctional facilities.

youth of color (Sickmund et al., 2013). Forty percent of incarcerated youth were black and 23 percent were Hispanic, as compared with about 13 percent and 17 percent, respectively, in the U.S. population at large. White, non-Hispanic youth made up 32 percent of the incarcerated juvenile population, as compared with 63 percent of the U.S. population (Sickmund et al., 2013, U.S. Census Bureau, 2013). About 30 percent of youth incarcerated in juvenile correctional facilities in 2011 were under the age of 16. Another 55 percent were ages 16 or 17, and 14 percent were ages 18 to 20 (Sickmund et al., 2013).[17]

Juvenile offenders hail disproportionately from challenging circumstances. According to 2003 data from the nationally representative Survey of Youth in Residential Placement, 56 percent of incarcerated youth reported that they had been living with only one parent at the time of commitment, and 26 percent reported that they had been living with neither parent. Nine percent of surveyed youth reported that they, themselves, were already parents (Sedlak and McPherson, 2010). Ninety percent of the incarcerated youth were found to have some type of emotional problem, and 71 percent had multiple emotional problems. A striking 20 percent of surveyed males and 40 percent of females reported that they had previously attempted suicide (Snyder and Sickmund, 2006). In addition, substance use history is much higher among incarcerated youth than among other youth in the population. Among incarcerated youth in 2003, 84 percent reported having used marijuana in their lifetimes, and 30 percent said they had used cocaine or crack; the corresponding numbers among non-incarcerated youth were 30 percent and 6 percent, respectively (Sedlak and McPherson, 2010).

Beyond these environmental and psychological risk factors, the problems facing juvenile offenders are compounded by comparatively weak academic skills. The average reading ability of incarcerated youth has been estimated at the fourth-grade level, placing them five years behind average grade-level targets (Project READ, 1978). Though this estimate is widely cited, it is based on data collected between 1976 and 1978; it is not clear how or whether the average literacy skills of juvenile offenders have changed during the past three decades. Incarcerated youth are also more likely than their counterparts to be learning disabled. In a 2003 synthesis of the research on youth with disabilities, Mears and Aron (2003) summarized evidence suggesting that between 30 and 50 percent of incarcerated youth have special education disabilities, as compared with approximately 10 percent of non-incarcerated youth. They also approximated that the proportion with emotional disabilities exceeded 50 percent, that as many as 20 may have severe emotional disturbances, and that as many as 12 percent may be mentally retarded. However, they noted that reporting on these percentages is quite difficult, given that screening procedures and diagnostic criteria are applied inconsistently across contexts and that students' disability records are not consistently transferred from their regular schools to their correctional education programs. This is important because under the Individuals with Disabilities Education Act (IDEA) (Pub. L. 101-476), minors with disabilities have a legal right to a free, appropriate

[17] Figures for incarcerated youth are based on 2011 data; comparison data for the U.S. population come from 2012.

public education in the least restrictive environment, including appropriate accommodations (U.S. Department of Education, 2013a). Due to the need for accommodations and regulatory documentation, students with disabilities who qualify for services under IDEA cost approximately 1.9 times as much to educate as those without disabilities (Chambers et al., 2004). Given the disproportionate representation of students with disabilities in juvenile correctional facilities and the cost of educating these students, juvenile correctional facilities often struggle to adequately serve the special needs of their students (Leone, 1994; Pasternak et al., 1988).

Nationally, the long-term outlook for youth who commit crimes as juveniles is somewhat unclear because states track juvenile recidivism using different metrics and different subsets of offenders, and some states do not make such data available at all. According to a 2006 report that used data from Florida, New York, and Virginia, the 12-month re-arrest rate among released juvenile offenders in either the juvenile or adult system was 55 percent. Using data from eight states, the same report estimated that 33 percent of juvenile offenders were re-adjudicated in a juvenile court or reconvicted in an adult criminal court within 12 months after release from a juvenile facility (Snyder and Sickmund, 2006).

One important determinant of juvenile offenders' prognosis appears to be incarceration itself. A recent study examined ten years of administrative data from Chicago and capitalized on plausibly random variation in juveniles' appearance before judges inclined to assign incarceration (Aizer and Doyle, 2013). Adjusting for demographic and crime severity variables, the study found that juvenile incarceration reduced offenders' high school completion rates by 13 percentage points and increased their adult incarceration rates by 22 percentage points. The authors suggested that expansion of less-restrictive penalties such as electronic monitoring and home confinement may be an especially effective—as well as cost-effective—strategy for reducing future criminality among juvenile offenders.

Purpose and Organization of the Chapter

Given that juveniles have the right to a publicly funded education, policymakers face the question of how best to provide educational services that will lower young offenders' risk of future crime and increase their chance of success in the legitimate economy. This question is particularly acute for offenders assigned to correctional facilities. Since incarcerated youth cannot take advantage of the public education systems available in their communities, correctional facilities must provide an alternative educational system to serve them. In educating juveniles, correctional facilities must serve a highly transient population of students who bring a widely varied set of educational and emotional needs (Sedlak and McPherson, 2010).

This chapter systematically reviews evidence about the effectiveness of educational interventions implemented within juvenile correctional facilities. Though, as noted above, some juveniles are tried and incarcerated as adults, our discussion and analysis in this chapter is limited to education in juvenile correctional facilities. This is because our extant meta-analysis of correctional education programs for adults has already examined the research on educational

programs for individuals held in adult facilities (Davis et al., 2013) and because juvenile correctional facilities constitute a distinct and separate part of the correctional system with their own sets of policy conditions and constraints (Gagnon et al., 2009).

In this chapter, we first present our methodological approach to the systematic review. We then summarize the results for the eligible studies identified, which we classify into six intervention types—Corrective Reading (a commercially packaged curriculum), computer-assisted instruction, personalized academic instruction, remedial academic instruction, vocational education, and GED completion. Based on the dependent variables in the eligible studies, we summarize available evidence for five types of outcomes: reading skills, mathematics skills, diploma completion, postrelease employment, and postrelease recidivism. For each intervention type reviewed, we contextualize our discussion of the eligible articles in terms of the wider body of literature that is not eligible for the systematic review (due to population, setting, methods, etc.) but that does address the effectiveness of the intervention under consideration. We conclude the chapter with a broad summary of findings, a discussion of methodological limitations, and suggestions for research and policy.

Approach

A fundamental difference between correctional education for juvenile and adult populations is that juveniles in the United States have a right to a public education. Therefore, all programs for incarcerated youth include a correctional education component. In other words, the question facing policymakers is not whether to provide education services for juveniles in correctional facilities, but which types of programs are most effective. The meta-analytic approach in our adult analysis included many types of correctional education, each of which was compared against a no-correctional-education scenario. A meta-analysis works best when you have a relatively homogenous intervention (i.e., prison education) tested among many arenas and settings. For adults, we were able to conduct a meta-analysis by comparing individuals who received some form of correctional education to those who did not. However, that approach is less well suited to studying the effectiveness of juvenile correctional education programs, since programs with an absence of correctional education are typically not present in the United States context on which our study is focused. Instead, our approach to synthesizing research on juvenile correctional education is to undertake a systematic review, in which we screen and evaluate articles using the same criteria as we employed in the adult meta-analysis. Yet, we now summarize the findings of the research as a literature review rather than aggregating estimated effect sizes across studies that are testing widely different hypotheses for the treatment versus nontreatment groups. We focus on describing the balance of evidence favoring the types of interventions examined in the literature we reviewed.

Document Identification

Our comprehensive search for articles and reports pertaining to juvenile correctional education was nearly identical to the search process we undertook for the adult meta-analysis. We employed the same databases in our search, which were the Education Resources Information Center (ERIC), Education Abstracts, Criminal Justice Abstracts, National Criminal Justice Reference Service Abstracts, Academic Search Elite, EconLit, Sociological Abstracts, and Google Scholar. As was true for the adult meta-analysis, our juvenile search was limited to studies conducted in the United States and released from 1980 through 2011. However, the search terms we employed in this case were specific to correctional education for juveniles. Our searches required one of the following descriptors from each set of terms:

- youth or juvenile
- juvenile justice, prison, jail, incarcerat* [where the asterisk serves as a wildcard, allowing for different word endings], detention center or corrections
- some indication of program type, including education, academic, diploma, GED, literacy, math, reading, science, job skills, job training, apprentice,* vocational education, voc tech, occupational education, career technical education, workforce [or work force] development, workforce training, workforce preparation, or school to work.

We then supplemented this list with manuscripts cited by other literature reviews on the topic of juvenile education. Altogether, the document search process resulted in 1,150 citations for title-and-abstract screening, as shown in Figure 3.1, which summarizes our search and screening process.

Eligibility Assessment

The documents collected through the database searches were then screened for eligibility by two graduate students at the Pardee RAND Graduate School who had been trained in screening procedures for the project. The manuscript screening procedures were identical to those described for the adult meta-analysis report (Davis et al., 2013), except that for the juvenile review, the manuscripts were required to describe the effects of an academic or vocational intervention on incarcerated juveniles, where the definition of juveniles was permitted at that stage to be defined by the manuscripts themselves or to include participants under age 21. As in the adult meta-analysis, the manuscripts were also required to be primary, empirical studies rather than literature reviews or opinion pieces. Each manuscript was screened independently by two screeners, and conflicts were resolved by a senior member of the research team. The screening process yielded 157 manuscripts eligible for full-text screening.

The full-text screening process involved an independent review of the full manuscripts—not just their titles and abstracts—by two graduate students. As was true for the adult meta-analysis, disagreements between the two screeners were resolved by a senior member of the research team. To pass full-text screening and be deemed eligible for inclusion in the systematic review, the study was required to meet three criteria:

- evaluate an *eligible intervention* within an *eligible population* and *setting*
- measure success of the program using an *eligible outcome measure*
- employ an *eligible research design*.

For this systematic review of the juvenile literature, an *eligible intervention* was defined as any academic or vocational education/CTE intervention program. An *eligible population*—namely, juveniles—was defined for our purposes as consisting primarily of individuals age 20 or below. An *eligible setting* was any facility, regardless of jurisdiction (state, local, etc.), to which juveniles were confined due to arrest, court proceedings, or adjudication/conviction. Eligible interventions were limited to academic or vocational education/CTE programs. Eligible interventions were permitted to include an aftercare (i.e., postrelease) component, but the interventions had to be delivered *primarily* within the correctional facility setting. Interventions that did not provide instruction in academic or vocational skills—for instance, mentoring programs, substance abuse programs, and mental health programs—were excluded from the definition of an eligible intervention.

We define *eligible outcome measures* as any measure of recidivism (e.g., re-arrest, reconviction, or re-incarceration), postrelease employment, academic attainment (e.g., GED or high school completion), or academic performance in reading and mathematics (e.g., test scores). Measures of academic performance and completion could be gathered during incarceration or postrelease.

Finally, we included two types of studies in the definition of *eligible research design*. The first and most common type was a *comparison-group design* in which a group of incarcerated juveniles who received an intervention were compared with a group of incarcerated juveniles who did not, or who received a different version of the intervention. The second type was a *single-case design*, which is a research approach discussed later in this section.

For comparison-group designs, as in our adult meta-analysis, we rated the rigor of the juvenile studies using two scales that closely correspond to one another—the Maryland Scientific Methods Scale and the U.S. Department of Education's What Works Clearinghouse (WWC) scale. On both, assessments of rigor reflect the extent to which the designs protect against selection bias, or unobserved differences between the treatment and comparison groups that are correlated with the outcome of interest. Table 3.1 summarizes the standards employed for both scales. Randomized trials with low attrition constitute the most rigorous of these types of designs, because randomizing the two groups renders the treatment and comparison group alike in expectation. We assigned these designs a 5 (the highest rating) on the Maryland Scale, and a "Meets Standards" rating on the WWC scale. Studies that demonstrate very close matches between treatment and comparison groups on relevant observable characteristics (at minimum, age, prior offenses, baseline education level, and time to data collection) are awarded a 4 on the Maryland Scale and a "Meets Standards with Reservations" rating on the WWC scale. Studies that do not demonstrate strong baseline matches (within a 20th of a standard deviation for the aforementioned variables) but that attempt to control for observed baseline differences earn a 3

on the Maryland Scale, but "Do Not Meet Standards" on the WWC scale. Studies that do not attempt to control for observed baseline differences between the treatment and comparison groups earn a 2 on the Maryland Scale, and do not meet WWC standards. The Maryland Scale assigns a rating of 1 to studies that do not include a comparison group because they include no way to estimate even roughly what would have happened to the treatment group in the absence of treatment, and these studies are not eligible for WWC review. Consistent with our adult meta-analysis, we formally exclude Maryland level-1 studies from those juvenile studies we deem eligible for our systematic review of evidence in this chapter. However, unlike in our adult meta-analysis, we do include brief descriptions of level-1 studies that are relevant to the interventions under discussion, insofar as they help to contextualize findings from the eligible studies. We make mention of relevant level-1 studies because these studies are often cited in the broader literature on what works in juvenile correctional education (e.g., Houchins et al., 2008; Wexler et al., 2013). Our aim in briefly mentioning level-1 studies as part of the research context while excluding them from our discussion of *eligible* studies is to acknowledge the centrality of some of these studies to the correctional education literature, while also highlighting why their designs do not warrant even limited inferences about program impact.

Table 3.1. Operational Definitions of Evidence Rating Categories on the What Works Clearinghouse and Maryland Scientific Methods Scales for the Juvenile Systematic Review

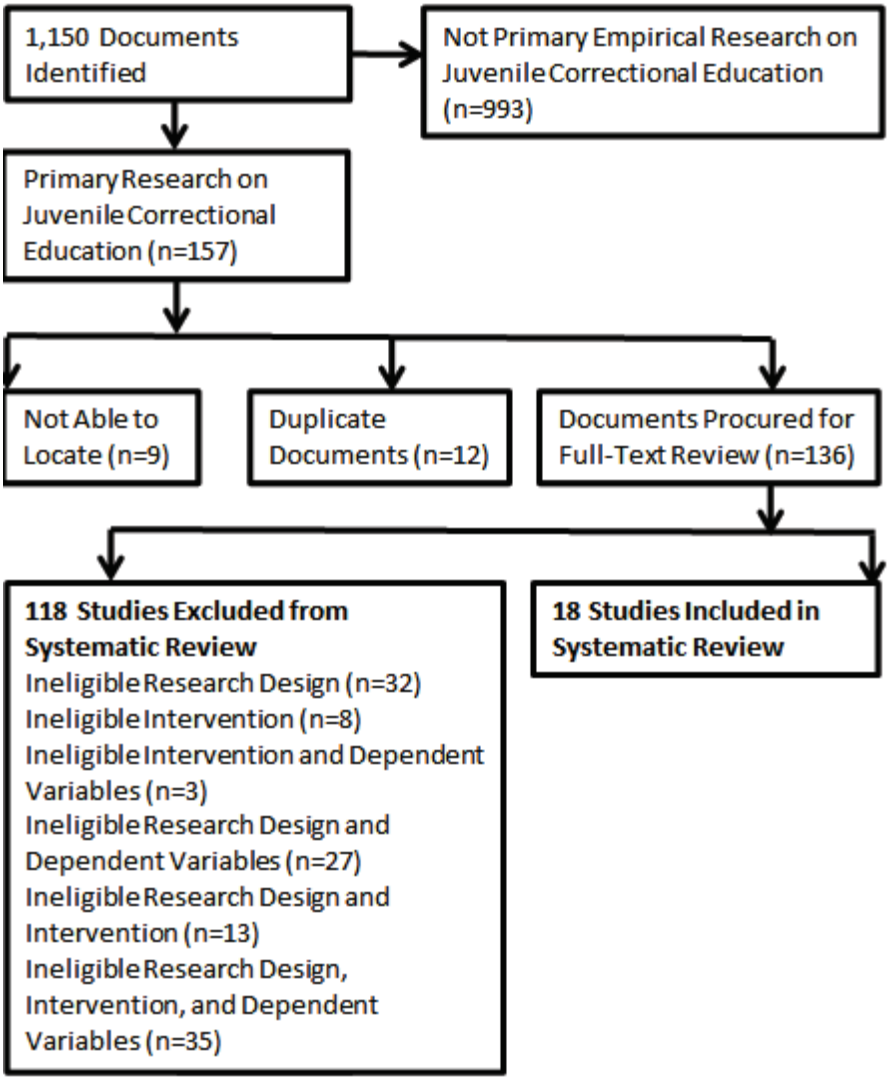
What Works Clearinghouse (WWC) Scale	Maryland (MD) Scientific Methods Scale	Joint Operational Definition
Meets Standards	5	Randomized, controlled trial with attrition below the liberal WWC threshold, *or* single-case designs with well-established pre- and post-intervention trends
Meets Standards with Reservations	4	Quasi-experimental design (or high-attrition RCT) in which the treatment and comparison groups are matched (within about 1/20th of an SD) at baseline on at least age, prior offenses, baseline educational level, and time to data collection. *Or* single-case designs with moderately establish trends.
Does Not Meet Standards	3	Treatment and comparison groups are matched on 1-2 variables other than gender, and/or there are statistical controls for at least some baseline differences between groups other than gender
	2	No random assignment for matching, and no statistical controls for baseline differences between treatment and comparison groups
	1	No separate comparison group

We make one notable exception to the comparison-group requirement, and that is for studies that use a class of approaches called single-case designs. Single-case designs are commonly employed in special education research, where large samples are often unavailable for intervention evaluation (Kratochwill et al., 2010). They involve systematically introducing an intervention with one or a few students in an effort to demonstrate causal effects on outcomes such as participant behavior or learning. These studies typically include a large number of pre- and post-intervention outcome measurements, allowing students to function as their own controls. In this way, they *do* include a comparison condition, but the comparison condition is the sustained pre-intervention state of the group that eventually receives treatment. Focusing on one or a handful of participants, these designs typically lack statistical power for conventional

hypothesis testing. However, insofar as it is possible to establish a clear trend for student performance in the absence of the intervention, then clear deviations from that trend in the presence of the intervention can be causally attributed to the intervention itself. The U.S. Department of Education's What Works Clearinghouse (WWC) has therefore established specific standards for the rigor of single-case design studies (Kratochwill et al., 2010). We follow these standards when rating the single-case designs included in our systematic review. This means that we assign a level-5 rating on the Maryland Scale to studies that receive the highest rating ("Meets Standards") under WWC standards for single-case designs, because these studies demonstrate a strong basis for inferring that observe effects are causal. This is consistent with our overall use of the Maryland Scale/WWC ratings as measures of internal validity (freedom from selection bias) rather than external validity (generalizability to broader populations). Still, because single-case design studies are very small and do not permit hypothesis testing, we caveat our level-5 ratings for single-case design studies with asterisks in Appendix Table A. This reflects the fact that the studies conform to a parallel set of internal validity standards established by the WWC for these designs. We acknowledge that the ability to generalize from such studies is limited by the very small samples they include.

Among the 157 studies eligible for full-text screening, nine could not be located. Another 12 were duplicates. This resulted in 136 that received full-text screening, of which 27 were deemed eligible for detailed review by our Scientific Review Team. Figure 3.1 illustrates the winnowing process, from the initial search through title-and-abstract screening and full-text screening. It also summarizes the reasons for exclusion among the articles that received a full-text screening.

Figure 3.1. Eligibility Assessment of Potential Documents for Inclusion in the Systematic Review



Scientific Review

The 27 studies that passed full-text screening were then reviewed independently by two Ph.D.-level researchers specifically trained in the data extraction protocol, as described in Chapter Two of the meta-analytic report (Davis et al., 2013). The scientific review team for the juvenile systematic review comprised a subset of review team members from the adult meta-analysis who brought specific expertise in correctional education for juveniles. As such, it included five faculty members from academic departments across the country, who received two days of training in the data extraction process, with a subsequent online evaluation for norming, and with periodic norming feedback via email. The data extraction protocol for the juvenile systematic review was modified slightly from the protocol for the adult meta-analysis, in that a question was

added about the standalone or integrated nature of the correctional education program, and a checkbox option for special education was added to the intervention content item. In addition, the scientific review team was asked only to identify the outcomes and baseline variables collected in the study rather than collecting the actual values of the variables, which were instead extracted by a graduate student on the project, with detailed checking and confirmation by a senior member of the research team. A copy of the juvenile scientific review protocol, including the main worksheet, the outcomes worksheet, the baseline characteristics worksheet, and the glossary, is shown in Appendix C.

Synthesis of Eligible Studies

Based on the extracted data, each study was rated for rigor on the Maryland Scale and WWC scale. Eighteen of the 27 studies that underwent scientific review were deemed eligible for formal inclusion in the analysis. Data from the 18 eligible studies were organized and summarized by intervention type; summaries of each are shown in Table A.1 in Appendix A. This table includes information about each study, including its citation, a description of the treatment and comparison conditions it examines, a listing of the demographics of the study population and the size of the treatment and comparison groups, a brief description of intervention duration and frequency, where reported, and quantitative summaries of the effect sizes reported or inferable in each of the studies. In cases where we had to calculate effect sizes on test score outcomes, we subtracted pre-post changes for the comparison group from pre-post changes for the treatment group, and divided by the pooled standard deviation of the pretest score. For dichotomous outcomes such as diploma completion rates, employment rates, and recidivism rates, we define *effects* as the percentage for the treatment group minus the percentage for the comparison group. The Maryland Scale rating reflects the extent to which the research design and analysis mitigated selection bias in the effect size estimate. In studies that employed random assignment, we report on the *intent-to-treat* effects, meaning the differences between participants *assigned* to the treatment and control groups, regardless of their compliance and persistence in the intervention. For randomized trials, a Maryland Scale rating of 5 means that the attrition rates of the treatment and control groups fell below the more liberal of the two attrition thresholds established by the WWC for a study to "Meet Standards." We provide additional details about the calculation we used for this threshold in our adult meta-analytic report (Davis et al., 2013).

Summaries of the nine studies that were deemed ineligible due to research design (i.e., level-1 studies) are still shown—but are shaded in blue—in Table A.1. Because of the small number of eligible studies within each category and because the hypotheses tested within a category of intervention types were not always uniform, our findings for each analytic category are described qualitatively rather than aggregated quantitatively across studies, as they were in the meta-analysis for adults. In the results section that follows, we present a synthesis of findings for each intervention category.

We begin our discussion of each intervention category by discussing the broader literature pertaining to that intervention, even if that literature focuses on noncorrectional settings or populations. Our discussion of the research contexts also includes a few studies (those in shaded rows in Table A.1) that were conducted in juvenile correctional facilities but were rated a level 1 on the Maryland scientific methods scale because they lacked an adequate comparison condition.

After briefly presenting the research context for each intervention, we discuss the findings of studies that were eligible for the systematic review. Where sufficient data are available, we report effect sizes in pooled pretest standard deviation units for assessment results, and in percentage point differences for recidivism and employment rates. For single-case design studies, we calculate and report mean differences in performance before and after intervention administration.[18] We conclude each intervention subsection with a summary of what can be said about that intervention in juvenile correctional settings, based on the preponderance of extant evidence.

Distinctions from Other Reviews of Interventions for Juvenile Offenders

Our systematic review is intended to complement other reviews that have examined the evidence on educational interventions for juvenile offenders. Lipsey (2009) has conducted a comprehensive meta-analyses on interventions designed to reduce juvenile delinquency. His study differed from ours, however, in that it included a wide array of interventions beyond education and was not limited to studies conducted within correctional facilities. He also limited his analysis to studies that focused on recidivism as the dependent variable of interest. Sander and colleagues (2012) also examined the effects of a broad array of interventions for juvenile offenders, including educational and non-educational interventions, and including studies conducted within and outside of correctional facilities, but they diverged from Lipsey in that they focused on academic rather than recidivism outcomes. In contrast to both of those studies, we limit our review to studies of academic and vocational education/CTE interventions implemented with juveniles incarcerated in correctional facilities.

Building on a small review of reading interventions in correctional settings by Krezmien and Mulcahy (2008), Wexler et al. (2013) undertook a review that focused only on academic interventions undertaken in juvenile correctional facilities, and that looked exclusively at academic outcomes. Though our review partially overlaps with that of Wexler et al. (2013), it differs in three key ways. First, similar to our meta-analysis of adult interventions, we include both academic and vocational education/CTE interventions rather than academic interventions only. Second, we consider not only academic achievement outcomes but also employment and

[18] Kratochwill et al. (2010) acknowledge the difficulty of presenting summary statistics for single-case design studies, where determinations of evidence are based on visual examination of trends rather than conventional hypothesis testing. They discuss reporting the percentage of non-overlapping data points as a way of describing effects, but this approach still says little about the substantive magnitude of effects. We report mean gains to help clarify the magnitudes in a way that is comparable to our reporting for comparison-group studies.

recidivism outcomes. Third, we include studies regardless of whether or not they are published in peer-reviewed journals. We do this in order to be broadly inclusive of reports, dissertations, and other ways in which research findings are often reported, and also to minimize publication bias, which may result if studies with positive findings are more likely to be published in journals than those with negative or null findings (Borenstein et al., 2009). We nevertheless take care to rate the rigor of studies using the Maryland Scale, which we operationalize using rules from the WWC scale, as described above. This clarifies the extent to which results are internally valid and free of likely selection bias. To address the issue of external validity—that is, generalizability—we report on sample sizes, sample demographics (where given) and, where possible, on the statistical significance of the effects.

Results

The 18 studies formally included in this systematic review, which are summarized in Table A.1, address six different categories of interventions: Corrective Reading (again, a commercially available curriculum), computer-assisted instruction, personalized academic instruction, remedial academic instruction, vocational training, and passing the GED test. We limit the systematic review to studies in which these interventions are administered within correctional facilities serving juveniles. The studies examine four types of outcomes: reading skills, diploma completion, postrelease employment, and recidivism, as measured by re-arrest or re-incarceration. It is notable that passing the GED assessment (GED Testing Service, 2013) serves as both an independent and dependent variable of interest in our review. This is because two of the studies examine the relationship between intensive, personalized instruction and academic attainment (including earning a GED), while two others examine the relationship between GED completion in a juvenile facility and postrelease employment and recidivism. Given that many correctional educators in workshops and individual discussions have pointed to implementation of the new online GED assessments as a current and pressing challenge (see Chapter Four), the evidence examining the effect of receipt of the GED was of particular interest to the research team.

Table 3.2 summarizes results for the two intervention categories—Corrective Reading and computer-assisted instruction—that use measures of reading skill as dependent variables. Table 3.3 summarizes results for the other three categories—personalized academic instruction, vocational training, and earning a GED—that focus on diploma completion, employment, and/or recidivism outcomes. Table A.1 presents additional, study-level details about each of the studies summarized in Tables 3.2 and 3.3.

Table 3.2. Summary of Findings for Reading Interventions

Intervention Type	Studies and Maryland Scale Ratings	Reading Effects	Preponderance of Evidence
Corrective Reading	n Studies=4 n Participants=49 Level-5 studies: 3 (1 randomized controlled trial, 2 single-case) Level-3 studies: 1	Average gains of 9 to 36 words read correctly per minute in 2 level 5 single-case design studies (no hypothesis test); Non-significant gain of 0.66 SD across reading domains in level-3 study (p=0.36); Non-significant gain of 0.21 SD across reading domains for group size of 4 versus 12 in level 5 randomized trial (p=0.65)	The preponderance of evidence about Corrective Reading in juvenile correctional settings is *positive* for reading skills based on two level 5 single-case designs and 1 level-3 study, but samples are small in all cases. Level-5 studies should be largely free of selection bias, but none of the level-5 studies provides a hypothesis test of the overall effects of Corrective Reading.
Computer-assisted instruction	n Studies=3 n Participants=1,399 Level-5 studies: 3	Gain of 0.21 SD in reading for Read 180 relative to default curriculum in level-5 study (p<.001); Nonsignificant decrease of 0.17 SD across reading domains for Fast ForWord relative to default curriculum in level-5 study (p>.05); Nonsignificant gain of 0.21 SD in reading for Tune in to Reading relative to FCAT Explorer in level-5 study (p>0.05)	The preponderance of evidence about Read 180 in juvenile correctional settings is *positive* for reading. The preponderance of evidence about Fast ForWord is slightly *negative but statistically nonsignificant* for reading. The preponderance of evidence onTune in to Reading is slightly *positive but statistically nonsignificant* for reading. All estimates should be largely free of selection bias.

NOTE: We do not provide MD Scale or WWC effectiveness ratings because the number of studies is small and some have very few students. Thus, we think it is premature to declare any of these interventions effective or ineffective based on available evidence. Instead, we provide a column reporting on the preponderance of existing evidence, which may be positive, mixed or negative for each outcome examined.

Corrective Reading

Research Context

Corrective Reading is a commercially available, intensive reading program designed for students whose reading skills are below grade-level. The curriculum, which emphasizes direct instruction over inductive or student-driven approaches, includes an instructional strand focused on decoding skills (i.e., identifying unfamiliar words) and another strand focused on comprehension, though the two strands can also be taught together (McGraw Hill Education, 2013).

In 2007, the WWC evaluated Corrective Reading and deemed it to have potentially positive effects on alphabetics (e.g., phonics and decoding) and fluency (e.g., rate and accuracy), but no discernible effects on comprehension (What Works Clearinghouse, 2007). This evaluation was based on a randomized trial undertaken in third-grade classrooms at eight elementary schools and thus did not focus on correctional education settings per se (Torgesen et al., 2006). The other

24 Corrective Reading studies screened in the WWC review did not meet WWC evidence standards. However, the WWC review occurred before the WWC had established separate standards for single-case design studies. This is important because two of the studies screened out in that review—those by Drakeford (2002) and Allen-DeBoer and colleagues (2006)—were single-case design studies that we include in our systematic review because they were undertaken in juvenile correctional facilities and now comply with the set of WWC standards for single-case designs (Kratochwill et al., 2010). In addition, the WWC review screened out a study that we evaluate to be a level 2 on the Maryland Scale and thus include in our systematic review (Scarlato and Asahara, 2004). Most of the Corrective Reading studies reviewed by the WWC did not focus on incarcerated youth.

In our systematic review of Corrective Reading implemented in juvenile correctional facilities, we consider four studies that meet an evidence level of 2 or higher on the Maryland Scale. All of the studies focus on reading skills as the dependent variables of interest. The studies' findings are reported in Table 3.2, and additional details about each study appears in Table A.1. Three of the studies compare Corrective Reading to the default reading intervention in the juvenile facility. These include two well-implemented single-case design studies (Allen-DeBoer et al., 2006; Drakeford, 2002) that each warrant a WWC "Meets Standards" rating, and thus we give them a corresponding Maryland Scale rating of 5.[19] The other, by Scarlato and Asahara (2004), is a nonrandomized comparison group study that does adjust for baseline performance, and so rates a level 3 on the Maryland Scale. In addition, we examine a randomized trial with low attrition by Houchins and colleagues (2008), which rates a 5 on the Maryland Scale but differs from the others in that it compares two approaches to Corrective Reading implementation—one implemented with a small group of four students, and another with a larger group of twelve students.

Studies with Ineligible (Level-1) Designs in Juvenile Correctional Settings

Before we turn to the eligible studies, it is worth noting that the research context includes two studies conducted in juvenile correctional education settings that did not meet our systematic review standards because they used pre/post measures without a comparison group, rendering them a level 1 on the Maryland Scale. As noted, we reference these studies (and include them in shaded rows of Table A.1) because they are often cited as part of the evidence base on Corrective Reading. However, because they lack comparison conditions within the study, we do not consider them to be part of our systematic review of the evidence base for the intervention.

A study by Coulter (2004) focused on 12 students, age 15 on average, with baseline reading levels of grades one to six. The students were assigned to a nine-week program of one-to-one tutoring using direct instruction (Carnine et al., 1997) and Corrective Reading (Engelmann et al.,

[19] The original Maryland Scale did not consider single-case designs, but the inclusion of these designs is relevant for the juvenile correctional education literature, so we continue our practice of operationalizing the WWC and Maryland Scales in corresponding ways.

1999) strategies. The average instructional dosage received was 21 sessions, or about a month of instruction, and the average gains during that time were nine months on the combined rate-and-accuracy subtest of the Gray Oral Reading Test, 3rd edition, and nine months on the comprehension subtest. In addition, the gain in words read correctly per minute was 3.57 per week, which the authors compared to an expected gain of 1 word per week for students on a fourth-to-sixth grade level receiving intensive instruction. In addition, a study of Corrective Reading implemented in a juvenile facility in combination with whole-language instruction (Malmgren and Leone, 2000) found statistically significant gains in the Gray Oral Reading Test rate-and-accuracy score (0.35 of a standard deviation) as well as a statistically nonsignificant gain in comprehension (0.34 of a standard deviation), among 45 juveniles ages 13–18 exposed to a six-week summer reading program for about three hours per day, five days per week. As with Coulter (2004), this study is not our eligible for our systematic review because it did not include a comparison group. Unlike Coulter's study, Malmgren and Leone (2000) did not present their findings in terms of national or other norms, so it is especially difficult to estimate whether similar gains would have been made using a different instructional approach over the same period of time. Still, the findings suggest that oral reading gains ranging from a third to a half of a pretest standard deviation are feasible within six to nine weeks for incarcerated students receiving Corrective Reading instruction in combination with whole-language teaching. We turn now to evidence from studies that were formally eligible for the systematic review.

Eligible Studies in Juvenile Correctional Settings: Single-Case Designs

As noted above, we consider single-case designs to meet strong evidence standards (i.e., to merit a 5 on the Maryland Scale in terms of the strength of their causal inferences) if they meet the single-case design standards set forth by the WWC. The two single-case design studies that examine Corrective Reading met that standard in terms of establishing clear pre- and post-intervention performance trends in at least three cases (Kratochwill et al., 2010). Moreover, the two single-case studies of Corrective Reading, both using multiple-baseline designs, show positive effects of the Corrective Reading intervention on the number of words read correctly per minute.[20] The mean gain for the Allen-DeBoer et al. (2006) study, implemented for an average of 30 30-minute lessons with four students ages 16–18, was 35.8 words per minute. This was relative to mean baseline of about 93 words per minute, suggesting a roughly 38 percent gain on average. Single-case designs, though they allow for causal inference, do not permit hypothesis testing or the calculation of traditional effect sizes (Kratochwill et al., 2010). The study, however, showed no evidence of an effect on word errors per minute. The mean gain for the Drakeford (2002) study, which was undertaken with six students ages 12–21 for an average of 20

[20] In a multiple-baseline design, the intervention is introduced to multiple students but at staggered starting points, to separate any secular time trend from the treatment effect.

one-hour lessons, was 9.2 words read correctly per minute, on a mean baseline of about 77 words per minute. Relative to the baseline level, this represents about a 12 percent gain.

Pooling the two estimates, the mean gain associated with Corrective Reading in the two studies appears to be 1.66 words read correctly per minute for every hour of Corrective Reading instruction, though this value is a rough average at the study-level and is, of course, based on very small samples. Though single-case designs are considered a rigorous method for undertaking studies with small samples (such as small groups of learning-disabled students), they do pose a challenge for generalizability, since they require extrapolation from very small groups of students and do not permit traditional hypothesis testing.

Eligible Studies in Juvenile Correctional Settings: Comparison-Group Designs

Two studies of Corrective Reading used eligible comparison-group designs. As noted, one was an observational study that adjusted for baseline differences in test scores and thus merited a 3 on the Maryland Scale. This 19-week study by Scarlato and Asahara (2004) compared 180 minutes per week of Corrective Reading to 345 minutes of weekly specialist-directed reading instruction in the comparison group among nine students ages 16–17. The study found substantial positive effects of Corrective Reading on subscales of the Woodcock Reading Mastery Test Revised, ranging from about 0.3 of a standard deviation in word identification and word comprehension, to about 0.9 in passage comprehension and total reading. However, the comparison group showed lower reading skills at baseline than the treatment group, so it is possible that the groups also differed in unobserved ways. Moreover, the treatment effects were due in part to the substantial losses (as large as 0.5 of a standard deviation) made by the comparison group who worked with a reading specialist. Whether this is due to the particular skills of that reading specialist in the comparison condition is unclear. In other words, the design makes it difficult to disentangle treatment effects from effects of the types of students who were selected to receive the treatment and the particulars of the comparison condition. For this reason, the results should be interpreted with caution. Moreover, none of the observed effects, despite their large magnitude, was statistically significant, which is the result of the very small sample size of nine students.

Houchins et al.'s (2008) randomized trial comparing Corrective Reading with smaller versus larger instructional groups included 20 students ages 13–17 receiving instruction for about 21 one-hour sessions. The findings for use of Corrective Reading in smaller groups (1:4 instead of 1:12) were substantial and positive for several outcomes, including word identification, word attack, and silent reading (0.6, 0.5, and 0.7 of a standard deviation, respectively), but were not statistically significant. (The word identification coefficient was reported to be significant at the 1-percent level, but the p-value increased to 0.058 when we adjusted for multiple comparisons using the formula $1–(1–p)k$, where p is the p-value, and k is the number of comparisons.) The findings were positive but very small and statistically nonsignificant for oral reading at the third grade level, and negative but nonsignificant for oral reading at the fourth and fifth grade levels.

The size of the small Corrective Reading group in this particular evaluation (four per group) appears similar to that in the aforementioned studies, based on the size of the treatment groups examined, which ranged from 4 to 6 across the studies.

Because Houchins et al.'s (2008) study was a rigorously designed randomized trial with low attrition, it merited a 5 on the Maryland Scale. Its results are therefore likely free from unobserved differences between treatment and comparison groups. However, because the study did not include a condition without Corrective Reading, it permits only an assessment of the program with a smaller group relative to a larger group. It is possible that the positive effects of the smaller group size are not specific to the Corrective Reading curriculum but would have been observed with other curricula as well. Still, the findings suggest that for those seeking to use Corrective Reading, smaller instructional groups may be warranted.

Summary

Taken together, the preponderance of evidence on Corrective Reading in correctional settings suggests that the intervention's effects are positive for reading skills. The evidence seems strongest for basic skills like word identification and decoding, since positive evidence for comprehension comes only from the Scarlato and Asahara (2004) study, which merits only a 3 on the Maryland Scale. In addition, none of the studies was large enough to yield statistically significant effects. This makes it difficult to generalize broadly from these findings. Based on these four eligible studies, it would be difficult to state definitively that Corrective Reading is an effective reading program for incarcerated juveniles. However, taken in conjunction with the literature in the research context section, and in the absence of better-supported remedial reading alternatives for correctional settings, Corrective Reading shows some promise. This promise is best substantiated with lower-level skills like word identification and decoding.

Computer-Assisted Instruction

Research Context

Meta-analyses of the effects of computer-assisted learning outside of correctional education settings have produced mixed signals about the effectiveness of these programs for raising student achievement. In a meta-analysis of 17 studies spanning kindergarten through 12th grade and published in 1982 through 1999, Soe, Koki, and Chang (2000) found positive effects of computer-assisted instruction on reading achievement. The average impact estimate was 0.132 of a standard deviation, though the estimates ranged widely, from a low of 0.045 to a high of 0.762 of a standard deviation. In a more recent systematic review of computer-assisted instruction effects on reading, Slavin et al. (2008) found a weighted mean effect of 0.1 of a standard deviation across eight eligible studies. Importantly, all of these studies focused on computer-assisted instructional packages as standalone, supplemental interventions rather than as

components of integrated, blended curricula.[21] In our own analysis of computer-assisted instruction in adult correctional education settings, we found no statistically significant difference between computer-assisted and face-to-face instruction in math and reading, though the estimates were based on only four relatively underpowered studies, and the effects were generally positive in magnitude (Davis et al., 2013).

However, computer-based instructional interventions vary widely, which makes it difficult to generalize about them as a class of interventions. We therefore focus our discussion in this section on the three computer-assisted interventions that were eligible for inclusion in our juvenile correctional education systematic review: Read 180, Fast ForWord®, and Tune in™ to Reading (TIR).

Read 180, published by Scholastic, is a complete reading curriculum for upper elementary through high school–aged students that includes an adaptive, computer-assisted component, but also includes teacher-led direct instruction and independent and small-group reading components. The prescribed dosage is typically 90 minutes per day, five days per week (Loadman, 2011; Scholastic, n.d.). It is part of a class of interventions that Slavin et al. (2008) refer to as "mixed-methods models" and what others call "blended learning" models (Horn and Staker, 2011), but, given that it prominently features an adaptive, computer-based component, we classify it as a computer-assisted approach in our analysis. Based on seven studies that meet evidence standards with reservations (comparable to a level 4 on the Maryland Scale), the WWC found potentially positive effects for the impact of Read 180 relative to comparison curricula on comprehension, with an average increase of 0.11 of a standard deviation, or 4 percentile points, and on general literacy achievement, with an average increase of 0.31 of a standard deviation, or 12 percentile points. Based on eight studies, four of which overlapped with the WWC analysis, Slavin et al. (2008) provide a weighted mean effect of 0.24 of a standard deviation for Read 180 relative to comparison curricula. However, none of the studies included in Slavin et al.'s systematic review of computer-assisted instruction, or in the WWC review of Read 180, were conducted in correctional education settings.

The Fast ForWord software-based intervention is published by Scientific Learning Corporation. Unlike Read 180, a middle-grade-oriented reading program in which computer-assisted instruction is one component, Fast ForWord is a completely computer-based curriculum and is designed for beginning readers (Scientific Learning Corporation, 2004). It is intended for use five days per week, for 30–100 minutes per day over a 4–16-week time period (What Works Clearinghouse, 2013). In a review of seven studies that met its evidence standards and two that met standards with reservations (comparable to a level 4 on the Maryland Scale), the WWC found positive effects of Fast ForWord on alphabetics (e.g., decoding), no effect on reading fluency (e.g., rate and smoothness), and mixed (i.e., both positive and negative) effects on

[21] We use the term "blended" to refer to curricula that incorporate both computer-based and face-to-face instructional methods (see, for instance, Horn and Staker, 2011; also, Childress, 2013).

reading comprehension. However, none of these studies was conducted in correctional education settings.

The final computer-assisted intervention eligible for consideration in our systematic review is Tune in to Reading (TIR), which was developed in 2005 and is published by Electronic Learning Products. The TIR software, which contains more than 600 songs analyzed for readability level, promotes reading fluency by teaching students to sing written words with the correct pitch and tone (Calderone et al., 2009). Prior to being studied in a juvenile correctional education setting, the intervention, known at the time as Carry-a-Tune, was evaluated for 90 minutes a week over nine weeks in a rural west Florida middle school. The study, which was undertaken by Biggs and colleagues (Biggs et al., 2008), found that the 24 students in the treatment group improved by 0.98 of a pooled pretest standard deviation, as compared with no change in the performance of the 22 matched-comparison group students who were assigned to required reading for the same amount of time ($p < .001$). Though the study was small, its substantial effects and use of a matched comparison group (warranting a level 4 on the Maryland Scale) suggested the promise of this intervention with struggling adolescent readers.

Studies with Ineligible (Level 1) Designs in Correctional Settings

As part of our consideration of the research context, we did find one study of the aforementioned interventions that was administered in a correctional setting for juveniles, but with a design that made it ineligible for the systematic review. The developer of Fast ForWord, Scientific Learning Corporation (2004), conducted a study of the intervention with 29 youth incarcerated by the Virginia Department of Correctional Education. Focusing on 18 students at one of the two schools in the study, evaluators found that students improved by 1.5 grade equivalents on average over a ten-month time period on the Woodcock Johnson Tests of Achievement–Broad Reading. In the other participating school, the 11 students in the study gained nearly 1.5 grade equivalents in a four-month time period as measured by the STAR Reading assessment. Both sets of pre-to-posttest gains were statistically significant at the 5 percent level. However, because neither subgroup included a comparison group, this study is rated as a level 1 design on the Maryland Scale, we do not officially include it in our systematic review, and it therefore appears in a shaded row within Table A.1.

Eligible Studies in Juvenile Correctional Settings

The three studies of computer-assisted instruction that qualified for the systematic review focused on the three aforementioned interventions: Read 180, Fast ForWord, and Tune in to Reading. Results for the studies are synthesized in Table 3.2 and are summarized in greater detail in Table A.1. In the largest of the three studies, Loadman et al. (2011) conducted a randomized, controlled trial of Read 180 with students incarcerated in eight correctional facilities run by the

Ohio Department of Youth Services facilities.[22] The study randomized five cohorts of students, for an initial sample of 1,982 students. Because the final rates of overall and differential attrition (37.2 percent and 2.5 percentage points, respectively) fell beneath the liberal threshold of the WWC, the study merited a 5 in our operationalization of the Maryland Scale. The final analytic sample included 1,245 students, ranging in age from 14 to 22. The students randomly assigned to receive 90 minutes of daily instruction with the Read 180 curriculum instead of the same amount of instruction with the default language arts curriculum showed gains on the Scholastic Reading Inventory that were 0.21 of a standard deviation higher than the control group at the end of the 20-week intervention, a statistically significant difference ($p < .001$). Moreover, among the 243 students still enrolled at the correctional institution a year after baseline testing, the gains at that time were 0.26 of a standard deviation greater on the California Achievement Test than for the control group. The latter difference was also statistically significant ($p = 0.011$), though the one-year effect could be rated only a 4 on the Maryland Scale due to the small proportion of the sample still enrolled a year after baseline testing. Still, the Read 180 study represents one of the largest and most well-executed studies we uncovered within a juvenile correctional education setting, and should be viewed as a model for future efforts.

Fast ForWord was also evaluated in a randomized, controlled trial in juvenile correctional setting, in this case in a long-term, maximum-security juvenile facility in Alabama (Shippen et al., 2012). The study, which we rated a 5 on the Maryland Scale due to its complete lack of attrition, involved 51 students ages 11–20. The study estimated the impact of exposure to Fast ForWord reading relative to a default individualized instructional program. The duration of the program was 45 minutes per day, five days per week, for 11 weeks, though in practice the average exposure duration was only 24 days. The study found a positive impact on spelling skills of 0.23 of a standard deviation, but a negative effect on the Test of Word Reading Efficiency (–0.14 of a standard deviation) and on the Woodcock Reading Mastery Test-Revised/Normative Update (–0.21 of a standard deviation). Due to the study's limited statistical power, none of the estimates was statistically distinguishable from zero, but the magnitude and direction of the reading effects suggest that Fast ForWord was not an effective tool for raising reading achievement within the study population.

Finally, Calderone et al. (2009) undertook a randomized trial in which Tune in to Reading was compared against the default language arts instruction program in six juvenile correctional facilities in Florida. The default control-group curriculum was FCAT Explorer, which is another computer-assisted program, but one focused largely on drill and practice for the Florida Comprehensive Assessment Test. The study randomized 138 incarcerated males in grades 7 through 11 to TIR versus the control condition within each site. After attrition, which fell

[22] The findings for the first two cohorts, which were similar, though slightly smaller in magnitude, were reported in Zhu et al. (2010). The findings discussed above reflect the full five-year study documented in the project's final report to the Institute of Education Sciences.

beneath even the conservative boundary of the WWC (at 25.4 percent overall and a differential rate of 0.6 percentage points), the analytic sample included 103 students, and we rated the study a 5 on the Maryland Scale. Students received computer-assisted instruction for 45 minutes, two times per week, for nine weeks and were assessed with a computer-adaptive cloze (i.e., fill-in-the-blank) reading assessment developed by TIR but validated against the Qualitative Reading Inventory (Leslie and Caldwell, 2000) and the FCAT.[23] Students in the treatment group showed gains that were 0.21 of a pooled pretest standard deviation greater than those of the control group. This is a positive effect of nontrivial magnitude, though, given the small sample size, the effect estimate did not approach statistical significance ($p = 0.3$).[24]

Summary

The three eligible studies that focused on computer-assisted instruction in juvenile correctional settings were all well-executed, low-attrition randomized trials. Taken together, they showed mixed results with regard to students' reading skills. The evidence from correctional settings comports with the larger bodies of evidence for Read 180 and Fast ForWord, respectively, in that the extant evidence for Read 180 suggests that it raises achievement more than comparison interventions, and Loadman et al. (2011) found a clear positive effect of the curriculum. Meanwhile, the larger body of evidence for Fast ForWord is indeterminate regarding its effectiveness, and the Shippen et al. (2012) study conducted in a juvenile correctional setting showed positive effects for spelling and negative effects for reading, none of which were significant. The Tune in to Reading study in a correctional setting did show a positive effect, but the effect was not statistically significant and was much smaller in magnitude than what had been found in the pilot study conducted in a regular middle school setting (Biggs et al., 2008). In light of these studies and the larger body of extant evidence, there is little evidence to currently support the use of Fast ForWord in a correctional setting, and larger studies are needed to strengthen the research base on Tune in to Reading. Considered in combination with the large and favorable body of research outside of correctional settings, the evidence in favor of using Read 180 is the strongest for any of the interventions considered in this review.

[23] The correlations were reported to be 0.7 with QIR and 0.56 with the FCAT, and test/retest reliability was estimated at 0.86.

[24] Wexler et al.'s (2013) systematic review reports a negative effect for Calderone et al. (2009), possibly due to transposing the estimates for the treatment and comparison groups.

Table 3.3. Summary of Findings for Other Juvenile Correctional Interventions

Intervention Type	Academic Effects	Employment Effects	Recidivism Effects	Preponderance of Evidence
Personalized and intensive instruction	n Studies=3 n Participants=895 Level-5 studies: 1 Level-3 studies: 2 Effects: 27.1 percentage-point increase in diploma completion in level-5 study (p<.01); 2 months of total achievement gain (math, reading, language) in level-3 study (no hypothesis test); nonsignificant effect of -0.045 SD for peer- versus teacher-managed approach in level-3 study (p>.05)	n Studies=1 n Participants=714 Level-5 studies: 1 Effect: 8.0 percentage-point increase in employment 1 year postrelease (p<.02)	n Studies=2 n Participants=759 Level-5 studies: 1 Level-2 studies: 1 Effects: 1 percentage point increase in rearrest within a year in level-5 study (p>.05); 29 percentage-point reduction in rearrest within 6 months in level-2 study (p<.05)	The preponderance of evidence about personalized instructional approaches in juvenile correctional settings is positive for degree completion, based on one level-5 study. It is also positive for employment based on one level-5 study. It is mixed for recidivism avoidance, based on one level 5 and one level-2 study. The level-5 study should be largely free of selection bias.
Other remedial instruction	n Studies=1 n Participants=63 Level-3 studies: 1 Effect: 0.38 SD reading gain per 10 hours of instruction with Orton/Gillingham reading curriculum relative to default (no hypothesis test)		n Studies=2 n Participants=568 Level-3 studies: 1 Level-2 studies: 1 Effects: 22 percentage-point reduction in level-3 study (p=.015); 9.4 percentage-point increase in level-2 study (p<.05)	The preponderance of evidence about other remedial programs is positive for reading, based on one level-3 study. It is mixed for recidivism based on one level 3 and one level-2 study. Selection bias remains a likely threat.
Vocational education/CTE	n Studies=1 n Participants=1,046 Level-2 studies: 1 Effect: 7.6 percentage-point increase in GED pass rates (p<.001).	n Studies=1 n Participants=1,502 Level-3 studies: 1 Effect: 39 percent increase in the odds of employment 1 year postrelease (p<.01).	n Studies=1 n Participants=1,905 Level-3 studies: 1 Level-2 studies: 1 Effects: nonsignificant 3 percent reduction in odds of rearrest within a year in level-3 study (p=0.8); 17.1 percentage-point reduction in reincarceration within 5 years in level-2 study (p<.05)	The preponderance of evidence about vocational education/CTE participation while in a juvenile facility is positive for diploma completion based on one level-2 study and is positive for employment, based on one level-3 study. It is mixed for recidivism avoidance, based on one level-3 and one level-2 study. Selection bias remains a likely threat.

GED completion	n Studies=2 n Participants=2,266 Level-3 studies: 1 Level-2 studies: 1 Effects: 5.8 percentage-point reduction in reincarceration within a year in level-3 study ($p<0.1$); 12.5 percentage-point reduction in rearrest within 3 years in level-2 study ($p<.001$)	The preponderance of evidence about GED completion while in a juvenile facility is positive for recidivism avoidance, based on one level-3 study and one leve- 2 study, but selection bias remains a likely threat.

NOTE: We do not provide Maryland Scale or WWC effectiveness ratings because the number of studies is small and some have very few students. Thus, we think it is premature to declare any of these interventions effective or ineffective based on available evidence. Instead, we provide a column reporting on the preponderance of existing evidence, which may be positive, mixed or negative for each outcome examined.

Personalized and Intensive Instruction

Research Context

Personalized learning is a broad term in the education literature, indicating that instruction is adjusted to fit the unique needs and developmental trajectories of each student. The Bill and Melinda Gates Foundation's director of Next Generation Learning recently defined it as meaning that "students' learning experiences are tailored to their individual needs, skill levels, and interests" (Childress, 2013). The term can serve as a loose synonym for several related concepts, including student-centered instruction and differentiated instruction, and it shares many features with competency-based education (Jobs for the Future, 2013; U.S. Department of Education, 2011). This is especially true among the three studies in the juvenile correctional education systematic review, each of which is described as including competency-based attributes. Competency-based learning is an approach in which students progress at their own pace, earning credit not for the time spent in a course but for mastering a specified sequence of content targets (Sturgis and Patrick, 2010; Priest et al., 2012). Given the high mobility and highly variable skill levels of students in juvenile correctional facilities (Leone et al., 2002), personalized and competency-based approaches may be particularly well suited for correctional education settings. Competency-based models are well established in settings that serve students with atypical academic progression. They are mainstays of "credit recovery" programs that help students who lack the credits to graduate to catch up with their peers on via an accelerated schedule (Sturgis et al., 2010; U.S. Department of Education, 2011).

Nevertheless, systematic evidence about the effectiveness of personalized and competency-based instructional models is quite limited, with a literature focused largely on anecdotes (Priest et al., 2012). A few high-performing charter schools, such as Carpe Diem in Arizona (NBC News and the Hechinger Report, 2013) and Young Women's Leadership Charter School in

Chicago (U.S. Department of Education, 2010) have outperformed similar schools on aggregate measures, and a few other schools of choice that use competency-based measures have also shown stronger academic performance than demographically similar schools (Steele et al., 2013). But it in all cases, it is difficult to attribute these differences to the competency-based models themselves rather than to unmeasured characteristics of the schools themselves and the families that choose them.

Studies with Ineligible (Level 1) Designs in Correctional Settings

Our examination of the research context includes two studies that were conducted in correctional education settings that were not eligible for inclusion in the systematic review because they did not include appropriate comparison groups. As with other relevant studies that we rated a 1 on the Maryland Scale, these ineligible studies appear in shaded rows in Table A.1.

The first of these is a very small study of personalized instruction within a juvenile correctional setting conducted by Muse (1998). The study was ineligible for the systematic review because it was based on student-level data only for the treatment group, and its comparison condition used aggregate, school-level data from four comparison schools. Given the lack of a same-level comparison group, we assign it a rating of 1 on the Maryland Scale. The study focused on the GED completion rates in academic classes taught by the author in one North Carolina juvenile correctional facility (about 66 students in total), relative to the average completion rate of students at 4 other North Carolina juvenile correctional facility schools in the state in the same years. Students in the study ranged in age from 12 to 17 years old. Examining GED completion rates over a three-year period, the author reported that 67.1 percent of his students earned GEDs, as compared with 8.0 percent of students in the other schools, though it is not clear that the groups were comparable in terms of risk levels, age, length of stay, and so forth. Though the effect size is substantial, it is difficult to say how much of the 59.1 percentage-point difference in completion rates was due to the intensive, personalized instructional method as opposed to other factors. Results should therefore be viewed with great caution.

The other study of personalized instruction that was relevant to the research context but rated a 1 on the Maryland Scale was by Hill, Minifie, and Minifie (1984). They undertook a program of diagnostic evaluation and personal tutoring as an 18-hour (nine-week) supplement to traditional classroom instruction for 31 incarcerated juveniles in South Carolina who were defined as handicapped. They found that students improved by about three months in silent reading, one month in oral reading, and an unspecified amount in mathematics, but in the absence of a comparison condition, it is not possible to say how much improvement the students would have made without treatment during the same time period. For this reason, the study does not meet eligibility standards for the systematic review.

Eligible Studies in Juvenile Correctional Settings

Among the 18 studies that were eligible for the systematic review, four focused on personalized or individualized instructional models in which adult instructors worked intensively with students, tailoring instruction to the individual needs of each student. In each of these studies, the comparison groups received the default instructional programming for students in their respective correctional systems. These studies are synthesized in Table 3.3, and additional details about each study are provided in Table A.1.

The largest and most rigorous of the studies was a randomized trial by the National Council on Crime and Delinquency (2009) evaluating the Avon Park Youth Academy operated by the Florida Department of Juvenile Justice. The study randomized 714 youth ages 16–18 who were incarcerated in Florida to either the Avon Park program or to a control condition was incarceration in a default juvenile justice program in Florida. Unlike the default program, which featured traditional academic instruction, the Avon Park Youth Academy used an intensive, personalized, competency-based instructional model tailored to each student's academic development. It also included vocational programming through the Home Builder's Institute, and aftercare upon release. The study was not able to disentangle the vocational and aftercare effects from the program's personalized overall approach. However, because the randomized groups were tracked with administrative data, there was no attrition from the randomization sample, meaning the study earned a level 5 on the Maryland Scale and a WWC "Meets Standards" rating. Despite randomization, however, the dosages of the treatment and control models were different; students in Avon Park were incarcerated for an average of 14.2 months, versus an 11.2-month average for the comparison group. The study examined three different outcomes: rates of diploma completion at release, employment one year postrelease, and recidivism (defined here as re-arrest) within a year after release. With regard to diploma completion, it found a 26.9 percentage point higher rate among the treatment group relative to the control group (44.1 versus 22.0 percent, $p < .01$), where diploma completion was defined as earning a high school diploma, a GED, or a special diploma for students with special education needs. Differences were pronounced and statistically significant in all three diploma categories, though they were greatest in the GED and special diploma categories. The study also found an eight percentage-point difference in employment one year postrelease, with an average employment rate of 72.4 percent among the treatment group and 64.4 percent among the control group ($p < .05$). However, it found no statistically significant difference in recidivism rates. Within a year after release, the treatment and comparison groups were rearrested at comparable rates (57.2 percent, and 56.2 percent, respectively).

The second study we identified as focusing on personalized instruction in a juvenile correctional facility was considerably smaller than the Avon Park study and did not use a randomized design. Skonovd and colleagues (1991) examined recidivism rates six months after release among 45 youth ages 16–17 who were incarcerated in San Bernardino County. Twenty-five youth were assigned to the Regional Youth Educational Facility (RYEF), which was an

intensive, competency-based education program that included six months of education within the juvenile facility, followed by four to six months of aftercare supervision by a probation officer familiar with the youth through RYEF. (The standard caseload for the probation officers was reduced from 65 to 15 for the Avon Park program.) The comparison group of 20 students received the default educational program in the county. Assignment to treatment or comparison group was determined by the juvenile courts, and the comparison group was constructed so that it met RYEF eligibility criteria, even though the students in the comparison group had not been referred to RYEF by the courts. The treatment and comparison groups consisted only of students who successfully completed either the treatment or default program. Students who changed programs or failed complete were excluded from the analysis, and the average length of stay for the control group was two months longer than for the treatment group. Though baseline risk indices were similar for the two groups, no statistical adjustments were made for observed demographic differences between treatment and comparison-group students. For these reasons, the study rates a level 2 on the Maryland Scale. The study found that rates of re-arrest or probation violation within six months after release were only 16 percent in the treatment group, versus 45 percent in the comparison group. Despite the small sample size, this 29 percentage-point difference was large enough to be statistically significant ($p < .05$).

We also identified two studies of personalized learning that focused on academic test scores as the dependent variables of interest. Mayer and Hoffman (1982) compared pretest to posttest gains on the California Achievement Test Total Battery for 68 incarcerated students assigned to individualized instruction with the gains for 75 students assigned to group instruction. The total battery score included mathematics, reading, and language skills. In the individualized scenario, lessons and activities were tailored to students' prior skill assessments; in the group approach, classes of about 12 students received daily instruction appropriate to their assigned grade level. During a ten-month period, students in the individualized program showed nine months of academic growth on average, while those in the group program made seven months of growth, for a relative treatment effect of two months. Because effects accounted for the baseline performance of each student, the study merits a 3 on the Maryland Scale. However, the study did not provide information for assessing the statistical significance of this difference, nor did it provide extensive information about other institutional and sample differences between groups. For these reasons, it is difficult to attribute the difference in gains to the individualized program itself, and the results must be interpreted with caution.

The final eligible study we identified that focused on personalized instruction did not actually assess the personalization itself, but rather, compared a personalized instructional model managed by a peer tutor to a similar model managed by a classroom teacher. This study, conducted by Kane and Alley (1980), is relevant insofar as a peer-tutoring model may offer a cost-effective alternative to a teacher-directed approach. Twenty-one students in the study were assigned to a peer-managed classroom, in which the ratio of peer tutors to students was 1:1 or 1:2, and 17 were assigned to a teacher-managed classroom, in which the teacher-student ratio

ranged from 1:3 to 1:7. Importantly, the mean pretest math grade level of the tutors was 11.7, as compared with a mean of 6.0 for the students, and the curriculum was the SRA Computation Skills Development Kit published by Science Research Associates. The SRA kits provided self-paced, competency-based instruction that allowed each student to demonstrate mastery of content at his or her own pace (Proctor and Johnson, 1965). Therefore, in both the peer-managed and teacher-managed conditions, student progress was largely self-paced, and the peer tutor or teacher served to help keep students on track and answer their questions rather than to lead whole-class instruction. After 38 lessons of 45 minutes each, researchers found that students in the peer-managed classrooms made less mathematics progress than their peers, as measured by the SRA assessment survey, with a relative change of –0.045 of a standard deviation. Because this effect was not statistically significant at the 5 percent level, the researchers suggested that there was no difference in performance between the peer-managed and teacher-managed classrooms. However, given that the study was underpowered with only 38 students, only a large effect would be sufficient to reject the null hypothesis. Thus, the fact that the effect estimate was negative in magnitude provides a tentative cautionary note about the use of peer tutors as opposed to classroom teachers. Also, because the study did not adjust for between-group differences other than baseline performance, it merits a 3 on the Maryland Scale and suggests mainly that more evidence is needed on the merits of peer- versus teacher-managed classrooms in correctional settings.[25]

Summary

The eligible literature on personalized instruction for juveniles in correctional facilities includes one large, no-attrition randomized trial: the Avon Park study conducted by the National Council on Crime and Delinquency. Though it is just one study, it provides a convincing endorsement for the effectiveness of the kind of intensive and personalized approach that the Avon Park program employed in improving diploma completion and employment rates. However, evidence for the effect of personalized and intensive learning on recidivism is mixed: The Avon Park study found no effect on rates of recidivism within a year, while the less rigorous RYEF study found a large and statistically significant reduction in recidivism. Given that the Avon Park study was 15 times as large as the RYEF study and that the latter used a less-rigorous, level-2 design, evidence of a positive relationship between intensive instruction and recidivism reduction remains thin at best. One possibility is that some as-yet-undetermined threshold of impact on skills or employment must be reached before such programs yield a reduction in recidivism.[26]

Regarding the effects of personalized learning on academic achievement, the Mayer and Hoffman (1982) study showed a positive effect with unclear statistical significance, and the Kane

[25] Wexler et al.'s (2013) review described the effect as positive rather than negative but did not adjust for the baseline between-group differences reported in the article.

[26] We thank a peer reviewer for raising this point.

and Alley (1980) study showed a slight negative—but not statistically significant—effect for peer-managed personalized learning relative to teacher-managed personalized learning.

It is important to note that the definition of *personalized learning* varies not only in the current education literature but also among these four studies. In the Avon Park and RYEF, the intervention itself was multifaceted, encompassing competency-based academic instruction, targeted services for special needs students, vocational education, and aftercare supervision by a probation officer familiar with the students' progress while incarcerated. However, in the studies by Mayer and Hoffman (1982) and Kane and Alley (1980), the intervention was much narrower, focusing mainly on self-paced classroom instruction. The field would benefit from studies that compared simpler and more-complex personalized models using common outcome metrics, and also that considered the relative costs of each model.

Other Remedial Instruction Programs

Research Context

In recent years, a growing body of literature has questioned the effectiveness of remedial education for improving student outcomes. However, this literature has largely focused on postsecondary education, where remedial education can slow a student's progress and increase the cost of earning a degree, thereby acting as a potential deterrent to degree completion (Martorell and McFarlin, 2008; Caldagno and Long, 2008; Scott-Clayton and Rodriguez, 2012). In secondary education, the need to remediate the learning gaps of students who fall behind seems less controversial, the question being how best to do so. In many ways, the aforementioned categories of Corrective Reading, computer-assisted instruction, and personalized learning each offer answers to that question. All of the interventions in these categories aimed, at least in part, to remediate the low academic achievement of students in juvenile correctional facilities. However, our systematic review also uncovered two studies of remedial programs that did not fit directly into one of the aforementioned categories, and we consider evidence for those studies in this section.

Studies with Ineligible (Level 1) Designs in Correctional Settings

Interestingly, the number of studies of remedial education models that we deemed ineligible for the systematic review but relevant to the research context—four—was twice the number of studies in this category that were eligible for the systematic review. This is perhaps because our "other remedial intervention" category acts as a catch-all for small studies that have examined various remediation efforts on a small scale, without the benefit of robust research designs. These four studies, which appear in shaded rows within Table A.1 due to their ineligibility, collectively examine the effects of teaching efforts for reading road signs (Murph and McCormick, 1985), completing a job application (Heward et al., 1980), using metacognitive learning strategies (Platt and Beech, 1994), and using three distinctive writing prompts (Sinatra, 1984). All are small studies, and all show gains in the target behaviors, but none uses a

comparison group. Because all four ineligible studies are included in the recent systematic review by Wexler (2013), we consider them here in some detail.

Two of the studies focus on students with very low reading levels who have been classified, based on IQ testing, as having mild mental retardation. These two studies, by Murph and McCormick (1985) and Heward and colleagues (1980), use single-case designs and focus on improvement in fundamental, reading-related life skills—namely, reading nine road signs in the former study and filling out an entry-level job application in the latter. The study by Heward does not meet WWC single-case design evidence standards because it does not establish long enough baseline trends (i.e., with at least four or five observations per phase) before introducing the intervention, but it does show that students taught to fill out the applications raised their average accuracy rate by 18 fill-in-the-blank items (out of 35) during 11 45-minute instructional sessions. The study by Murph and McCormick does meet WWC standards in terms of the number and length of pre- and post-intervention phases, but it suffers from what the WWC terms an over-alignment of instruction and assessment (What Works Clearinghouse, 2008): After 9–24 instructional sessions of 15 minutes each, students who are repeatedly drilled in reading nine road signs are able to read all of them. Though an effect of instruction is clearly established, the measure of reading is simply too narrow to be construed as a measure of reading skill, and the intervention itself is also too narrow to generalize to other contexts in which reading must be taught. Though the authors justify the reading of road signs as a necessary life skill for driving, it seems unlikely that 16-to-18-year-olds who struggle to identify common road signs will be able to read and pass a written driving test—a fact that undermines the authors' assertion about the relevance of the task to their lives.

The two other studies deemed ineligible in this category also have serious design flaws. A study by Platt and Beech (1994) used a single-case design approach, but with only one pretest observation in each case, meaning that it does not meet WWC standards for single-case designs. The authors show mean gains of 12 percentage points in words read correctly and 19 percentage points in passage comprehension after an unspecified amount of instruction in metacognitive learning strategies. However, they selectively present data for only five of the students taught by the 27 educators trained to use the method, noting that only the "most complete" reports were presented. Overall data for all students exposed to the method are not presented, nor are any data presented about the number and demographics of the student sample. In other words, the data should be construed as anecdotal at best.

Finally, Sinatra (1984) considers the effects of a writing intervention implemented in his own classroom, in which struggling readers were given structured writing prompts that focused on visual, imagery, and report-writing tasks. He finds a noteworthy gain of 16 percentage points on students' writing assignments after several months of instruction, but it is unclear how well the students would have fared with writing instruction that did not include those prompts.

In short, the research context on remedial instruction for struggling incarcerated learners is replete with research designs that, despite the benevolent intentions of authors and teachers, do little to advance the field's understanding of what works in remediation.

Eligible Studies in Juvenile Correctional Settings

We turn now to two studies of remedial interventions that had comparison groups and were deemed eligible for the systematic review. Results from these studies are synthesized in Table 3.3 and are shown in greater detail in Table A.1. A study by Simpson, Swanson, and Kunkel (1992) examined the effects of a structured remedial reading program, the Orton/Gillingham reading curriculum, as compared with the default language arts program in two juvenile youth detention facilities. The Orton/Gillingham program was described in the article as phonics-based, with a focus on reading, writing, and spelling, and incorporating auditory, visual, and kinesthetic learning modes. Researchers identified 55 learning disabled students for treatment, 32 of whom persisted to analysis, and asked teachers to recommend a similar set of 61 students for the comparison group, 31 of whom persisted to analysis. The treatment group received the Orton/Gillingham curriculum for 90 minutes a day in groups of 1–6; the comparison group students received default language arts instruction for only 45 minutes a day in classes of about 12. Thus, the treatment group received a larger instructional dosage per week and in smaller classes. Treatment students may also have been released sooner, given that their mean instructional hours were reported as 51.9 (about 35 days) versus 46.0 hours (about 61 days) for the control group. Students in the analysis were tested at pretest and again before release using the Woodcock Johnson Test of Reading Mastery, and their re-arrest rates were tracked within the first year after release. Those in the treatment group gained 0.86 years of growth in reading more than the control group, and the difference was statistically significant ($p = .007$), though the treatment group also received a greater instructional dosage and in smaller classes. To eliminate the instructional dosage confound, the authors estimated that the treatment group gained 0.38 years of growth more than the treatment group for every ten instructional hours, though they did not provide a hypothesis test for this estimate. Finally, they found a substantial relationship between the treatment condition and recidivism avoidance; those in the treatment group had a one-year re-arrest rate of 41 percent, versus 63 percent in the comparison group, and this difference was statistically significant ($p = 0.015$). Because the treatment and comparison groups were both identified (at least by teachers) as learning disabled and shared similar baseline reading scores (4.3 vs. 4.6) and ages of first arrest (13.7 and 13.8), and because the reading analysis adjusts for baseline scores, we give the study a rating of 3 on the Maryland Scale. However, it does remain vulnerable to unobserved differences between groups. For instance, given that the treatment students appear to have been released sooner, on average, it is possible that they also had a lower baseline risk of re-arrest that was not accounted for in the study.

The other eligible study of remedial education, by Archwamety and Katsiyannis, focused only recidivism outcomes, measured between one and seven years after release. The study

compared 339 youth ages 12–18 enrolled in a mathematics or reading remedial program (not both) while incarcerated to 166 students who were not enrolled in a remedial program. Students who were assigned to remediation were at least one grade level behind at baseline in the remedial subject, and had a lower mean baseline IQ than their nonremediated peers (91.8 versus 99.3). The authors found that students assigned to remediation were actually 9.4 percentage points more likely to recidivate (definition unspecified) within 1–7 years after release. Their recidivism rate was 23.3 percent in the treatment group versus 13.9 percent in the comparison group, and the difference was statistically significant ($p < .05$). However, the study did not adjust for baseline differences, resulting in a rating of 2 on the Maryland Scale. In other words, given that the treatment group clearly demonstrated higher baseline risk than the comparison group in terms of weaker academic and cognitive skills, the study does not provide convincing evidence that remediation caused higher recidivism among the treatment group, and it would be inappropriate to draw conclusions about the impact of remediation based on this study.

Summary

The two studies in the systematic review yield different conclusions about the relationship between remedial education and recidivism. Though the Simpson et al. (1992) study of the Orton/Gillingham remedial curriculum was only about one-eighth the size of the Archwamety and Katsiyannis (2000) study, it showed stronger equivalence at baseline and also provided clearer details about differences between the treatment and control conditions. As such, it makes a more convincing case that students remediated with the Orton/Gillingham program rather than receiving standard language arts instruction improved faster in their reading skills and were less likely to be rearrested. Nevertheless, it leaves open the possibility that treated students may have had shorter sentences or other unobserved differences that may at least partially explain the treatment effects, and thus the evidence supporting the Orton/Gillingham program remains underdeveloped. Archwamety and Katsiyannis's study is highly vulnerable to selection bias and thus says little about the relationship between remediation and recidivism. Beyond the evidence presented in previous sections about Corrective Reading, computer-assisted instruction, and personalized instruction, it is difficult to draw broad conclusions about the effectiveness of other remedial programs in juvenile correctional settings.

Vocational /Career Technical Education

Research Context

Among the population of U.S. secondary school students at large, the prevalence of vocational training—now commonly termed career technical education (CTE)—declined between 1982 and 2004, with CTE credits accounting for 21 percent of the credits earned by high school graduates

in 1982, versus only 14 percent in 2004 (U.S. Department of Education, 2013b).[27] In part, this was a response to concerns that lower-achieving students were being tracked into vocational pathways that did not prepare them to succeed in an increasingly competitive and dynamic labor market (U.S. Department of Education, 2013b). Evidence on the effectiveness of vocational education/CTE in raising academic outcomes is somewhat mixed. Using a nationally representative sample of high school students tested in 10th and 12th grade, Bozick and Dalton (2013) found no evidence that CTE course-taking improved or hurt students' mathematics performance. Studies that have used lottery-based random assignment have also found little to no impact on test scores, though they have found benefits in terms of other outcomes. For example, Kemple and Willner (2008) randomized New York high school students to career academies that provided both vocational and academic training in combination with internships; they found positive effects on high school persistence, as well as subsequent earnings benefits for males. Neild, Boccanfuso, and Byrnes (2013) capitalized on students' lottery-based random assignment to five CTE high schools in Philadelphia, finding that students assigned to CTE had higher rates of college preparatory mathematics coursework and higher graduation rates, though they performed no better than their peers on mathematics and reading assessments. Insofar as a lack of marketable skills increases the appeal of criminal behavior (Becker, 1968), it is possible that juveniles involved in the criminal justice system may be especially likely to benefit from programs that emphasize vocational skills.

In a meta-analysis of 548 effect estimates from 361 studies focused on juvenile offenders, Lipsey (2009) considered evidence about a variety of programs designed to reduce recidivism. His study, which included studies published between 1958 and 2002, differed from ours in that it included both education and non-education programs, it focused on recidivism as the sole outcome of interest, and only 22 percent of the estimates in his analysis were based on programs administered within correctional facilities. Lipsey found that skill-building interventions—defined to include behavior management, cognitive-behavioral therapy, social skills training, challenge programs, academic training, and job-related interventions including vocational training—reduced subsequent recidivism by about 6 percentage points, though the effect was not statistically significant at the 5 percent level. He also found that the effects of skill-building interventions did not depend on the implementation context—whether in juvenile correctional facilities or with non-incarcerated offenders. Disaggregating skill-building effects by program subtype, he estimated that job-related training programs reduced recidivism by about 2.8 percentage points; however, this estimate was not statistically significant and was smaller in magnitude than the 6 percentage-point estimate for the skill-building category as a whole.

Our own meta-analysis of adult correctional education also looked in particular at the effects of correctional vocational education/CTE for adults, finding that participation in vocational

[27] We use the term "vocational education/CTE" for consistency with our adult meta-analysis, and to reflect the language in the studies we are able to synthesize in this section, though CTE is the more-contemporary term.

education/CTE programs while incarcerated reduced adults' odds of recidivism by 36 percent relative to no participation in correctional education (Davis et al., 2013).

Eligible Studies in Juvenile Correctional Settings

Our systematic review identified three eligible studies that examined the effects of participation in a standalone vocational education/CTE program in a juvenile correctional facility. These are summarized in Table 3.3, and additional details about each are provided in Table A.1. Roos (2006) examined the employment and recidivism rates for participants of the Re-Integration of Offenders–Youth (RIO-Y) career development course operated by the Texas Youth Commission. The sample included 1,502 incarcerated individuals ages 18–21, an age group classified as juveniles within the program. Five hundred eight-two of these juveniles participated in the 30-day RIO-Y program; another 920 received no career development course or other instruction of note during that time period. (The RIO-Y study is unique in our systematic review in that the comparison group did not receive an alternative instructional program during the intervention period. This is possible because all were 18 years of age or older.) Students were not randomly assigned to the program, but the analysis adjusted for 17 baseline demographic and risk-related covariates, so it warrants a level 3 rating on the Maryland Scale. The study reported that the odds of employment one year after release were 39 percent higher among the treatment than the comparison group, and the difference was statistically significant ($p < .01$). This would correspond to about a 7.1 percentage point increase in the probability of employment, using the 64.4 percent employment base rate one year postrelease reported in the aforementioned National Council on Crime and Delinquency (2009) Avon Park study. (Roos's study does not report a base rate.) The study also found that the odds of re-arrest within a year after release were 3 percent lower in the treatment group, but this very small effect did not approach statistical significance ($p = 0.8$), so the author concluded that the program had affected employment but not recidivism.

Wilson (1994) also investigated the effects of vocational education/CTE in a juvenile correctional facility. This study examined the re-arrest rates within five years after release among 403 juveniles, ages 11–18, incarcerated by the Colorado Division of Youth Services. Two hundred sixty of the students participated in a vocational education/CTE training program while incarcerated, and 143 did not. The study did not provide details about program attributes or dosage levels. Assignment to treatment status was not random, and the analysis did not adjust for baseline differences, so the study merits a level 2 rating on the Maryland Scale. Bearing in mind that there was no adjustment for selection, the study found a statistically significant 17.2 percentage point reduction in re-arrest rates, from 78.3 percent in the comparison group to 61.2 percent in the treatment group ($p<.05$).

Finally, DelliCarpini (2010) examined the effect of offering a new vocational education/CTE program to youth ages 16–21 within a county jail in New York State. The new program augmented the existing academic instructional program with classes in business, drafting, and

carpentry. All youth incarcerated in the facility were enrolled in the program (though dosage information was not reported), and outcomes for the first-year cohort (2008–2009) of 465 students were compared with outcomes for the prior-year cohort of 581 students. The rate at which students earned a GED increased by 7.6 percentage points from 5.5 to 13.1 percent—a statistically significant gain ($p < .001$). The gain was driven in part by an 8.2 percentage point increase in eligibility to test (from 7.1 to 15.3 percent), as determined by scores on a practice test, and also by an 8 percentage point increase in pass rates (from 78 to 86 percent) among those who took the GED. The study rates a level 2 on the Maryland Scale because it did not adjust for (or report on) baseline differences between the two cohorts, and because it did not adjust for secular time trends that may have accounted for differences in outcomes between two sequential cohorts.

Summary

Based on these three studies, the preponderance of evidence for vocational education/CTE in a juvenile correctional facility is positive for GED completion and postrelease employment and mixed for avoidance of recidivism. None of the studies are impervious to selection bias, but the Roos (2006) study does attempt to mitigate such bias through statistical controls, and it is also the largest study. Bearing that in mind, the positive evidence for employment effects seems firmer than for GED completion or recidivism effects. Still, the results from these studies are not sufficiently rigorous to be considered definitive. Taken as preliminary evidence, the preponderance of extant research on vocational education/CTE in correctional settings does appear to support further study of such programs, preferably with rigorous methods that allow for causal inferences about their effects.

GED Completion

Research Context

Two of the studies in our systematic review examine the relationship between earning a GED while incarcerated and subsequent recidivism. Among adult incarcerated populations, our meta-analysis found that completion of education while incarcerated reduced inmates' odds of recidivating by about 43 percent. Among the 22 studies (and 28 effect size estimates) that focused in particular on high school credential or GED programs in correctional facilities, the corresponding rate reduction in odds was about 30 percent ($p < .05$). However, these studies pertain to the approximately 37 percent of adults in prisons who lack high school diplomas (Crayton and Neusteter, 2008).[28] In contrast, nearly all juveniles in correctional facilities lack diplomas because most are still of high school age. The question, then, among the studies in juvenile facilities that have focused on GED completion, is whether juveniles who earn a GED

[28] This figure applies to state prisons in 2004. The comparable figure for the general U.S. population ages 16 and older is 19 percent, according to the same report.

while incarcerated are subsequently less likely to recidivate. The question is very difficult to answer in a causal sense—that is, does earning a GED reduce recidivism?—because juveniles remain in the facilities for very different lengths of time, and their ability to complete a GED during that time may depend on many factors, including their length of stay, their overall academic preparedness, and their opportunities to pursue a traditional high school diploma instead of a GED. Unfortunately, these and other potential confounds are not fully captured in the studies we consider, and thus it is not appropriate to view the two studies, which rate at levels 2 and 3, respectively, on the Maryland Scale, as estimating the causal impact of the GED on recidivism. Still, the studies help to illuminate the association between GED completion and postrelease recidivism.

The broader evidence on GED attainment is mixed with regard to educational and economic outcomes. In the general population of high school dropouts, Heckman and Rubinstein (2001) found that earning a GED is negatively related to subsequent earnings, hourly wages, and levels of additional schooling, after controlling for cognitive ability as measured by the Armed Forces Qualifying Test. They attributed this negative effect to lower levels of noncognitive skills, such as persistence, planning, and adaptability, among those who earned GEDs relative to other individuals who did not complete high school. This still raises the question of what the value of the GED credential is, holding all else constant, including motivation to pursue a GED. Tyler, Murnane, and Willett (2000) exploited between-state variation in GED passing scores to separate the effects of the GED credential from the underlying ability and motivation levels among high school dropouts who take the GED. They found that the GED credential itself improved white recipients' earnings five years later by 10–19 percent, though it appeared to have no effect on recipients from other racial/ethnic groups.

However, the aforementioned studies did not estimate the effects of GEDs earned in prison settings. In a rigorously executed follow-up study by Tyler and Kling (2007), the authors found that, among incarcerated adults, earning a GED in prison yielded earning gains of 15 percent in the first two years after release, though this benefit was concentrated among nonwhite GED earners and dissipated after the second year. In addition, they found that most of the benefit came from participating in a GED education program rather than from actually earning the GED itself. The implication is that incarcerated individuals may benefit more from the human capital they acquire by participating in a GED program than from the credential itself. In other words, the acquisition of skills is what matters.[29] This finding is consistent with our own meta-analysis of adult correctional education, in which we found that participation in an academic educational program while incarcerated increased the odds of postrelease employment by 8 percent, and that

[29] As one reviewer noted, it is possible that the availability of the credential is a factor that motivates inmates to acquire the skills, and that they would learn less if the credential were not available to them. These studies do not address the role of the credential in motivating learning.

participating in a high school diploma or GED program, in particular, reduced the odds of recidivism by 30 percent (Davis et al., 2013).

Eligible Studies in Juvenile Correctional Settings

Given that all juveniles are expected to pursue a high school diploma or GED while incarcerated, we did not identify studies that specifically examined the effects of GED program participation (relative to no participation) for juvenile offenders. However, we did identify two comparison-group studies that examined the effects of earning a GED while incarcerated in a juvenile correctional facility. We summarize our findings about these studies in Table 3.3, and we provide additional details about each study in Table A.1. Unlike the aforementioned GED literature, which focused mainly on postrelease earnings, the two GED studies in our systematic review examined the relationship between earning a GED in a juvenile facility and the probability of recidivating after release. The larger study, by Jeffords and McNitt (1993), examined re-incarceration rates within a year after release among 1,717 juveniles ages 16–21 held in the Texas Youth Commission or Gulf Coast Trades Center correctional facilities in Texas. Among the 475 youth who earned GEDs while incarcerated, the estimated rate of re-incarceration was 5.8 percentage points lower than among the 1,242 youth who did not, though the difference was significant at only the liberal 10-percent level. Though students were not randomized to their GED completion status, this estimate is based on a regression model that controls for gender, ethnicity, age at release, risk classification, previous felony referrals, previous adjudications and incarcerations, and severity of most recent offense. For this reason, it merits a level 3 on the Maryland Scale. The unadjusted difference without controls was 9 percentage points ($p < .1$), which suggests that including the controls mitigated some selection bias that exaggerated the GED effect.

The second study, by Katsiyannis and Murray (1999), examined re-incarceration rates within three years after release among 549 youth who had been incarcerated for at least four months in a Nebraska rehabilitation and treatment facility. Two-hundred eighty-four of the students completed GEDs while incarcerated, and 265 did not. The re-incarceration rate among those who earned GEDs was 47.5 percent, versus 60.0 percent among those who did not. The 12.5 percentage point difference was statistically significant ($p < .01$). The study also fits a logistic regression model with a subset of 260 students that controls for age at first commitment and improvements in test scores. Though that analysis shows a positive and significant effect, its sample restriction and inclusion of post-baseline controls lead us to use the unadjusted rates instead. The comparison is rated a level 2 on the Maryland Scale.

Summary

The preponderance of evidence for earning a GED while incarcerated suggests that juveniles who do so experience lower rates of re-incarceration within one to three years after they are released. This effect was estimated at 12.5 percentage points in the level-2 study by Katsiyannis

and Archwamety (1999, but it was only 5.8 percentage points in the level-3 study by Jeffords and McNitt (1993). Given that the Jeffords and McNitt study found larger effect in the unadjusted model, their more-rigorous estimate of 5.8 percentage points is likely a better true estimate of the GED benefit, and even that may be positively biased by selection on unobservable characteristics. Because GED completion is at least partly a function of student motivation and aptitude rather than of differences in institutional programming, estimates of the impact of GED completion are especially vulnerable to selection bias. A more convincing approach would capitalize on external forces affecting incarcerated students' access to GED testing, while holding academic skills and other observable attributes constant. In the absence of more-rigorous GED studies in juvenile correctional settings, we can conclude only that those who succeed in earning a GED while incarcerated appear less likely to recidivate after release. The extent to which obtaining the GED causes this difference remains an open question.

Discussion

Limitations of Our Approach

Our systematic review of correctional education interventions for incarcerated juveniles reveals great heterogeneity in terms of interventions, methods, and outcomes of interest. Among the 18 eligible studies we identified, we classified the interventions into six categories: Corrective Reading, computer-assisted instruction, personalized instruction, other remedial education, vocational education, and GED completion. Studies in the first two categories focused on packaged and branded reading interventions (Corrective Reading, Read 180, Fast ForWord, and Tune in to Reading) and focused on reading performance as the dependent variables of interest. Studies in the latter three categories focused on a broader set of outcomes, including not only reading and mathematics performance but also measures such as diploma completion, postrelease employment, and postrelease recidivism. The wide variety of hypotheses tested in the studies, the broad array of outcomes examined, and the small number of studies in each hypothesis-by-outcome category make it difficult to synthesize the findings into statements about the relative effectiveness of each approach. In fact, because the number of studies eligible for review is quite small, and because many of the studies are themselves very small in terms of sample sizes, we mostly refrain from giving definitive pronouncements or ratings about the effectiveness of any particular type of intervention. Instead, we comment on the preponderance of evidence for each intervention category, based on the 16 comparison-group studies and the two well-executed single-case design studies featured in the evidence summary tables, Tables 3.2 and 3.3. To contextualize those studies, we have also provided short descriptions of the broader research context for each intervention type.

The effectiveness of any one of the intervention types in the study is likely to depend on how well the program is implemented and for what period of time. Given the small number of studies

in each category, we cannot easily extrapolate the effects of differential dosages or implementation approaches. However, the review does include a couple of exceptions. One of the Corrective Reading studies was specifically designed to measure the effects of instructional group size; it found a positive but statistically nonsignificant impact of smaller groups relative to larger groups that were using the Corrective Reading curriculum (Houchins et al., 2008). And one of the studies of personalized instruction found a small but statistically nonsignificant negative effect of a peer-managed versus teacher-managed approach (Kane and Alley, 1980).

We are also unable to extrapolate differential effects by participant characteristics. The studies vary in the level of detail they provide about participant characteristics, and we lack enough common studies testing the same hypothesis to examine differential effects by subgroup. Still, to facilitate policy decisionmaking among those using this review, we do report in Table A.1 on the demographic and baseline achievement features of the samples in each study, insofar as that information was present in the source material.

Key Insights for the Research Community

We found that the methods employed in the studies varied markedly by intervention type. Studies of the packaged reading interventions were generally fairly small, because these studies involve administering particular curricula at the classroom or student level, as well as administering pre- and post-tests to individual students. Two of the Corrective Reading studies utilized single-case designs that involved just four and six students each, but even the two comparison-group studies included only nine and 20 students, respectively. The designs of these studies were fairly robust, with one level-5 randomized trial and two level-5 single-case designs, but the small size of the studies and limited power for hypothesis testing still makes it difficult to generalize broadly from their findings. The studies of computer-assisted instruction also employed well-executed randomized trials, though the two studies varied in size. The Fast ForWord randomized trial included only 51 students, again providing limited statistical power, but the Read 180 randomized trial was well powered, with 1,245 students; it was able to detect a positive and statistically significant effect using a rigorous design that was fairly impervious to selection bias. Additional studies of this type within juvenile correctional facilities should be encouraged where possible.

The two studies of personalized and intensive instructional approaches were heterogeneous in size and design; the National Council on Crime and Delinquency's Avon Park study was a well-powered and well-executed randomized trial that included 714 youth and was able to examine diploma completion, employment, and recidivism-related outcomes, finding positive and statistically significant effects on the first two variables. The San Bernardino County study was much smaller, with only 45 students, and was more vulnerable to selection bias, which may have in part accounted for the substantial recidivism reduction effect it uncovered.

The vocational education/CTE and GED studies were similar in that they took advantage of large, administrative datasets to compare students exposed to particular treatments while

incarcerated (vocational programs, or GED credential completion) to those who were not similarly exposed. In both categories, one study employed an array of statistical controls to adjust for observed differences between treatment and comparison groups, earning a level 3 rating on the Maryland Scale. The other studies in each category compared those exposed to those not exposed without adjusting for selection, and thus warranted a rating of 2. Comparing the estimates of the level-3 and level-2 studies in the same intervention category and on a common outcome (namely, recidivism) suggests that selection bias may, indeed, have inflated the estimates in the level-2 studies, and even level-3 studies cannot adjust for selection on unobserved characteristics.

It is also notable that none of the studies in the systematic review earned a level-4 rating, which requires that the treatment and comparison groups be nearly identical on relevant baseline characteristics, as is sometime achieved by propensity score matching or other matching methods (Rosenbaum and Rubin, 1983; Shadish et al., 2008). Instead, the studies in the systematic review can be generally characterized as small-to-mid-scale randomized trials or as large observational studies with minimum-to-moderate use of statistical methods to adjust for unobserved differences.

This suggests that the field is ripe for larger-scale randomized trials. The Loadman et al. (2011) Read 180 study and the National Council on Crime and Delinquency's (2009) Avon Park study suggest that such studies, though challenging to undertake, are feasible. The literature is also ripe for rigorous evaluations of natural experiments such as Aizer and Doyle's (2013) study of the effects of juvenile incarceration using naturally occurring random assignment to harsh judges. Studies that take advantage of rigorous causal methods in juvenile settings can shed much-needed light on what works in these settings. Several of the smaller randomized trials we include here have noted the difficulties of high student turnover in correctional facilities, and of simply gaining permission to undertake research in these facilities (Shippen et al., 2012, Calderone et al., 2009). Such research efforts will clearly take time to develop and execute. They will ideally be realized through long-term partnerships between researchers and correctional facilities. Because such partnerships take time to establish, there may also be a federal role in galvanizing them. The U.S. Department of Education Institute of Education Science's recent grant program for supporting research partnerships between school systems and researchers offers one potential model. Guided by such partnerships, facilities can make increasingly evidence-based decisions that not only improve their students' prospects but also reduce the social incidence of crime and delinquency.

Key Insights for Policymakers and Practitioners

Taken in conjunction with the broader research literature on each of the interventions examined, our systematic review does identify two interventions for which the evidence base is strongest: Read 180 (for reading improvement) and the kind of personalized and intensive intervention administered at the Avon Park Academy (for diploma completion and postrelease employment).

Both of these interventions are supported by a large and rigorous study within juvenile correctional settings, and the effectiveness of Read 180 is further substantiated by several large and well-executed studies outside of correctional facilities. Beyond these strong bodies of research, we find that evidence for Corrective Reading and Tune in to Reading is positive but based on very small studies from which it is difficult to generalize. Our review also highlights a few juvenile correctional education interventions, such as the Fast ForWord software program and peer-managed instruction, for which the current (though limited) body of knowledge offers little support at the present time.

We are more reluctant to offer even cautious endorsement for interventions in which the strongest studies are rated 3 or below on the Maryland Scale, even if they show positive effects, as is the case with the Orton/Gillingham remedial education program. This limitation in research quality also applies to the personalized interventions we reviewed other than Avon Park, the vocational education/CTE interventions, and GED completion as an intervention.

In fact, the benefits of earning a GED while incarcerated, though estimated as positive in the systematic review, remain especially unclear, since these studies' comparisons of students who earn a GED with those who do not are especially vulnerable to selection bias at the student level. The most rigorous research from the literature on incarcerated adults suggest that it is the education acquired in GED programs rather than the GED credential itself that confers the greatest postrelease benefits (Tyler and Kling, 2007; Davis et al., 2013). This finding is largely consistent with the GED research outside of correctional settings as well (Heckman and Rubinstein, 2001).

Though the evidence base about what works in juvenile correctional education remains incomplete, the existing research does offer guidance about promising directions for future programmatic investments. In the interim, program directors who make decisions based on extant evidence can play a critical role in documenting their interventions and reporting on the outcomes by using the most rigorous methods at their disposal.

4. RAND Correctional Education Survey

Introduction

When we began our correctional education study, we recognized early on that the 2008 recession had a substantial effect on the field of correctional education, with many states reporting cuts in funding for programs and changes to their delivery models for educating incarcerated adults, including such changes as shortening the length of time individuals spent in programs, reducing the number of teachers, reducing the number of program slots, and cutting some programs altogether. Such changes mean that today correctional education in the U.S. likely looks very different from correctional education during the time that many of the studies in our meta-analysis were undertaken. Understanding these differences helps us to put in context the meta-analytic results described in Chapter Two and to provide the basis for forward-looking policy recommendations presented in Chapter Five.

In July 2013, we fielded the RAND Correctional Education Survey to better understand the key issues facing correctional education today. State correctional education directors' responses to this survey provide us with insights into how states dealt with the recession of 2008, how correctional education is currently provided to incarcerated adults in the United States, what information technology is being used, and how states fund correctional education. We also gathered information on preparations for the new 2014 GED exam.

In this chapter, we first summarize our approach for the survey and then present the results of the survey analyses, concluding with a discussion of what the survey results inform us about the field of correctional education for incarcerated adults.

Approach

Survey Design

The purpose of the RAND Correctional Education Survey was to gather information about the organization and delivery of correctional education for incarcerated adults in U.S. state prisons, about the use of computer technology and preparations for the 2014 GED exam, and about the impact of the 2008 recession on the field. The intent of this national survey was to help fill a critical void in our understanding of the organization and delivery of academic and vocational education/CTE to incarcerated adults and of how the landscape of correctional education is changing.

To inform the development of the survey, we held discussions with experts in the field and conducted four 90-minute focus groups with state correctional education directors responsible for adult education, adult vocational education/CTE, and/or juvenile correctional education. Specifically, we conducted two focus groups on adult academic programs, one focus group on

vocational education/CTE programs for adults, and one focus group on juvenile correctional education. The participants were recruited in advance using a purposive sampling design to attain geographic representation and to include representatives from states considered to be leaders in field. A total of 30 individuals participated in these focus groups, which were conducted at the 2011 Correctional Education Association Leadership Forum. The focus group discussions identified several key themes facing the field. The purpose of these group discussions was to help us identify some of the key trends in this field. During the focus group discussions, we learned about a number of issues that were facing the field of correctional education, including the effects of budget cuts as a result of the 2008 recession, the need to gain efficiencies in providing education to incarcerated adults and juveniles, the increasing role of computer technology in academic education and vocational education/CTE, and the challenges the new 2014 GED exam and computer-based testing. We leveraged the insights and information from these discussions to inform the development of the specific survey items, which were designed by the project team and then underwent several reviews by our research partners at the Correctional Education Association and the U.S. Department of Education. The final questionnaire was loaded into a web survey and fielded using RAND's Multimode Interviewing Capability (MMIC) system, whose staff programmed and fielded the web survey.

Sample

The survey was distributed to the state correctional education directors in all 50 states. The contact list was generated by searching public documents and verified by the Correctional Education Association.

Fielding the Survey

An advance letter from RAND accompanied by a letter by the BJA and the U.S. Department of Education explaining the importance of the survey was sent to each director approximately two weeks before the survey was fielded in July 2013. This was followed by an email invite to the directors to participate in the web survey, which provided them with the web link and their unique login name and password. In addition, we made available a PDF version of the web survey for those directors that preferred to fill out a paper version of the survey or who asked for a copy so they could see what information they would need to collect to complete the web survey.

We sent several follow-up email reminders to those directors who had not yet completed or begun the web survey. In addition, the Director of the State Council of Directors, Correctional Education Association, assisted us in sending out several reminders to their membership encouraging participation. Two team members also called individual directors whose states that had not yet started or completed the web survey to encourage participation. Survey responses were accepted through October 2013.

Measures

Shaped by our discussions with correctional education leaders across the country, the survey (see Appendix B for the questionnaire) included questions about the following topics:

- Key components of correctional education programs within each state
- Capacity of correctional education programs and how it changed between 2009 and 2012
- Impact of budget cuts or other fiscal pressures
- Use of technology
- Preparations for the 2014 GED exam and computer-based testing
- Outcome and performance indicators tracked by states' correctional education programs
- Budget and financing.

Data Cleaning and Analysis

As a result of the various forms of outreach, data came to RAND in several different forms. Most data were received through the MMIC system, but respondents also sent emails or added information in an open-ended comment field at the end of the survey to provide data on specific items or to otherwise clarify responses. Once the survey was closed, data cleaning involved identifying the data provided through these methods and merging these with the final dataset. Because skip patterns were built directly into MMIC, the logic of responses that depend on earlier responses was maintained. However, respondents sometimes added information to the "other" category that could be coded as a previously listed response. In these cases, we recoded responses for consistency.

We appended to the dataset information on the size of each state's adult prison population in 2009 and 2012 using data from the Bureau of Justice Statistics (Carson and Sabol, 2012; Carson and Golinelli, 2013). We undertook a descriptive analysis and present the results overall, by size of state and by type of lead agency responsible for administering adult correctional education within states. Because this is a census of all state correctional education programs, we do not calculate inferential statistics. Using data from the Bureau of Justice Statistics (Maruschak 2012), we classified states by the size of their adult prison populations in 2012. We consider small states to have had an adult prison population in the range of 1–24,999, medium states to have had an adult prison population in the range of 25,000–49,999, and large states to have had 50,000 or more adult prisoners in 2012.

Results

The overall response rate for the survey was 46 out of 50 states, or 92 percent, and importantly included at least partial participation from all of the states with large prison populations (n = 50,000 adult inmates or greater). In addition, 40 of the respondents (87 percent) had responsibility for both academic education and vocational training for incarcerated adults within their state. Only five respondents were responsible for academic education only, and one respondent was responsible for vocational training only. Of the state directors who responded,

only four stopped before completing the entire questionnaire. The number of states on which the findings are based is noted for each table and figure presented below.

Overview of Correctional Education Programs Today

For most responding states (36), the majority of correctional education program authority is vested within one central state agency; it is shared among several state agencies in three states. In 30 of the states, the authority for correctional education programs resides primarily within their states' departments of corrections or public safety; only four states indicated that the primary authority was a state department of education or department of adult education, and one respondent indicated that it resided within their state department of labor (data not shown).

Table 4.1 summarizes the types of educational programs available to adult state prisoners. Most states (44) reported offering adult basic education, general education development (GED) courses, and vocational skills training/CTE. Forty states also reported offering special education. Thirty-two states also offered adult secondary education and/or adult postsecondary education, and 33 states offered ESL courses. Smaller states were somewhat less likely to offer adult secondary education and postsecondary education courses. In addition, 30 out of 46 states indicated that within their state's prison system correctional education is considered to be an offender work assignment (data not shown), meaning that work assignments are also considered part of correctional education.

Table 4.1. Number of States Offering Educational Programs to Adult State Prisoners, by Type of Program

		Size of State		
	Overall	**Small**	**Medium**	**Large**
Type of Program	N (%)	N (%)	N (%)	N (%)
Adult basic education	44 (96%)	27 (93%)	10 (100%)	7 (100%)
Adult secondary education	32 (70%)	19 (66%)	7 (70%)	6 (86%)
GED test preparation	44 (96%)	27 (93%)	10 (100%)	7 (100%)
Adult postsecondary education/college courses	32 (70%)	18 (62%)	9 (90%)	5 (71%)
Vocational skills training/CTE	44 (96%)	27 (93%)	10 (100%)	7 (100%)
English as a second language (ESL) courses	33 (72%)	22 (76%)	7 (70%)	4 (57%)
Special education	40 (87%)	25 (86%)	9 (90%)	6 (86%)
Other	17 (37%)	12 (41%)	3 (30%)	2 (29%)

Total number of states responding	46	29	10	7

NOTE: Percent represents the percentage for each column of the number of states who responded.

In recent years, there has been an increasing emphasis on offering vocational education/CTE programs that lead to a nationally or industry-recognized certificate. The data in Table 4.2 provide insights as to what types of vocational training programs are currently being provided to adult inmates. Construction and automotive training were two important trades in which instruction was provided. Overall, the trade certifications most commonly reported were in construction (28 states), occupational safety (20 states), plumbing or electrical apprenticeships (20 states), automotive service (19 states), and welding certification (14 states). The perceived importance of general computing skills is underscored by the reports that 24 states out of the 42 states that responded to this question also offered Microsoft Office certification. Very few states indicated that no nationally or industry-recognized certifications were offered to adult inmates.

Table 4.2. Number of States Offering Nationally or Industry-Recognized Certifications

		Size of State		
	Overall	**Small**	**Medium**	**Large**
Certifications Offered	N (%)	N (%)	N (%)	N (%)
National Center for Construction Education and Research	28 (67%)	16 (57%)	7 (88%)	5 (83%)
Microsoft Office certification	24 (57%)	15 (54%)	5 (63%)	4 (67%)
Occupational Safety and Health Administration training programs	20 (48%)	13 (46%)	4 (50%)	3 (50%)
Apprenticeship cards (e.g., plumbing, electrical)	20 (48%)	11 (39%)	5 (63%)	4 (67%)
National Institute for Automotive Service Excellence	19 (45%)	12 (43%)	4 (50%)	3 (50%)
American Welding Society	14 (33%)	11 (39%)	1 (13%)	2 (33%)
Our state does not offer nationally or industry-recognized certificates	2 (5%)	2 (7%)	0 (0%)	0 (0%)
Total number of states responding	42	28	8	6

NOTE: Percent represents the percentage for each column of the number of states who responded.

Overall, participation in correctional education programs is mandatory in 24 states for adult inmates without a high school diploma or GED and mandatory in 15 states for adult inmates below a certain grade level (Table 4.3). We hypothesized that as a result of the 2008 recession and budget cuts, some states might change their requirements to make correctional education

voluntary as one way of trimming costs. In fact, 32 out of 35 states indicated that they *had not* changed their state's policy from mandatory to voluntary participation (data not shown).

Table 4.3. Degree to Which Participation in Correctional Education Programs Is Mandatory

		Size of State		
	Overall	**Small**	**Medium**	**Large**
	N (%)	N (%)	N (%)	N (%)
Participation is mandatory for adult inmates without a high school diploma or GED	24 (52%)	14 (48%)	5 (50%)	5 (71%)
Participation is mandatory for adult inmates below a certain grade education level	15 (33%)	6 (21%)	7 (70%)	2 (49%)
Participation in correctional education programs is voluntary for all inmates (i.e., not mandated by state policy or by legislation)	21 (46%)	16 (55%)	3 (30%)	2 (29%)
Other	2 (4%)	1 (3%)	0 (0%)	0 (0%)
Total number of states responding	46	29	10	7

NOTES: Respondents were asked to check all that apply. Therefore, there is overlap in the responses between the first two categories (mandatory for adults without a high school diploma or GED *and* mandatory for adult inmates below a certain grade level). For the "Overall" column, the "other" category included two responses that education was mandatory based on age.

Funding of Correctional Education and Impact of the 2008 Recession

Overall, the recession resulted in a decrease on average in the size of states' correctional education budgets. In 2009, the mean correctional education budget reported by survey respondents was $114,546,927, and this dropped to $100,760,235 in 2012 (Table 4.4). Overall, 36 states reported that between FYs 2009 and 2012 their state's correctional education programs (academic and/or vocational education/CTE) experienced a decrease in funding (Table 4.6). The average change in the total correctional education budget in each state between 2009 and 2012 was a decrease of 6 percent, but there were differences by size: Small states experienced a 2 percent increase on average, whereas medium states experienced an average decrease of 20 percent and large states an average decrease of 10 percent (Table 4.4).

Table 4.4. Mean Change in State Correctional Education Budgets Between FY2009 and FY2012

	Size of State

Total Correctional Education Budget	Overall	Small	Medium	Large
Mean budget in FY2009 (number of states)	$114,546,927 (n = 30)	$7,281,225 (n = 17)	$18,444,125 (n = 8)	$633,014,800 (n = 5)
Mean budget in FY2012 (Number of states)	$100,760,235 (n = 34)	$6,567,571 (n = 21)	$15,550,286 (n = 7)	$529,846,167 (n = 6)
Mean change in budget[1] (number of states the calculation is based on)	–6% (n = 29)	2% (n = 17)	–20% (n = 7)	–10% (n = 5)

[1]Mean changes in budget are calculated as the mean of each state's change in budget from 2009 to 2012. They are calculated on the sample of states that provided valid data in 2009 and 2012 and thus, may not represent the average change for all states.

Another way to examine the decrease in states' correctional education budgets is to calculate the mean change in dollars spent per student. In FY 2009, the mean dollars spent per student in correctional education programs was $3,479, and this decreased to $3,370 in FY 2012 (Table 4.5). Overall, the average change in the mean correctional education dollars spent per student was a decrease of 5 percent between 2009 and 2012. Similar to the results shown in Table 4.4, medium-sized states experienced the largest average decrease, 16 percent in the mean dollars spent per student.

Table 4.5. Mean Change in States' Correctional Education Budgets Per Student Between FY2009 and FY2012

	Size of State			
	Overall	Small	Medium	Large
Mean dollars per student in FY2009 (number of states)	$3,479 (n = 24)	$1,710 (n = 13)	$1,213 (n = 6)	$10,794 (n = 5)
Mean dollars per student in FY2012 (number of states)	$3,370 (n = 21)	$1,590 (n = 19)	$1,666 (n = 6)	$10,711 (n = 6)
Mean change in dollars per student	–5%	4%	–16%	–1%
Number of states the change calculation is based on	23	13	5	5

1Mean changes in dollars per student are calculated as the mean of each state's change in mean dollars per student from 2009 to 2012. They are calculated based on the sample of states that provided valid data in 2009 and 2012 and thus, may not represent the average change for all states.

We asked respondents specifically about the impact of budget cuts or other fiscal pressures on different aspects of their states' correctional education systems. Of the 36 states that reported a decrease in funding for their correctional education systems, 27 states reported a reduction in the number of teachers for academic programs, and 25 states reported a reduction in the number of instructors for vocational educational/CTE programs (Table 4.6).

Table 4.6. Number of States Reporting Decrease in Funding Between FY2009 and FY2012

	Size of State			
	Overall	**Small**	**Medium**	**Large**
Change Implemented in Response to Budget Cuts or Other Fiscal Pressures	N (%)	N (%)	N (%)	N (%)
Number of states reporting a decrease in funding for their state's correctional education programs between FYs 2009 and 2012	36 (84%)	21 (75%)	9 (100%)	6 (100%)
Total number of states responding	43	28	9	6
Number of states that indicated changes were made to the number of teachers or instructors	31 (86%)	16 (76%)	9 (100%)	6 (100%)
Total number of states responding	36	21	9	6
Number of states that reported reductions in the:				
• Number of teachers for academic programs	27 (87%)	14 (88%)	8 (89%)	5 (83%)
• Number of instructors for vocational education/ CTE programs	25 (81%)	11 (69%)	8 (89%)	6 (100%)
Total number of states responding	31	16	9	6

In response to reduced budgets, states in general reduced their staffing levels and the capacity of their correctional education programs. Of the 36 states that reported a decrease in funding for their state's correctional education programs (Table 4.6), a major cost-cutting measure for 31 states was to not fill vacant teaching or instructor positions (Table 4.7). Other cost-cutting measures included the implementation of hiring freezes (21 states), delayed or canceled pay increases for staff (20 states), staff furloughs (11 states), reductions in the number of course offerings for academic programs (20 states) and for vocational education/CTE programs (16 states), and reductions in or elimination of contracts with community colleges or technical schools (17 states). Further, ten states reported that they anticipated additional budget cuts to correctional education programs in FY2013 (data not shown).

Table 4.7. Of Those States That Reported A Decrease in Funding Between FY2009 and FY2012, Changes Made in Staffing Levels and Capacity in Response to Budget Cuts

	Size of State			
	Overall	**Small**	**Medium**	**Large**
Changes Made to Staffing Levels and Capacity	N (%)	N (%)	N (%)	N (%)
Did not fill vacant teaching/instructor	31	17	8	6

positions	(89%)	(81%)	(100%)	(100%)
Hiring freeze of teachers/instructors was implemented	21 (60%)	9 (43%)	7 (88%)	5 (83%)
Delayed and/or cancelled pay increases for teachers/instructors	20 (57%)	10 (48%)	6 (75%)	4 (67%)
Staff furloughs of teachers/instructors were made	11 (31%)	6 (29%)	3 (38%)	2 (33%)
Reduced salaries and/or benefits for teachers/instructors	6 (17%)	2 (10%)	2 (25%)	2 (33%)
Reduced or eliminated contracts with community or technical colleges	17 (49%)	8 (38%)	5 (63%)	4 (67%)
Reduced the number of course offerings for academic programs	20 (57%)	10 (48%)	5 (63%)	5 (83%)
Reduced the number of course offerings for vocational education/CTE programs	16 (46%)	8 (38%)	4 (50%)	4 (67%)
Other	8 (23%)	5 (24%)	2 (25%)	1 (17%)
None	1 (3%)	0 (0%)	1 (13%)	0 (0%)
Total number of states responding	35	21	8	6

Smaller states appear to have been less likely than medium-sized and larger states to have reduced the number of course offerings for academic and vocational education/CTE programs (Table 4.7). In general, smaller states appeared to be less likely to use the range of cost-cutting measures listed in Table 4.7 than medium-sized or large states. It may be that smaller states had less leeway to reduce staff or course offerings than other states. We did not ask whether teachers or instructors were given additional duties instead, though this may help explain why fewer smaller states did not employ the full range of cross-cutting measures listed.

The impact of these budget cuts was a reduction in the mean number of students participating in academic education and vocational education/CTE programs, particularly within medium-sized and large states (Table 4.8). In 2009, the mean number *students enrolled in academic programs* was about 8,300. By 2012, the mean dropped to 6,918. Between FYs 2009 and 2012, the average change reported by states was an overall decrease of 4 percent. Medium-sized and large states in particular saw reductions in the number of students in academic programs. Among small states, the average change in the number of students enrolled in academic programs was a decrease of 1 percent, but medium and large states reported larger average decreases (10 percent and 8 percent, respectively)

The average number of vocational education/CTE students in each state was smaller (3,935 in 2009; 3402 in 2012) than that for academic education programs (Table 4.8). On average, there was a 1 percent increase in the number of *students enrolled in vocational education/CTE*

programs (Table 4.8).[30] It appears that this was largely due to an increase of 7 percent in the mean number of students enrolled in vocational education/CTE programs within small states; whereas the medium-sized and large states reported on average a decrease of 4 percent and 11 percent, respectively, in the number of students enrolled.

Table 4.8. Impact on Mean Number of Students Enrolled in Academic Programs and Vocational Education/CTE Programs, FYs 2009 and 2012

		Size of State		
Impact on Students	**Overall (Mean)**	**Small (Mean)**	**Medium (Mean)**	**Large (Mean)**
Number of students enrolled in academic programs				
• FY2009	8,321 (n=31)	3,524 (n=19)	10,180 (n=6)	21,656 (n=6)
• FY2012	6,918 (n=39)	3,356 (n=25)	8,985 (n=8)	19,002 (n=6)
Mean change in academic program enrollment[1]	–4%	–1%	–10%	–8%
Number of students enrolled in vocational education/CTE programs				
• FY2009	3,935 (n=30)	1,683(n=17)	5,352 (n=7)	8,663 (n=6)
• FY2012	3,402 (n=37)	1,777 (n=23)	4,807 (n=8)	7,758 (n=6)
Mean change in vocational education/CTE students[1]	1%	7%	–4%	–11%

[1]Calculated as the mean of each state's change in the number of students from 2009 to 2012. It is calculated on the sample of states that provided valid data in 2009 and 2012 and may not represent the average change for all states.
NOT: For one small state, we set the value for number of students enrolled in academic programs in 2009 to missing because of uncertainty in the data the state reported. As a result, this state does is not included in the calculation of the mean change in academic program enrollment.

Based on our discussions with state correctional education directors, we hypothesized that the recession would result in a decrease in the number of teachers and instructors who were employees and a possible increased reliance on contract personnel. The effect of the staffing and capacity changes summarized in Table 4.7 was an overall decrease in the mean *number of academic teachers* who were employees from an average of 110 in 2009 to an average of 85 in 2012—representing on average a 24 percent decrease (Table 4.9). This decrease was largely driven by what was occurring in the medium-sized and large states. Small states experienced a modest average decrease of 5 percent; however, medium-sized and large states on average experienced a 44 percent and 20 percent decrease, respectively. At the same time, we expected to see an increased reliance on contract academic teachers. On average, states experienced a

[30] The overall mean shows a decrease (3,935 to 3,402), likely because the average decrease in the larger states offsets the small increase in the smaller states.

decrease of 1 percent in the number of academic teachers who were contract personnel. When we look at size of state, both the small and large states experienced a decrease on average of 20 percent and 40 percent, respectively. The large increase of 136 percent reported by the medium-sized states in the mean number of academic teachers who were contract personnel was largely driven by what was occurring within a few states in this size category.

In terms of *instructors for vocational education/CTE*, on average, states reported an increase of 8 percent in the mean number of instructors who were employees between 2009 and 2012 and reported (Table 4.9). In the small and medium-sized states, we see on average an increase of 8 percent and 24 percent, respectively in the number of instructors who were employees, which suggests a modest expansion of vocational education/CTE programs in these states. At the same time, the large states reported a 7 percent decrease, on average, in the number of vocational instructors that were employees. In general, the large percentage changes among academic contract personnel and vocational contract personnel among medium-sized states reflect very large changes by a couple of states, but relatively minor changes in the others. For example, one state increased its academic contract personnel from 0 to more than 70 teachers; another state increased its vocational contract personnel from 0 to more than 30 during this time period.

Table 4.9. Mean Change in the Number of Employee or Contract Teachers by Type of Program, FYs 2009 and 2012

		Size of State		
Number of Teachers or Instructors	**Overall (Mean)**	**Small (Mean)**	**Medium (Mean)**	**Large (Mean)**
Number of academic teachers who are employees				
• FY2009	110 (n=38)	34 (n=24)	165 (n=8)	342 (n=6)
• FY2012	85 (n=41)	39 (n=27)	96 (n=8)	275 (n=6)
Mean change in number of academic teachers who are employees[1]	–24%	–5%	–44%	–20%
Number of academic teachers who are contract personnel				
• FY2009	11 (n=35)	15 (n=22)	6 (n=8)	5 (n=5)
• FY2012	12 (n=41)	12 (n=27)	13 (n=9)	5 (n=5)
Mean change in number of academic teachers who are contract personnel[1]	–1%	–20%	136%	–40%
Number of vocational instructors who are employees				
• FY2009	56 (n=39)	18 (n=25)	105 (n=8)	152 (n=6)
• FY2012	56 (n=43)	19 (n=28)	116 (n=8)	141 (n=6)

Mean change in number of vocational instructors who are employees[1]	8%	8%	24%	–7%
Number of vocational instructors who are contract personnel				
• FY2009	2 (n=37)	3 (n=24)	2 (n=9)	0 (n=5)
• FY2012	4 (n=41)	3 (n=28)	9 (n=8)	0 (n=5)
Mean change in number of vocational instructors who are contract personnel[1]	27%	–10%	250%	N/A

[1]Mean change calculated as the mean of each state's change in the number of teachers (by type) from FYs 2009 to 2012. It is calculated on the sample of states that provided valid data in both FYs 2009 and 2012 and may not represent the average change for all states.
NOTE: N/A indicates that there were no such instructors in either year.

Other changes to instructional support included an increased reliance on inmates as peer tutors in the classroom. Between FYs 2009 and 2012, 14 out of 36 states reported increasing their use of inmate/peer tutors in the classroom. Of those that did, 14 states used inmates as peer tutors to assist students with coursework, nine states had inmates assist with vocational education/CTE programs, eight states had inmates assist with administrative tasks, and three states had inmates help oversee computer labs (data not shown).

Postsecondary Education

Historically, a key piece of legislation that helped to make postsecondary education more available to incarcerated adults is the Higher Education Act of 1965 (Pub. L. 89-329), which provided student loans to any qualified student, including prisoners, for postsecondary education. In part due to this federal funding, in the 1970s through the 1980s there was a growth in the number of state prison systems offering postsecondary education courses. However, in the early 1990s, Congress excluded prisoners from the Pell Basic Education Opportunity Grant with passage of the Violent Crime Control and Law Enforcement Act of 1994 (Pub. L. 103-322). The elimination of Pell Grant funding for prisoners led to the closure of approximately half of the existing postsecondary correctional education programs within correctional facilities (Taylor, 2005).

The result was a decrease in the percent of state prison facilities that offered college courses from 30 percent in 1995 to 26 percent in 2000 (Crayton and Neusteter, 2008). Participation by state prison inmates in college courses also declined over time from 14 percent in 1991 to 7 percent in 2004 (Crayton and Neusteter, 2008).

Our survey results provided an update on these historical trends. In 2013, as noted in Table 4.1, 32 states reported offering postsecondary education or college courses[31] to adult inmates, with the medium and larger states more likely to offer such courses than the smaller states. With the Pell Grant exclusion, our survey results indicate that today postsecondary education or college courses in many states (28) are paid for primarily by the individual inmate or through the use of family finances, or by private funding such as foundations or individual donations (20 states) (Table 4.10). State funding is used by 16 states. Only 12 states use college or university funding to cover the costs of postsecondary education, and very few states use inmate benefits or welfare funds. Larger states are less likely to rely on inmates' personal or family finances and more likely to use state funding or college or university funding to cover postsecondary education costs.

Table 4.10. Funding Sources Used to Pay for Adult Inmates' Postsecondary Education or College Courses

		Size of State		
	Overall	**Small**	**Medium**	**Large**
Funding Sources	N (%)	N (%)	N (%)	N (%)
Personal or family finances	28 (62%)	17 (61%)	8 (80%)	3 (43%)
Private funding (e.g., foundations, religious/community group, individual donation)	20 (44%)	12 (43%)	6 (60%)	2 (29%)
State funding (e.g., department of corrections' budget allocation)	16 (36%)	7 (25%)	5 (50%)	4 (57%)
College or university funding	12 (27%)	5 (18%)	4 (40%)	3 (43%)
Inmate benefits or welfare funds	7 (16%)	4 (14%)	2 (20%)	1 (14%)
Not Applicable, our state does not offer postsecondary/college courses to adult inmates	7 (16%)	5 (18%)	1 (10%)	1 (14%)
Total number of states responding	45	28	10	7

NOTE: Respondents were asked to mark all that apply and so the column totals exceed 100 percent.

Use of Technology and Preparedness for Implementation of the 2014 GED Exam

A growing trend in the field of education and in correctional education is the use of computer technology. Gorgol and Sponsler (2011) surveyed 43 states on their postsecondary correctional

[31] One should keep in mind that postsecondary education can include courses that lead to a vocational certificate as well as college coursework in general.

education programs and concluded that correctional educators looked to technology as an innovative way to improve the delivery of postsecondary education and to increase access. Based on the insights from the focus groups we conducted and discussions with key experts, we included specific questions in our survey of state directors to gather data on what type of computer technology is currently being used for educating adult inmates, on instruction methods that leverage technology, and the degree of access to the Internet by teachers and inmate students. Forty-one states reported that at least one of their state's prison facilities had a computer lab, with the median number of facilities with a computer lab being 11 (data not shown).

The use of computers in correctional education programs is common. Thirty-nine states reported use of desktop computers (either standalone or networked), and 17 states reported use of laptops for their correctional education programs (Table 4.11). The use of tablets, such as Kindles or iPads, was reported by only two of the small states, and 13 states reported the use of other technology (specifically, eight states reported the use of Smartboards). In terms of networks, 26 states (62 percent) reported their correctional education program utilized a local area network (LAN), and 11 states (26 percent) reported using a statewide or wide area network (WAN). Only 10 states reported using closed-circuit television for correctional education instruction.

Table 4.11. Types of Technology Hardware and Networks Used in States' Correctional Education Systems

		Size of State		
	Overall (n=42)	**Small (n=28)**	**Medium (n=8)**	**Large (n=6)**
Type of Hardware or Networks Used	N (%)	N (%)	N (%)	N (%)
Desktop computers (standalone or networked)	39 (93%)	27 (96%)	7 88%	5 (83%)
Local area network (LAN)	26 (62%)	15 (54%)	5 (63%)	6 (100%)
Mobile laptops	17 (40%)	9 (32%)	5 (63%)	3 (50%)
Statewide or wide area network (WAN)	11 (26%)	7 (25%)	2 (25%)	2 (33%)
Closed-circuit TV	10 (24%)	5 (18%)	4 (50%)	1 (17%)
Tablets (e.g., Kindles, iPads)	2 (5%)	2 (7%)	0	0
Other technology	13 (31%)	6 (21%)	5 (63%)	2 (33%)
Total number of states responding	42	28	8	6

Small states were more likely to rely on desktop computers (standalone or networked), whereas medium-sized and large states were more likely to utilize laptops (Table 4.11). Medium-sized states were more likely to report use of smart boards and closed-circuit TV for instruction.

Table 4.12. Instruction Methods for Academic Programs or Vocational Education/CTE Courses

		Size of States		
	Overall	**Small**	**Medium**	**Large**
Instruction Methods Used	N (%)	N (%)	N (%)	N (%)
On-site instruction	42 (100%)	28 (100%)	8 (100%)	6 (100%)
Correspondence courses	15 (36%)	9 (32%)	4 (50%)	2 (33%)
Interactive Video/satellite instruction	3 (7%)	1 (4%)	2 (25%)	0 (0%)
One-way Video/satellite instruction	2 (5%)	1 (4%)	1 (13%)	0 (0%)
One-way Internet-based instruction	1 (2%)	1 (4%)	0 (0%)	0 (0%)
Interactive Internet-based instruction	1 (2%)	1 (4%)	0 (0%)	0 (0%)
Other technology	4 (10%)	2 (7%)	1 (13%)	1 (17%)
Total number of states responding	42	28	8	6

In terms of methods of instruction, 42 states reported use of on-site instruction to provide academic or vocational/CTE courses, and 15 states reported the use of correspondence courses (Table 4.12). Although ten states reported that they had closed circuit television (Table 4.11), few states actually used it to provide one-way or interactive video/satellite instruction (Table 4.12). The use of the Internet-based instruction (one-way or interactive) was only reported by 1 state.

In general, student access to the Internet is very limited in most states. Thirty states (73 percent) of states reported that only teachers and instructors have access to live Internet technology in the classroom (Table 4.13). In 26 states, students do not have access to any Internet technology, and in 16 states students have access to only simulated Internet programs. Use of simulated Internet programs appeared to be more prevalent in medium-sized states.

Our survey results are further supported by the findings from a recent survey of state correctional executives. The Association of State Correctional Administrators (ASCA) asked their membership about whether their agency planned to provide their state prison inmate population access to online education courses to obtain a GED diploma or advance degree. Only four states indicated their agency planned to provide inmates with access to online education

courses for the GED, two states indicated so for inmates to earn advanced degrees, and two states for inmates to earn professional or vocational certification (ASCA, 2013).

Table 4.13. Number of States Offering Access to the Internet for Correctional Education Programs

		Size of State		
	Overall	**Small**	**Medium**	**Large**
Type of Access to the Internet	N (%)	N (%)	N (%)	N (%)
Only teachers/instructors have access to live internet technology in correctional education classrooms	30 (73%)	21 (75%)	7 (88%)	2 (40%)
Total number of states responding	41	28	8	5
Student access to the internet				
• Students do not have access to any Internet technology	26 (62%)	18 (64%)	5 (63%)	3 (50%)
• Students may only use simulated Internet programs	16 (38%)	10 (36%)	4 (50%)	2 (33%)
• Students have restricted access to live Internet	6 (14%)	4 (14%)	1 (13%)	1 (17%)
Total number of states responding	42	28	8	6

2014 GED Preparedness

In 2014, a new GED assessment will be implemented. The new, more rigorous test will be aligned with the Common Core State Standards (CCSS) and will use a new test delivery model—computer-based testing to replace the paper-and-pencil examination. These two changes have important implications for correctional administrators and educators in terms of preparing for and implementing the new test. Educators will need to be prepared to teach the CCSS and prepare students for a more rigorous GED test that will require students to demonstrate high-level thinking skills and exhibit deeper levels of knowledge in four subject areas. In addition, the new test delivery model will require educators to prepare students to have a level of computer literacy and skills necessary to successfully navigate the test using a computer. These changes, in turn, have implications when it comes to agency budgets and professional development needs of educators and present a number of logistical concerns when it comes to preparing to implement computer-based testing. We asked correctional education directors about their preparations for the new GED exam and for their views regarding early concerns about what these changes might mean for their correctional education systems.

Thirty-one states reported that their state planned to implement the 2014 GED exam, with nine states indicating that their state was exploring other high school equivalency exams and two states indicating their state did not plan to implement the new GED exam (data not shown).

Of those that planned to implement the 2014 GED exam, on average 14.5 of their state's correctional facilities (median was 11 facilities) were currently set up or were expected to be set up by January 1, 2014, to implement the exam (data not shown).

Of those planning to implement the 2014 GED exam, 17 states planned to use a combination of computer workstations and laptops for inmates to take the exam. Eight states indicated that they planned to use only computer workstations, and two states planned to use laptops only (data not shown).

Of the 31 states who planned to implement the 2014 GED exam, all but one indicated that they would provide professional development training for their teachers and instructors to prepare them to teach the new GED exam; the one exception indicated no such training would be provided (data not shown). Table 4.14 summarizes the type of professional development training states are providing or plan to provide to assist teachers and instructors in preparing to teach and implement the 2014 GED exam and computer-based testing. Most states planned to conduct training on the testing process, test protocols, and test security requirements. Most states also planned to train on instruction aligned with the common core standards and on computer literacy.

Table 4.14. Professional Development Training for Teachers/Instructors to Prepare Them to Teach the New 2014 GED Exam

		Size of State		
	Overall	**Small**	**Medium**	**Large**
Topics Training Will Address	N (%)	N (%)	N (%)	N (%)
Training on instruction aligned with the common core standards	29 (97%)	21 (100%)	3 (75%)	5 (100%)
Training on the testing process	28 (93%)	20 (95%)	3 (75%)	5 (100%)
Training on the test protocols	26 (87%)	18 (86%)	3 (75%)	5 (100%)
Training on test security requirements	26 (87%)	18 (86%)	3 (75%)	5 (100%)
Training on computer literacy	25 (83%)	17 (81%)	3 (75%)	5 (100%)
Other	2 (7%)	1 (5%)	1 (25%)	0 (0%)
Total number of states responding	30	21	4	5

State correctional education directors are concerned about the more rigorous 2014 GED exam and the implementation of computer-based testing. In our survey, 14 states expected that these changes may have a negative effect on the number of adult inmates who will be prepared to take the new exam, 13 states expected a negative effect on the amount of time needed to prepare for the exam, and 16 states expected a negative effect on GED completion rates (data not shown). Our findings are similar to that of a recent survey by the Association of State

Correctional Administrators in which 21 states reported that they anticipated a sizable drop in their pass rate for inmate students as a result to the switch to computer-based testing for the GED (Association of State Correctional Administrators, 2013).

Table 4.15 summarizes what concerns, if any, state correctional education directors have with respect to the 2014 GED exam and the move to computer-based testing. Of the 31 states planning to implement the 2014 GED exam, 24 of the states expressed concerns about the length of time it may take to prepare students to take the new GED exam, and 22 of the states were concerned about the cost to their institution or correctional education program to prepare for computer-based testing. Teachers being adequately prepared to teach the new exam (19 of the states) and to implement computer-based testing (14 of the states) were concerns for a number of states. Twelve of the states reported concerns that limited access to computers may possibly preclude some students from taking the new GED exam, and ten of the states were concerned about the cost of the 2014 GED exam to the individual student. Only two of the states indicated they had no concerns about the new exam or computer-based testing.

Table 4.15. Concerns About Forthcoming Changes to the 2014 GED Exam and the Move to Computer-Based Testing

		Size of State		
	Overall	**Small**	**Medium**	**Large**
Areas of Concern	N (%)	N (%)	N (%)	N (%)
Length of time it will take to prepare students to take the GED exam	24 (83%)	16 (76%)	3 (100%)	5 (100%)
Cost to the institution or program of preparing for computer-based testing	22 (76%)	14 (67%)	3 (100%)	5 (100%)
Teachers may not be prepared to teach the new GED exam's components	19 (66%)	11 (52%)	3 (100%)	5 (100%)
Teachers may not be prepared to implement computer-based testing	14 (48%)	8 (38%)	2 (67%)	4 (80%)
Limited access to computers may preclude some students from taking the GED exam	12 (41%)	7 (33%)	1 (33%)	4 (80%)
Cost of the 2014 GED exam to the student	10 (34%)	6 (29%)	1 (33%)	3 (60%)
Security concerns about access to the Internet for the GED exam	7 (24%)	4 (19%)	1 (33%)	2 (40%)
Other	6 (21%)	3 (14%)	1 (33%)	2 (40%)
No concerns	2 (7%)	2 (10%)	0 (0%)	0 (0%)
Total number of states responding	29	21	3	5

Smaller states tended to express fewer concerns about the 2014 GED exam and computer-based testing than medium-sized or larger states. All of the medium-sized and large states that answered this question were concerned about the cost of the new GED exam, about whether their teachers would be prepared to teach the new exam, and the length of time it would take to prepare students. In addition, most of the large states were concerned that teachers may not be prepared to implement computer-based testing and that limited access may preclude some students from taking the exam. These results suggest that states with larger prison populations may encounter more challenges in terms of implementing the new GED exam and that smaller states may fare better.

Outcome Indicators and Postrelease Measures of Success

Another area of interested that we asked state correctional education directors about is what outcome indicators and measures of postrelease success for correctional education programs are of value to both (1) assess student progress and attainment and (2) meet correctional goals of increased safety within the institution and reductions in recidivism.

Table 4.16 summarizes which outcome indicators states' correctional education systems track. A majority of states (40) track GED certificates and nationally or industry-recognized certificates earned (36 states). Thirty-two states also tracked gains in reading or math skills, and about half of states tracked academic program completions. College credits earned and degrees were tracked by 17 and 18 states, respectively. Other outcome indicators tracked by states' correctional education systems included reading level performance, the Wide Range Achievement Test (WRAT) scores, the Tests of Adult Basic Education (TABE), WorkKeys certificates awarded, vocational training program completions, reductions in discipline, and state and local vocational certificates.

Table 4.16. Outcome Indicators Tracked by States' Correctional Education Systems

Indicator	Size of State			
	Overall	Small	Medium	Large
Indicators	N (%)	N (%)	N (%)	N (%)
GED certificates earned	40 (95%)	27 (96%)	8 (100%)	5 (83%)
National or industry-recognized certificates awarded	36 (86%)	22 (79%)	8 (100%)	6 (100%)
Gains in reading or math skills	32 (76%)	20 (71%)	7 (88%)	5 (83%)
Academic program completions (e.g., adult basic education, adult secondary education, ESL)	23 (55%)	15 (54%)	5 (63%)	3 (50%)
High school degrees awarded	21 (50%)	15 (54%)	3 (38%)	3 (50%)

College credits earned	17 (40%)	10 (36%)	5 (63%)	2 (33%)
College degrees earned (e.g., Associate degrees)	18 (43%)	11 (39%)	5 (63%)	2 (33%)
Other	7 (17%)	4 (14%)	2 (25%)	1 (17%)
Total number of states responding	42	28	8	6

By size of state, tracking of GED certificates earned, nationally or industry-recognized certificates, and gains in reading or math skills were reported by a number of the states in each size category (Table 4.16). Medium-sized states were nearly twice as likely to report also tracking college credits and college degrees earned, suggesting that perhaps college coursework and contracting with community colleges to provide courses might be more prevalent in these states.

We also asked state correctional education directors what postrelease indicators they considered to be important outcome measures of academic or vocational education/CTE program success. The majority indicated reductions in recidivism and postrelease employment as being two important measures to track. Many states also cited enrollment in vocational training programs and in postsecondary education/college courses. Less cited were postrelease indicators of college attainment or degrees awarded. Other postrelease indicators mentioned included Department of Labor statistics for their population and continued skill training, and one respondent noted that all of the indicators listed in Table 4.17 are important but cannot be tracked at this time.

Table 4.17. Postrelease Indicators States Consider to Be Important Outcome Measures for Correctional Education

		Size of State		
	Overall	**Small**	**Medium**	**Large**
Indicators	N (%)	N (%)	N (%)	N (%)
Recidivism	41 (98%)	27 (96%)	8 (100%)	6 (100%)
Post-release employment	38 (90%)	24 (86%)	8 (100%)	6 (100%)
Job retention	29 (69%)	18 (64%)	5 (63%)	6 (100%)
Enrollment in vocational training programs	24 (57%)	15 (54%)	6 (75%)	3 (50%)
Enrollment in postsecondary education/ college courses	22 (52%)	14 (50%)	6 (75%)	2 (33%)
College attainment	16 (38%)	10 (36%)	4 (50%)	2 (33%)
Degrees awarded	12	7	4	1

	(29%)	(25%)	(50%)	(17%)
Other	3 (7%)	3 (11%)	0 (0%)	0 (0%)
Total number of states responding	42	28	8	6

Medium-sized states were more likely to consider enrollment in vocational training programs and in postsecondary education/college courses as well as college attainment and degree awarded as being important outcome measures (Table 4.17). These results are consistent with the findings in Table 4.16 that medium-sized states also were more likely than the small or large states to track college credits and college degrees earned.

Participation in Federal, State, Local, and Private Grant Programs

In addition to funding from states, correctional education programs also can benefit from federal funding such as from Title I, Part D, of the Elementary and Secondary Education Act of 1965 (ESEA) (Pub. L. 89-10) to be used to improve educational services for children and youth in local and state institutions for neglected or delinquent children and youth.[32] Further, federal grant programs and foundation funding can be used to support specific programs or research efforts.

Twenty-seven state correctional education programs reported participation in ESEA, Title I, Part D and the Workforce Investment Act (Pub. L. 105-220), Title II programs (Table 4.18). Regardless of size, approximately two-thirds of states participated in the ESEA Title I, Part D and Workforce Investment Act, Title II programs. Only nine states indicated that their correctional education programs had received funding under the SCA and six states from foundations such as the Sunshine Lady Foundation.[33]

Table 4.18. Federal, State, or Private Grant Programs States' Correctional Education Systems Participate in

		Size of State		
	Overall (n=42)	**Small**	**Medium**	**Large**
Type of Program	N (%)	N (%)	N (%)	N (%)

[32] The purposes of Title I, Part D are to (1) improve educational services for children and youth in local and state institutions for neglected or delinquent children and youth so that they have the opportunity to meet the same challenging state academic content and State student achievement standards that all children in the State are expected to meet; (2) provide these children with services to enable them to transition successfully from institutionalization to further schooling or employment; and (3) prevent at-risk youth from dropping out of school as well as to provide dropouts and children and youth returning from correctional facilities or institutions for neglected or delinquent children and youth, with a support system to ensure their continued education (U.S. Department of Education, 2006).

[33] Other foundations and specific grant programs mentioned included the Bill and Melinda Gates Foundation, the Open Society Foundations, the Perkins Leadership grant program, and one state's Department of Labor career technical grants.

ESEA, Title I, Part D	27 (64%)	17 (61%)	5 (63%)	5 (83%)
ESEA, Title II, Part A	4 (10%)	1 (4%)	1 (13%)	2 (33%)
Workforce Investment Act, Title II (also known as the Adult Education Family Literacy Act)	24 (57%)	16 (57%)	5 (63%)	3 (50%)
Federal Second Chance Act (SCA) grants	9 (21%)	4 (14%)	2 (25%)	3 (50%)
Office of Juvenile Justice and Delinquency Prevention (OJJDP) grants	1 (2%)	1 (4%)	0 (0%)	0 (0%)
Bureau of Justice Assistance (BJA) grant funding (other than Second Chance Act)	3 (7%)	0 (0%)	1 (13%)	2 (33%)
National Institute of Justice (NIJ) grants	1 (2%)	0 (0%)	0 (0%)	1 (17%)
Foundations (e.g. Sunshine Lady) (please specify):	6 (14%)	4 (14%)	2 (25%)	0 (0%)
None/Don't Know	4 (10%)	3 (11%)	1 (13%)	0 (0%)
Number of states responding	42	28	8	6

Of those states (n = 18) that received Workforce Investment Act, Title II dollars, the mean amount received was $26,014,500 in FY2012 (Table 4.19). In terms of the Perkins Act funding, states (n = 30) that received funding under this grant program received a mean amount of $4,114,150. Eight states also reported receiving the states' higher education/aid resources in FY2012, with the mean amount being $1,306,031.

Table 4.20. Amount of Funding States' Correctional Education Programs Received in 2012 from the Workforce Investment Act, Perkins Act, and States' Higher Educational/Aid Resources

Type of Program	Mean	Median
Workforce Investment Act, Title II (also known as the Adult Education Family Literacy Act) (n=18)	$26,014,500	$284,000
Carl D. Perkins Career and Technical Education Act (Perkins Act) (n=28)	$4,114,150	$69,000
States' higher education/aid resources (n=6)	$1,306,031	$596,125

Discussion

Variation in Correctional Education Programming Across the States

In 2013, most states offered adult basic education, GED courses, and vocational skills training. In addition, most states also reported having special education courses available. Higher-level educational programming, including adult secondary education and postsecondary education, is offered in about 70 percent of states (32 states and 33 states, respectively). However, we found that smaller states were less likely to offer such courses, suggesting that inmates in smaller states have fewer opportunities for adult secondary and postsecondary education. In 24 states, participation in correctional education programs is mandatory for adult inmates without a high school diploma or GED, and in 15 states mandatory for adults below a certain grade level. However, smaller states were less likely than medium-size and large states to require mandatory participation in correctional education programs. Smaller states though were more likely to emphasize vocational education/CTE training for state prisoners than medium-sized or large states.

An emerging trend is a growing emphasis on providing vocational education/CTE programming that will lead to industry or nationally recognized certifications. For example, 28 states reported offering the National Center for Construction Education and Research certification. Our survey suggests that more than half of reporting states offer certification training in construction and in Microsoft Office skills. Occupational safety and plumbing and electrical apprenticeships are offered in nearly half of reporting states, and welding is offered in about a third of them.

Impact of the 2008 Recession

The effect of the 2008 recession was a 6 percent decrease on average in states' correctional education budgets between FYs 2009 and 2012. However, the effect of the recession differed by size of state. The largest decrease in budgets was felt by medium-sized and large states. On average, small states experienced a 2 percent increase in their state's correctional education budget, compared with a 20 percent and 10 percent decrease in medium and large states. Another way to look at this is to calculate the dollars spent per student during this time period. Overall, the mean dollars spent per student for correctional education was $3,479 in FY2009, compared with $3,370 in FY2012—a 5 percent decrease on average in the dollars spent per student.

The reductions in states' correctional education budgets reportedly led to a dramatic contraction in the capacity of academic education programs, and to a reduction in the number of students on average who participated in these programs. For academic programs, these budget cuts and resulting cost-cutting measures yielded, on average, a 4 percent decrease in the mean number of adult students enrolled in academic programs between Fiscal Years 2009 and 2012. Medium-sized and large states on average experienced a larger decrease in the number of adult

students enrolled in academic programs (10 percent and 8 percent decrease, respectively), than did small states who reported an average decrease of 1 percent in the number of students in these programs.

The effect of the staffing and capacity cost-cutting measures on teachers was particularly felt in medium-sized and large states. Overall, there was on average a 24 percent decrease in the number of academic teachers who were employees, from an average of 110 in 2009 to an average of 85 in 2012. All size states experienced a decrease in the number of teachers who were employees, but the largest decrease occurred in medium-sized (44 percent) and large states (20 percent).

In addition, 20 states also reduced the number of course offerings for academic programs during this time period; this was especially true in the larger states. In the short run, these cuts saved states money by reducing the direct costs of correctional education programming, However, in the long run they may have added to the future costs of reincarceration, given that inmates are now returning to local communities having had fewer educational opportunities while incarcerated. Long-term costs are important to bear in mind. Our meta-analysis results in Chapter Two suggest that participation in correctional education programs is associated with a 13-percentage point reduction in recidivism, and that for every dollar spent on correctional education programs, five dollars are saved in three-year reincarceration costs.

Vocational education/CTE programs seem to have fared somewhat better during the recession than academic programs in terms of reductions in the number of students enrolled in vocational training programs, and in the number of instructors. On average, there was a 1 percent increase in the number of students enrolled in vocational/CTE programs between 2009 and 2012. However, this appears to be largely driven by an increase on average of 7 percent in smaller states. In comparison, the medium-sized and large states experienced a reduction on average of 4 percent and 11 percent, respectively, in the number of students enrolled in these programs. Small and medium-sized states in fact saw a modest increase between FYs 2009 and 2012 in the mean number of vocational education/CTE instructors who were employees (8 percent and 24 percent, respectively). Combined, this suggests a modest expansion of vocational education/CTE programs in small and medium-sized states during this time period. Still, 38 percent of small states and 44 percent of medium-sized states reported that in response to budget cuts they had reduced the number of course offerings for vocational education/CTE programs.

Use of Information Technology

One of the major trends that will shape the future of work in the 21st century is the growing role of information technology in our society, with technological change resulting in an increased demand for a skilled workforce (Karoly, 2013). In today's job market, basic computer skills are virtually a necessity in searching for job opportunities, applying online for jobs or benefits, and undertaking simple clerical tasks in the workplace. The importance of computing skills for today's job market is recognized by state correctional education directors and reflected by the

fact that 24 states reported offering a Microsoft Office certification as part of their vocational education/CTE programs.

Further, distance learning and online instruction are growing trends in the United States, with increasingly more educational courses being offered online either by colleges or virtual high schools. These online courses are appealing in that they offer an opportunity to address key barriers that correctional educators face in terms of limited classroom space and the need to scale back on instructional staff in recent years. In addition, the frequent movement of inmates from facility to facility makes it difficult to ensure continuity of coursework and learning opportunities, while distances between facilities (especially in rural states) make it difficult to provide instruction in all facilities. Computer-assisted instruction is also appealing in offering the opportunity to tailor instruction and coursework to the needs of the individual student.

Yet, our survey results indicate that the role of computer technology in correctional education is complicated. We found that the use of computers for instructional purposes is common, with 39 states reporting the use of desktop computers (either standalone or networked) and 17 states reporting the use of laptops. However, access to the Internet, and the use of Internet-based instruction (one-way or interactive), is reported to be limited in most states' correctional facilities. Thirty states reported that only teachers and instructors have access to live Internet technology. In 26 states, inmate students lack access to any Internet technology, and in only 16 states do inmate students have access to simulated Internet programs. In focus group discussions, state correctional education directors cited corrections' opposition to access to computer or to the Internet as a key barrier to using technology in the classroom. In terms of instructional methods that use some type of technology, only ten states reported that they had closed-circuit television, and only a few states reported using it to provide one-way or interactive video/satellite instruction.

Readiness for the 2014 GED Exam and Computer-Based Testing

The GED is the predominant way that inmates earn their high school equivalency diplomas, and GED completion is often a prerequisite for many vocational training programs (Harlow, 2003; Lockwood et al., 2013).

The new 2014 GED exam and the move to computer-based testing will further push correctional education systems to use information technology in the classroom and to find solutions to some of these barriers. Of the 31 states planning to implement the 2014 GED exam, 17 plan to use a combination of computer workstations and laptops for inmates to take the exam.

The 2014 GED exam not only represents a more rigorous test, being aligned with the Common Core State Standards (CSS), but also will rely on a new test delivery model—namely, computer-based testing to replace the old paper-and-pencil exam (Lockwood et al., 2013). This represents a profound change to states and at the same time presents some key challenges. GED completion rates are seen as important outcome indicator to track by 95 percent of states that took part in our survey. Of the 31 states planning to implement the 2014 GED exam, 14 states

expected that the more rigorous GED exam and the use of computer-based testing may have a negative effect on the number of adult inmates who will be prepared to take the new exam, and 16 states expected a negative effect on GED completion rates. This was particularly true for the medium-sized and large states. Nineteen states were concerned about their teachers being adequately prepared to teach the new exam, and 24 states were concerned about the length of time it may take to prepare students for the more rigorous exam.

In recent discussions with state correctional education directors at a 2013 Correctional Education Association conference and workshop we facilitated a discussion on preparations for the 2014 GED exam. One of the issues the state directors debated was how to assess whether an inmate student had sufficient computer skills to take the timed exam. Anecdotal reports from state correctional education directors with early experience with computer-based testing were that some inmate students did not have adequate computer skills to finish the test within the allocated amount of time. In addition to keyboarding tasks, the new GED exam and computer-based testing require a range of computing skills, such as knowledge of how to access tool bars, navigate "HOT SPOTS," use "drag and drop" and "point and click" skills, and use a drop-down online calculator (Lockwood et al., 2013). The directors discussed possible workarounds to help students, including the use of standalone calculators and having students practice writing in long-hand their essays before typing their answers on the computer. The directors also mentioned including as part of the GED preparation time in the computer lab for students. In our survey, 12 states reported concerns that limited access to computers may preclude some students from taking the new GED exam. Also, responding directors in 14 states reported concerns that their teachers may not be adequately prepared to implement computer-based testing.

Only two states reported no concerns about the new exam or computer-based testing. In general, smaller states expressed fewer concerns; however, our survey results suggest that states with the majority of the prison population (i.e., medium-sized and large states) expect to encounter a number of challenges in implementing the new exam and test delivery system.

Given these concerns, the survey results suggest that the United States may experience a dramatic drop in the number of GED completion rates for incarcerated adults, which will merit close monitoring and an assessment of the long-term implications for this population in terms of effects on their opportunities to participate in vocational training programs and postsecondary education, as well as effect on employment opportunities. These results also suggest that states may need technical assistance in preparing teachers and students for the new GED exam. The fact that not all states will be using the GED exam as a high school equivalency test raises questions about whether the use of alternative exams will be accepted by vocational training programs and college programs.

Postsecondary Education

As noted earlier, the history of postsecondary education for incarcerated adults is one of an initial growth in the number of programs and then a significant reduction in response to the elimination of Pell grants in the 1990s for this population.

Our survey results provide updated information about these trends. Our survey did not ask about the number of inmates in postsecondary courses but does provide information on the degree to which states offer them and how inmate students are paying for these courses. We found that in 2013, 32 states reported offering postsecondary education or college courses to adult inmates (especially true of medium-sized and larger states). However, these courses today are primarily paid for by the individual inmate or by family finances. In 16 states, state funding from the department of corrections, for example, is used to cover the costs of postsecondary education. Only 12 states reported using college or university funds to pay for these courses. Our survey results suggest that reinstatement of the Pell grants for this population may have a substantial effect in expanding postsecondary opportunities for state prisoners.

In recent years, there has been a growing interest in providing postsecondary education to inmates in state prison. Such programs as the Bard College Initiative and the Prison University projects are two examples. Importantly, a group of foundations recently joined together to fund a demonstration project in three states called Pathways from Prison to Postsecondary Education led by the Vera Institute of Justice to support postsecondary education and degree attainment for individuals who are within two years of release. Of particular note is that these various initiatives are focused on degree attainment, whereas traditionally courses offered within prisons often were not aimed at credential attainment or building a core of courses that would allow individuals to continue and ultimately, to obtain a postsecondary education degree either while incarcerated or upon release from prison.

5. Conclusions and Recommendations

Introduction

The key finding from this comprehensive study of correctional education in the United States is that correctional education is effective in reducing recidivism for incarcerated adults and that there is reasonable evidence that it is also effective, especially vocational training, in improving individuals' likelihood of postrelease employment. Our cost analysis further showed that correctional education is highly cost-effective for incarcerated adults—for every dollar spent on correctional education, five dollars are saved on three-year reincarceration costs. Our report also provides the most comprehensive systematic review we are aware of on what works in correctional education for incarcerated juveniles. For example, we found compelling—if still preliminary—evidence for Scholastic's computer-enhanced reading intervention, Read 180, and for the highly intensive and personalized education model exemplified by Florida's Avon Park Youth Academy.

Thus, the debate should no longer be about *whether* correctional education is effective or cost-effective; rather, the debate should focus on *where the gaps in our knowledge are and opportunities to move the field forward*.

In this chapter, we offer some recommendations and next steps, drawn from our evaluation results; while this report is to the U.S. Attorney General, these recommendations will also be of interest to other federal departments and agencies focused on reentry and are intended to provide a roadmap for building on the gains made to-date in educating incarcerated individuals to improve their chances of success upon release and reentry into local communities.

Correctional Education for Adults

Our survey results provide solid evidence about the dramatic impact the 2008 recession had on correctional education in the United States. Specifically, the results show that as budgets were reduced, the reported capacity for academic programs contracted, which led to a corresponding drop in the number of incarcerated adults participating in these programs and in the number of teachers who were employees. In the long run, such a lack of educational opportunities may contribute to future reincarceration trends and future incarceration costs. This raises the question of whether the trade-offs we are making in terms of cost savings today with reductions in educational programming are worthwhile considering the future costs of reincarceration as well as the effect that such lost opportunities have on individuals' chances of finding employment and being successful in reintegrating back into society.

Throughout this project, at various conferences, workshops, and as part of individual discussions with state correctional education directors, these directors have repeatedly said that their legislature or department of corrections is asking them for evidence about how effective their programs are to inform budget decisions and that they now are providing correctional education programming with fewer dollars. The directors strongly desired information on how they might modify their models of education to trim their budgets while still maintaining the effectiveness of their programs. The results of our meta-analysis answers the first question about effectiveness—correctional education programs are dramatically effective in reducing recidivism, and there is modest evidence of improvements postrelease employment outcomes. Our findings also clearly indicate that correctional education programs are highly cost-effective for incarcerated adults.

However, because of limitations in quality of the evidence base (as discussed further below), we cannot answer the other critical questions needed to inform discussions about modifications to educational programming in a resource-constrained environment. We note, as did MacKenzie (2008), that we are unable to get at what is inside the "black box" of what works in correctional education, to answer such questions as:

- What dosage is associated with effective programs, and how does it vary for different types of academic programs and students?
- What models of instruction and curriculum delivery (e.g. one-on-one, traditional classroom lectures, computer-based learning) are most effective in a correctional environment?
- Who benefits most from different types of correctional education programs?
- What principles from adult education and learning may be applicable to correctional education?

Thus, **we recommend focusing research and evaluation efforts at the federal and state levels to address these questions so that policymakers and state correctional education directors can make informed trade-offs in budget discussions.** Where feasible, researchers should be encouraged to make as much use of administrative data as possible to help reduce evaluation costs.

Apart from this limitation, our survey results underscore that how correctional education is being provided today is very different from how it was provided when many of the studies in the meta-analysis were undertaken. This includes different models of instruction and delivery, reductions in the number of teachers who are employees, the increased use of peer tutors, and the growing role of computer technology in the classroom and in instruction. Thus, a program provided ten years ago may be operating today in a different context altogether and under a different set of budget constraints. Thus, moving forward, **we recommend that federal and state governments and philanthropy fund (1) evaluations of programs that illustrate different educational instructional models with the goal of getting inside the black box, (2) evaluations of programs that are trying innovative strategies to implement technology and**

leverage distance learning in the classroom, and (3) an analysis of what lessons from the larger literature on adult education may be applied to correctional education.

The new 2014 GED exam, which requires implementing computer-based testing, represent a profound change for the field of correctional education. The GED certificate continues to be an important mechanism by which many inmates earn their high school equivalency and is a key outcome indicator tracked by departments of corrections. Yet, because the updated exam is more rigorous than its predecessor and because of the new requirement of computer-based testing, the majority of state correctional education directors expect to see a negative impact of the new GED exam on completion rates and on the number of inmates prepared to take the new exam.

These directors also have expressed concern that lower GED completion rates will hurt educational and recidivism outcomes more broadly. However, existing research suggests that this concern may be overstated because it appears that it is *the skills inmates acquire while preparing for the GED*, more than the credential itself, that reduces their postrelease recidivism (Tyler and Kling, 2007), and this finding is corroborated by broader evidence that the GED's effect as a signal of worker quality is quite limited (Heckman and Rubenstein, 2001; Tyler, Murnane, and Willett, 2000). Consistent with that conclusion, our own meta-analysis also found a positive impact of GED preparation, though it was not possible to disentangle preparation from completion in some of the less-rigorous studies (Davis et al., 2013). As such, it is possible that a more-rigorous GED will actually improve the long-term outcomes of inmates who pursue it. What is clear is that well-designed research is needed to estimate and document the impact of the new GED on inmates' educational skills, attainment, employment, and recidivism, as well as the implementation challenges it imposes on the correctional facilities themselves. **We recommend that the federal government monitor and evaluate the impact of the new GED and computer-based testing on the field and consider opportunities to provide technical assistance to states and training to help prepare educators to teach the more rigorous GED exam and to implement computer-based testing.**

The role of computer technology in correctional education is a growing trend, and the new computer-based testing requirement for GED exam administration is likely to accelerate the adoption of computer technology in correctional settings. Given these changes, it will be important to document how correctional settings overcome security and resource challenges to computer-based testing and how they maintain their technology infrastructure in resource-constrained environments. These lessons are important as computer-enhanced instruction becomes increasingly commonplace in the broader secondary and postsecondary educational landscape nationally. With the rise of blended learning technologies and massively open online courses (MOOCs), the question is not whether computers should play a substantial role in educating incarcerated adults, but how best to facilitate their adoption and use. Further, educators need assistance in measuring readiness for the GED exam including computer literacy, as well as assistance in adopting computer-aided instruction and incorporating online courses into the correctional education curriculum. In addition, there is a need for in-depth case studies and

evaluation of innovative examples of the use of computer technology in the classroom to aid in identifying exemplary practices. An analysis of the larger literature on the use of computer technology in adult education may be informative here as well. Thus, **we recommend further evaluation and research on the use of computer technology in the correctional education setting to help answer such questions**.

States are increasingly offering nationally and industry-recognized certificates, which is a positive trend as corrections focuses increasingly on training programs that will lead to meaningful credentials and enable individuals to earn a living wage. However, it is not yet clear to the degree to which these certificates will enhance the post-employment prospects of those leaving prison, given the historically difficult time former inmates have getting hired in jobs that provide a living wage—particularly in the sub-baccalaureate labor market. We need to assess the effectiveness of these programs, and the credentials they provide, in helping returning individuals find and sustain employment and to assess the degree to which existing barriers to employment persist that may dampen the effects of having these changes in vocational training programs. Given the changes in the U.S. economy and the 21st century workforce needs, **we recommend an assessment at the federal and state levels about what such changes mean for the criminal justice–involved population and that a summit at the state and federal levels with private industry be supported to explore what opportunities are available to formerly incarcerated individuals and what skills will be needed in the future**.

Finally, when we began this study, we conducted a wide search to identify what other surveys had been conducted on this topic. We found very little information available, and what was available tended to be out-of-date and limited in scope. The nationwide survey we conducted of state correctional education directors can serve as a baseline moving forward. **Repeating a nationwide survey of correctional education annually or biennially would enable the field and policymakers to assess progress in specific areas and the impact of different policies.**

Correctional Education for Juveniles

For juveniles, a key question is how best to provide services that will lower young offenders' risk of future crime and increase their chance of success in the legitimate economy. In educating juveniles, correctional facilities must serve a highly transient population of students who bring a widely varied set of educational and emotional needs (Sedlak and McPherson, 2010; Meisel et al., 1998; Leone, Meisel, and Drakeford, 2002). Further, youth with learning disabilities tend to be overrepresented in juvenile correctional facilities (Meisel, Henderson, Cohen and Leone, 1998). The literature in this area reflects the reality of what correctional education looks like for juveniles in the United States.

We focused our systematic review on education provided to juveniles in institutional settings. Overall, the 18 studies in our systematic review can be generally characterized as small-to-mid-

scale randomized trials or as large observational studies with minimum-to-moderate use of statistical methods to adjust for unobserved differences. We found that the methods employed in the studies on juvenile correctional education varied markedly by intervention type. For example, studies of the packaged reading interventions were generally fairly small, because these studies involve administering particular curricula at the classroom or student level, as well as administering pre- and post-tests to individual students. The designs of these studies were fairly robust, but the small sample sizes of the studies and limited power for hypothesis testing makes it difficult to generalize broadly from their findings. This suggests that the field is ripe for larger-scale randomized trials.

The field is also ripe for rigorous evaluations of natural experiments such as Aizer and Doyle's (2013) study of the effects of juvenile incarceration using naturally occurring random assignment to harsh judges. Studies that take advantage of rigorous causal methods in juvenile settings can shed much-needed light on what works in these settings. Several of the smaller randomized trials we include here have noted the difficulties of high student turnover in correctional facilities, and of simply gaining permission to undertake research in these facilities (Shippen et al., 2012; Calderone et al., 2009). As such, **we recommend that the focus be on implementing larger-scale randomized trials and rigorous evaluations of natural experiments**. Such research efforts will clearly take time to develop and execute. They will ideally be realized through long-term partnerships between researchers and correctional facilities. Informed by such partnerships, facilities can make increasingly evidence-based decisions that not only improve their students' prospects but also reduce the social incidence of crime and delinquency.

Taken in conjunction with the broader research literature on each of the interventions examined, we did identify two interventions that show particular promise: a blended learning reading curriculum by Scholastic called Read 180, which combines teacher-directed instruction with computer-enhanced, self-paced instruction, and the Avon Park Youth Academy in Florida, which is a highly intensive program that includes personalized academic instruction and consistent mentoring during and after incarceration by the same parole officer (who is given a markedly reduced caseload). Beyond these stronger studies, we found positive effects from very small studies of Corrective Reading and Tune in to Reading, but we think it is premature to generalize from such small samples.

Finally, the benefits of earning a GED while incarcerated, though estimated as positive in the systematic review, remain especially unclear, since these studies' comparisons of students who earned a GED with those who did not are particularly vulnerable to selection bias at the student level. Further, as noted above, the most rigorous research from the literature on incarcerated adults suggests that it is the education acquired in GED programs rather than the GED credential itself that confers the greatest postrelease benefits (Tyler and Kling, 2007; Davis et al., 2013).

Improving the Evidence Base for Adult and Juvenile Correctional Education

In our meta-analytic report (Davis et al., 2013), we laid out a number of recommendations to improve the evidence base and they merit summarizing here. The questions we would like to have answered were not feasible because of limitations in the quality of the evidence base and the unevenness of the research designs used to assess the evidence and identify promising practices. **There are four things that we recommend that the federal and state governments and philanthropy invest in to help further develop the evidence base for correctional education.**

Apply Stronger Research Designs

Establishing a causal relationship between correctional education participation and successful outcomes for inmates requires ruling out the possibility of selection bias. This form of bias occurs when inmates who elect to participate in educational programs differ in unmeasured ways from inmates who elect not to participate in educational programs. Isolating the effects that can be directly attributable to a program is crucial in supporting the design of effective policies—an objective hampered by studies with research designs that are highly susceptible to selection bias. In our meta-analysis, only seven of the 50 studies used to assess recidivism and one of the 18 studies used to assess employment were based on studies with high-quality research designs. Further, many studies did not report sufficient information about the socio-demographic characteristics and other characteristics of the treatment and comparison groups; reporting on such information would allow researchers to assess meaningful differences between the two groups to be evaluated and to quantify the potential threat of selection bias. To minimize this potential for bias, future studies should ideally use such research designs as randomized controlled trials and well-executed quasi-experimental designs.

In addition, identifying the appropriate comparison groups is important. Many of the studies reviewed in our meta-analyses used comparison groups of nonprogram participants but did not consider differences in terms of levels of education, certification, or training. Thus, the comparison group might be a mixture of inmates with varying levels of academic achievement.

Gaes (2008) recommended that a study registry be established to help sort out the different effect sizes found across studies. The vast array of programs currently administered and the dearth of basic information on their design and their effectiveness in a centralized system precludes the effective utilization of resources, particularly for states making strategic decisions on whether and how to recalibrate their programs to adjust to changes in funding and changes in the prisoner population. Funding of such a registry by the federal government to be operated by a university or research organization would help advance the evidence base by including details about each study, including information about the program and intervention, about the evaluation design, about characteristics of the treatment and comparison groups, and about the outcomes measures used. Such a registry could also provide technical assistance and evaluation guidance

for those working in the field. Throughout the course of the project, we have received repeated requests from correctional educators and researchers for this type of information—clearly the field sees a real need for such a registry.

Measure Program Dosage

Many practitioners have posed the question: What dosage level is associated with effective correctional education programs? For instance, does it matter that an individual participates in 20 hours of academic instruction, or is 30 hours of academic instruction required for a given course? Such questions about dosage levels are especially salient now, when many correctional education programs have experienced significant budget cuts.

On average, the studies we reviewed lacked specific information about the dosage of the program, such as the overall program duration, the number and grade level of the courses in which inmates were enrolled, how many hours per day or week inmates were exposed to formal class instruction, and how many hours per day or week inmates worked on assignments outside the classroom. In many of the studies, particularly those that were secondary analyses of administrative data sets, respondents were categorized simply as correctional education participants and nonparticipants. This crude categorization undoubtedly masked variation in exposure to the program among participants. For example, some inmates may have been enrolled for a year, while others inmates may have been enrolled for a week and withdrawn.

Without being able to discern such differences, it is difficult to put the findings from individual studies in their proper contexts. The lack of dosage information means that there is little to no empirical evidence that can help inform policymakers on "how much" correctional education is necessary to produce a change in the desired outcomes. In future studies, the proper recording of program dosage when collecting data and monitoring the progress of inmates through correctional programs will be critical to enable researchers to examine these questions.

Identify Program Characteristics

When we undertook our review of the literature on academic and vocational training programs for incarcerated adults, our charge from BJA was to identify promising or evidence-based programs that could be potentially replicated in other settings. We were unable to identify specific exemplary programs—not because such programs do not exist, but because the evidence base does not provide sufficient detailed information about such programs to allow us to do so. Many of the studies in the literature review did not provide sufficient detail on the characteristics of the program, such as the structure of the curriculum, the training and certifications of the teachers, the instructional methods used by the teachers, the student-teacher ratio in classrooms, and supplemental access to textbooks and technology. To the extent possible, we culled this information from the studies that provided it and used it in an exploratory fashion in our meta-analyses. However, few studies consistently listed these details in their program descriptions; consequently, our findings from these few studies are suggestive at best. Thus, from a meta-

analytic approach, we are unable to offer evidence-based prescriptions about what aspects of correctional education are most or least effective. The field would be well served if future research carefully documented the characteristics of the programs so that different models of program organization and instruction could be empirically validated.

Examine More-Proximal Indicators of Program Efficacy

More research is needed on more-proximal measures that would better indicate how programs actually affect thinking and behavior, such as changes in motivation, literacy gains, development of concrete skills, or academic progress versus academic achievement. Overwhelmingly, the research conducted to date has looked at recidivism as the major outcome indicator, which is understandable given its importance as a marker of successful prisoner rehabilitation. However, despite its salience in criminological research, the emphasis on recidivism has meant that we know much less about the process through which correctional education helps shape how former inmates re-integrate into the community. Correctional education is believed to improve the skills and abilities of inmates (i.e., "human capital" in economics parlance), which, in turn, improves their chances of continuing education/training upon release and then finding gainful employment. Only four studies in our review looked at skills and abilities (as measured by achievement test scores), and only 18 looked at employment. There were too few studies of additional education/training to include in a meta-analysis. Applying these more-proximal indicators of program efficacy will help to better elucidate the mechanisms that undergird the role of education in the rehabilitation process.

In summary, **to improve the evidence base, state and federal policymakers and foundations should invest in well-designed evaluations of correctional education programs**. Also, researchers and program evaluators need to strive to implement rigorous research designs to examine questions related to potential bias and program dosage. **Funding grants and guidelines can help further the field by requiring the use of more-rigorous research designs.** Funding mechanisms should also support partnerships between correctional educators and researchers and evaluators to undertake rigorous and comprehensive evaluations of their programs. **A study registry of correctional education evaluations would further aid in developing the evidence base** in this field to help inform policy and programmatic decisionmaking. Given that we know that these programs are cost-effective, if these programs were refined based on this important missing information, correctional education could yield even greater returns on investment.

Implications of Broader Trends in Corrections for Correctional Education

Several trends occurring in the field of adult and juvenile corrections have important implications that merit further consideration. First, a key trend in corrections is efforts by states to reduce the size of their state prison population, through a variety of means. This includes such

"front-end" strategies as reducing prison admissions, diverting offenders to county- rather than state-level institutions, or changing felonies to misdemeanors. This approach is being tried in many states, particularly with respect to drug offenders. Delaware, for example, repealed mandatory minimums for certain drug offenses in 2007. Colorado modified penalties for certain drug possession offenses in 2010. New York's Rockefeller Drug Laws were changed to eliminate mandatory minimums for certain first- and second-offense offenders (Division of Criminal Justice Services, 2010). And Indiana proposed a sentencing reform plan to give judges more leeway to sentence lesser felon to community corrections or treatment programs (Associated Press, December 15, 2010).

In addition, states have implemented strategies focused on the "back end" of the system, such as reducing sentence lengths though earned credits or good time and revocations for probationers and parolees. For example, in April 2011, California Assembly Bill 109 shifted prisoner and parolee responsibility to the counties to close the revolving door for low-level offenders because of high parolee revocation rates. California's Public Safety Realignment Plan, which went into effect October 1, 2011, fundamentally changed the state's criminal justice system. Under Realignment, nonserious, nonviolent, and nonsex offenders no longer serve time in state prison, nor are they supervised by state parole when released (CDCR, 2011). Instead, local counties are now responsible for managing, housing, supervising, and rehabilitating these low-level offenders. Many states also are reducing prison populations though accelerated release mechanisms. Media reports contained in *Crime and Justice News* reports compiled by Ted Gest revealed that more than 30 states are either in the planning stages or have implemented policies for early release, some targeting large segments of the prison population, and others more narrow segments, such as the terminally ill. All these changes in the correctional landscape have implications for how we think about how to provide academic and vocational education/CTE to incarcerated adults. For example, the movement in some states to have low-level offenders serve their time in county jails versus state prisons has implications for how we think about providing academic and vocational training to incarcerated adults at the local level. It raises policy questions: Are there differences in access to academic and vocational education/CTE programs depending on the setting where one services one's sentence? Are there differences in education and employment outcomes as a result?

Second, in the area of juvenile corrections, a related long-term trend has been to keep youth in the community if at all possible instead of placing them in correctional institutions, and, when they are incarcerated, to house them in local versus state facilities. A sharp decline in the juvenile incarceration levels in the United States may partially reflect this trend. For example, the number of juveniles detained, diverted, or committed on any given day in the United States declined from 105,000 to 61,000 between 1997 and 2011. This suggests that the current emphasis is on community-based educational services for juveniles who become involved in the criminal justice system, such placement in nonresidential alternative schools. Given evidence that incarceration

itself reduces juvenile offenders' educational attainment and increases their recidivism relative to less-restrictive sentences (Aizer and Doyle, 2013), this is a promising development.

In addition, an important federal initiative to address the school-to-prison pipeline and reduce at the front-end the chances of youth becoming involved with the justice system was launched in 2011. The U.S. Departments of Justice and Education announced the joint Supportive School Discipline Initiative (SSDI) aimed at addressing the disciplinary policies and practices that can push students out of school and into the justice system. As part of the SSDI, the U.S. Departments of Justice and Education recently released a school discipline guidance package to assist states, districts, and schools in developing practices and strategies to enhance school climate, and ensure that those policies and practices comply with federal law (U.S. Department of Education, 2014).

Our systematic review focused on what works with *incarcerated youth* in part because the broader literature on educational interventions for juvenile offenders outside of correctional facilities is even more nebulous. An important direction for future research is to identify interventions that improve juveniles' educational, employment, and recidivism outcomes in less-restrictive settings, such as alternative schools or traditional schools. To facilitate such studies on a large scale, it would of course be useful for longitudinal educational data systems to include indicators of students' involvement in the criminal justice systems. However, we recognize that the inclusion of such indicators may raise both logistical and privacy concerns. Therefore, any such indicators would likely need to be accompanied by rules governing their use (e.g., only for program evaluation in de-identified datasets). Without such indicators, it is difficult to identify juvenile offenders in larger educational data systems and thus, to conduct large-scale analyses of what works for those populations outside of correctional facilities.

The growing policy emphasis on community-based schooling for juvenile offenders also has implications for students' transitions between correctional and noncorrectional settings. In our discussions with juvenile correctional education directors, they identified these transitions as important challenges in terms of transferring academic records and maintaining curricular consistency. The extent to which these challenges are mitigated by placing offenders in nonresidential alternative schools instead of correctional facilities is unclear, as are other best practices for facilitating smooth transitions.

To guide policy improvements, stronger federal reporting requirements about local correctional education practices could help facilitate improved state and local comparisons of program effects. We currently know less at the federal level about education programs for juvenile offenders than about education for the larger K–12 population. Although some correctional education programs are included in the U.S. Department of Education's Common Core of Data, inclusion is variable, and these programs are often difficult to isolate in federal data. Moreover, such data provide little information about local policies on incarceration versus alternative placements and on standard sentence lengths, staffing policies, technology infrastructure, and instructional programs offered. A central repository of such information,

whether collected federally or privately, would provide a valuable tool to policymakers and researchers alike.

We recommend that policymakers seek to assess and understand the implications of these trends in the field of corrections with respect to their impact on correctional education.

Concluding Thoughts

There are more than 2 million incarcerated adults in the United States—more than any industrialized nation. This study has demonstrated that education programs can help adults get back on their feet upon release from prison and may help youth involved with the juvenile justice system to improve their education and employment prospects. Moreover, our meta-analysis of the literature on incarcerated adults suggests that correctional education programs are highly cost-effective in helping to reduce recidivism and improve postrelease employment outcomes. States will continue to operate in a reduced funding environment for at least the near future. The findings and recommendations we have laid out here are intended to ensure that, moving forward, we understand how to best to deliver education and vocational training to assist in achieving positive reentry outcomes.

Appendix A. Summary of Studies for the Juvenile Correctional Education Review

In this appendix, we provide a detailed summary of the studies, sample sizes, and effect sizes reported in the systematic review in Chapter Three. In addition, each study was rated for rigor on the Maryland Scientific Methods Scale. Eighteen of the 27 studies that underwent scientific review were deemed eligible for formal inclusion in the analysis. Shaded rows indicate studies that were ineligible for systematic review (n = 9) due to design but that inform the research context.

Table A.1. Summary of Studies, Samples, and Effects in the Systematic Review
(Shaded rows indicate studies that were ineligible for systematic review due to design but that inform the research context.)

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Corrective Reading												
Allen-DeBoer et al., 2006	Corrective Reading	Traditional language arts instruction	Mental health treatment unit within a juvenile correctional facility	Age: 16–18; 100% Male; 75% African American; 25% White; 100% with learning disabilities; Baseline grade equivalent: 4th-5th grade	4	0	30 minutes a day, 5 days a week, for 9 weeks (30 lessons on average)	Words Read Correctly per Minute (WPM) and Word Errors per minute (WE)	Mean gain: 35.8 WPM; No evidence of WE effect			5*
Drakeford, 2002	Corrective Reading	Traditional language arts instruction	Oak Hill Academy in Maryland	Age: 12–21 (mean: 17); 100% Male; 100% African American; 100% with history of educational disabilities	6	0	One hour, 3 times a week, for 8 weeks (20 lessons on average)	Words Read Correctly per Minute (WPM)	Mean gain: 9.2 WPM			5*

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Houchins et al, 2008	Corrective Reading: 4:1 student: teacher ratio	Corrective Reading: 12: 1 student: teacher ratio	Long-term juvenile correction facility in a Mid-Atlantic State	Age: 13–17 (mean: 16.5); 100% Male; 64% African American; 18% Hispanic; 18% White; 21% with learning disabilities or mental retardation; 58% with emotional or behavioral disabilities	10	10	1 hour, 3 times a week, for 7 weeks (21 sessions)	Woodcock Reading Mastery Test, Revised (WRMT-R): Word Identification (WI) and Word Attack (WA); Gray Silent Reading Test (GRST); Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF)	Relative gains: WI: 0.60 SD (reported p<.01, but p=.058 if adjusted for multiple comparisons) WA: 0.50 SD GSRT: 0.72 SD DORF3: 0.07 SD DORF4: -0.21 SD DORF5: -0.46 SD (none with a p<.05; mean: 0.205 SD, p=0.65)			5

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Scarlato and Asahara, 2004	Corrective Reading for (180 minutes per week)	Reading Specialist for 60 minutes twice a week, plus 225 minutes of additional reading instruction (345 minutes weekly)	Residential juvenile treatment facility	Age: 16–17; 100% Male; 100% with learning disabilities or emotional disturbance; 100% read significantly below grade level	5	4	45 minutes, 4 times a week for 19 weeks	Woodcock Reading Mastery Test-Revised (WRMT-R): Word Identification (WI), Word Attack (WA), Word Compre-hend (WC) and Passage Comp-rehend (PC); Total Reading (TR)	Relative gains: WI: 0.84 SD WA: 0.30 SD WC: 0.32 SD PC: 0.89 SD TR: 0.95 SD (none significant) (mean: 0.66 SD, p=0.36)			3
Coulter, 2004†	One-to-one tutoring using direct Instruction and Corrective Reading	None	State juvenile detention facility in Southern Colorado	Mean=15.5; 83% Male; 33% African American; 33% Hispanic; 33% White; 83% with disabilities; 42% with emotional disturbance; 8% with mental retardation; IQ range: 55–89	12	0	5 days a week for 9 weeks (mean=21 sessions, range=5 to 48 sessions; session length not given)	Gray Oral Reading Test, 3rd Edition (Passage [combines Rate and Accuracy] and Comprehension) Also, words read correctly per minute (WPM)	Passage: 9 months of gain for 1 month of teaching; Comprehension: 9 month gain for 1 month of teaching. 3.57 correct WPM per week gain, versus a 1 WPM expected gain			1

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Malmgren and Leone, 2000†	Corrective Reading Plus Whole Language Instruction	None	Urban juvenile detention facility on the East Coast	Age: 13.8–18.8 (mean=17.1); 100% Male; 100% African American; 44% in special education; 22% with emotional disturbance; 7% with mental retardation	45	0	2 hrs 50 min per day, 5 days a week, for 6 weeks	Gray Oral Reading Test, 3rd Edition (Passage [combines Rate and Accuracy] and Comprehension)	Passage: 0.35 SD (p=.02) Comprehension: .34 SD (p=.13)			1
Computer Assisted Instruction												
Loadman et al., 2011	Read 180 (Scholastic)	Default English language arts instruction	Eight Ohio Department of Youth Services facilities	Age: 14–22, most in grades 9–10; 96% Male; 69% African American; 24% White; 2% Hispanic; 5% Other; 48% with disabilities; 100% below proficient but at least basic readers at baseline	677	568	90 min., 5 days a week, for 20 weeks	Scholastic Reading Inventory (SRI) score at end of intervention California Achievement Test (CAT) in reading one year after baseline testing	Relative gain: 0.21 SD (p<.001) Relative gain: 0.26 SD (p=.011) [CAT analysis is based on only 133 treatment and 110 comparison students]			5 [4 for CAT analysis]

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Shippen et al, 2012	Fast ForWord software-based beginning reading program (Scientific Learning)	Default, individualized academic and vocational training	Long-term maximum security juvenile facility in Alabama	Age: 11–20 (mean=16.3); 100% Male 53% African American; 45% White; 2% Other; Mean IQ: 78; 18% with mild intellectual or learning disabilities	27	24	45 min., 5 days a week, for 11 weeks (average= 24 days)	Test of Written Spelling-4 (TWS-4); Test of Word Reading Efficiency (TOWRE); Woodcock Reading Mastery Test-Revised/Normative Update (WRMT-R/NU)	Relative gains: TWS-4: 0.226 SD TOWRE: -0.142 SD WRMT-R/NU: -0.201 SD (Reading domain mean: -0.172 SD) (p>.05 in all cases)			5
Calderone et al, 2009	Tune in to Reading (TIR), a program to teach reading through singing (Electronic Learning Products)	Default instructional program (namely, FCAT Explorer, an online, standards-based program)	Six residential sites for juveniles in the Florida correctional system	Ages not given; grades 7–11; 100% Male 52% African American 13% Hispanic 31% White 44% with disabilities	64	39	45 minutes, twice a week, for 9 weeks	TIR computer-adaptive cloze reading assessment	Relative gain: 0.21 SD (p>.05)			5

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Scientific Learning Corporation, 2004	Fast ForWord software-based beginning reading program (Scientific Learning Corporation)	NA	Two facilities in the Virginia Department of Juvenile Justice	Ages not given Mean grade level: 8.9 Mean baseline reading grade level: 6.6	29	NA	48 minutes or more, 5 days a week, for 10 months (WJ test group) or 4 months (STAR test group)	Woodcock Johnson Tests of Achievement, 3rd Edition STAR Reading Assessment	Mean gain: 1.6 grade levels in WJ test group (n=18, p<.05) Mean gain: 1.3 grade levels in STAR test group (n=11, p<.05)			1
Personalized and Intensive Instruction												
National Council on Crime and Delinquency, 2009	Avon Park Youth Academy: Intensive, personalized, vocational and academic training with aftercare	Default juvenile correctional programs within the state	Florida Department of Juvenile Justice facilities	Age: 16–18; 41% African American; 14% Hispanic; 44% White; 38% with special needs; 65% with below 6th grade reading level and 100% with below 6th grade math level at baseline	369	345	14.2 month average stay in facility (versus 11.2 months for comparison group)	High school, GED, or special diploma completion at time of release	27.1 percentage points (p<.01) T: 49.1% C: 22.0%	Employment 1 year postrelease Re-arrest within 1 year after release	Employment: 8 percentage points (p=.02) T: 72.4% C: 64.4%, Re-arrest: 1.0 percentage points (p>.2) T: 57.2% C: 56.2%	5

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Skonovd et al., 1991	Intensive, competency-based education with vocational training and aftercare	Default programs for juveniles in the same county	San Bernardino County Probation Department Juvenile Hall	Age: 16–17; Wards from which sample was drawn were 21% African American; 29% Hispanic; 50% White	25	20	6 months in juvenile facility and 4–6 months in after care	Re-arrest or probation violation within 6 months after release	-29 percentage points (p<.05) T: 16%; C: 45%			2
Mayer and Hoffman, 1982	Individualized academic instruction	Group (classroom-level) instruction	Four youth offender facilities in Florida	Ages not given; 100% Male 52% African American 48% White	68	75	10 months (frequency not given)	California Achievement Test, version 3, Total Battery (math, reading, language)	Relative gain: 2 months of learning (no hypothesis test available)			3
Kane and Alley, 1980	Peer-managed instruction using an individualized curriculum; tutor-student ratio of 1:1 to 1:2	Teacher-managed instruction with individualized curriculum; teacher student ratio of 1:3 to 1:7	Minimum-security juvenile correctional institution in Minnesota	Age: 12–17; 100% identified as learning disabled; mean pretest math grade level: 6.0	21	17	8 weeks (38 45-minute class periods)	Science Research Associates (SRA) Assessment Survey Multilevel Edition in mathematics	Relative gain: -0.045 SD (p>.05)			3
Muse, 1998†	Individualized, competency-based academic instruction	Default instruction in other schools in the same system	North Carolina juvenile correctional facilities	Age: 12–17; No additional demographic information provided	66 (students in 1 school)	4** (school-level averages)	9-month school year implied	GED completion rate over 3 years	59.1 percentage points (no hypothesis test) T: 67.1% C: 8.0%			1

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Hill, Minifie, and Minifie, 1984	Diagnostic evaluation and tutoring in reading and math	NA	South Carolina Department of Youth Services correctional facilities	Ages not given; 100% identified as handicapped; all were 5–8 years below grade level in reading and mathematics	31	NA	One hour twice a week for 9 weeks (18 sessions), in addition to regular classroom instruction	Analytical Reading Inventory (ARI) silent reading comprehension ARI oral reading accuracy	3 months improvement (p<.05) 1 month improvement (p>.05)	KeyMath Diagnostic Assessment	Statistically significant gain (p>.05); magnitude unspecified	1
Other Remedial Reading and Writing Instruction												
Simpson, Swanson, and Kunkel, 1992	Orton/Gillingham structured remedial reading instruction for 90 minutes a day in groups of 1–6	Default language arts instruction for 45 minutes a day in classes of about 12	Two juvenile youth detention facilities (location not given)	Age: 13–18; 100% Male; Baseline reading grade level: 4.4; Treatment students were test-verified as learning disabled; comparison group students were teacher-identified as similarly disabled	32	31	Actual mean dosage: 51.9 instructional hours in treatment group versus 46.0 in control group	Years of growth on the Woodcock Test of Reading Mastery Also, years of growth for every 10 hours of instruction	Relative gain: 0.86 years (p=.007) 0.38 years of growth per 10 hours of instruction (no hypothesis test available)	Re-arrest within a year following release	-22 percentage points (p=.015) T: 41% C: 63%	3
Archwamety and Katsiyannis, 2000	Remedial education in math or reading	Non-remedial education	Nebraska Youth Rehabilitation and Treatment Center	Age: 12–18; Mean IQ: 94.3; Treatment students were at least one grade level behind in remedial subject	339	166	Not specified	Recidivism (definition unspecified) within 1–7 years after release	+9.4 percentage points (p<.05) T: 23.3% C: 13.9%			2

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Murph and McCormick, 1985	Instruction in reading road signs	Students' previous instructional experiences	Training Institute of Central Ohio, a juvenile correctional facility	Age: 16 to 18; 100% Male; IQs: 70–79; mean baseline reading grade level: 2.5	5	NA	9 to 24 fifteen-minute instructional sessions per student	Road signs recognized out of 9 (pre vs. during-and- post)	Mean gain: 8.1 signs			1*
Heward, McCormick, and Joynes, 1980	Visual Response System training in completing a job application	Students' previous instructional experiences	Correctional facility for juvenile offenders (location not given)	Age: 15 to 18; 100% Male; 100% classified as "educable mentally retarded"; mean baseline reading grade level: 4.6	7	NA	11 45-minute sessions	Items answered correctly on a 35-item Master Employment Application (pretest versus probes and follow-up)	Mean gain: 17.8 items			1*
Platt and Beech, 1994	Learning strategies instruction in decoding, paraphrasing, taking tests, and setting goals	Students' previous instructional experiences in reading	Adult and juvenile detention centers in Florida	100% under age 21; No additional demographic information provided	5 selected students taught by 27 teachers trained in the method	NA	Not reported	Words read correctly (pre vs. during-and-post) Passage comprehension (pre vs. during-and-post)	Mean gain: 11.9 percentage points Mean gain: 19.3 percentage points [Note: the 5 students for whom data are given are only a small subset of students exposed to treatment.]			1*

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
Sinatra, 1984	Assignment of visual, imagery, and report writing tasks	Students' previous instructional experiences in writing	Short-term adolescent treatment center for incarcerated youth	Mean age: 15.3; 20% Male; Baseline reading grade level: 5–6	20	NA	Weekly practice over several months	Writing proficiency score (assessed by three raters) averaged across three tasks, as compared with a pretest	Mean gain: 16.3 percentage points			1
Vocational Education												
Roos, 2006	Re-Integration of Offenders –Youth (RIO-Y) career development course	No participation in a career development course	Texas Youth Commission facilities	Age: 18–21; 34% African American; 38% Hispanic; 28% White	582	920	30 days of instruction (versus no comparable instructional hours in comparison group)	Employment 1 year after release	Odds ratio: 1.39 (p<.01)	Re-arrest within 1 year after release	Odds ratio: 0.97 (p=.8)	3
Wilson, 1994	Vocational education elective participation in facility (auto, business, construction, food, special cooperative services)	Participation in nonvocational education	Colorado Division of Youth Services facilities	Age: 11–18; 100% Male; 16% Black; 34% Hispanic; 48% White; 2% Other	260	143	Not reported	Re-incarceration within 5 years after treatment	-17.1 percentage points (p<.05) T: 61.2% C: 78.3%			2

Citation	Treatment Condition	Comparison Condition	Setting	Demographics	n Treat	n Compare	Duration and Frequency	Outcome 1 Metric	Outcome 1 Effect Size Estimate	Outcome 2 (and 3) Metrics	Outcome 2 (and 3) Effect Size Estimate	MD Scale
DelliCarpini, 2010	Vocational education program availability (business, drafting, and carpentry)	Participation in default educational program	Eastern Suffolk BOCES Program for Incarcerated Youth in NY State	Age: 16–21; No additional demographic information provided	465	581	8 week module (daily instruction implied)	GED pass rate	7.6 percentage points (p<.001) T: 13.1% C: 5.5%			2
GED Completion												
Jeffords and McNitt, 1993	GED completion in facility	No GED completion in facility	Texas Youth Commission or Gulf Coast Trades Center correctional programs	Age: 16–21; No additional demographic information provided	475	1242	Not reported	Re-incarceration within 1 year after release	-5.8 percentage points (p<0.1)			3
Katsiyannis and Murray, 2000	GED completion in facility	No GED completion in facility	A youth rehabilitation and treatment facility in Nebraska	Age: 12–18; 100% Male	284	265	At least 4 months spent in facility	Re-incarceration within 3 years after release	-12.5 percentage points (p<.01) T: 47.5% C: 60.0%			2

STATE CORRECTIONAL EDUCATION DIRECTOR DATA COLLECTION FORM

Thank you for participating in this State Correctional Education Director data collection form being conducted by the RAND Corporation. The questions in this form focus on academic education and vocational or career/technical education (CTE) provided in state prison or correctional facilities *for incarcerated adults*.

Our goal is to understand how correctional education is currently provided and to whom, the effects of recent fiscal cuts on correctional education, the use of technology, preparations for the 2014 GED Exam, and how correctional education is organized and funded within your state. Your organization's responses and your identity will be kept confidential. This study is funded by the Bureau of Justice Assistance (BJA), Office of Justice Programs, U.S. Department of Justice. We kindly request that you complete this survey by August 30, 2013.

If you have any questions about the survey, please contact Lois Davis, RAND Project at email: Lmdavis@rand.org, tel. 310.393.0411, ext. 7330. If you have any questions about the project in general, please contact Dr. Gary Dennis, BJA Project Officer and Senior Policy Advisor for Corrections, email: Gary.Dennis@usdoj.gov.

Please mail the completed survey to Lois Davis, Ph.D., RAND, 1776 Main Street, Santa Monica, CA 90407-2138. Or email the survey to her at Lmdavis@rand.org.

CONTACT INFORMATION

Name of Person Completing this Form: _____
Title: _____
Department/Organization: _____
Telephone: ( )_____
Email address: _____
State: _____

A. In your current position, which of the following activities do you oversee or have responsibility for:

___Academic education programs only
___Vocational education or career/technical education only
___Both academic programs and vocational education/CTE programs

I. OVERVIEW OF YOUR STATE'S CORRECTIONAL EDUCATION PROGRAMS

1. What types of educational programs are currently available to adult prisoners within your state? (*Please make sure to also include those programs that are available in your state, but not under your supervision*.) (Mark all that apply)

_____Literacy training/Adult basic education (ABE) (i.e., basic skills instruction in arithmetic, reading, and writing)

_____Adult secondary education (ASE) (i.e., preparation to complete a high school diploma program)

_____ General Education Development (GED) test preparation

_____Adult post-secondary education (PSE)/college courses

_____Vocational skills training/Career Technical Education (CTE)

_____English as a Second Language (ESL) courses

_____Special education (e.g., for offenders with learning disabilities)

_____Other, please specify: _____

_____

_____

_____

2. Is participation in correctional education programs mandated by your state (either by legislative statute or policy)? (Mark all that apply)

____Yes, participation in correctional education programs is mandated by the state for:

☐ All adult inmates

☐ Adult inmates without a high school diploma or GED

☐ Adult inmates below a 6th or 8th grade education level

☐ Other (please specify): _____

_____

_____

____No, participation in correctional education programs is voluntary

3. Are work assignments currently considered to be part of correctional education within your state's prison system?

____Yes

____No
____Don't know

4. Please indicate which of the following funding sources are used to pay adult inmates' post-secondary education or college courses in your state (Mark all that apply):

_____Inmate benefits or welfare funds
_____State funding (e.g., department of corrections budget allocation)
____College or university funding
_____Private funding (e.g., foundations, religious/community group, individual donation)
_____Personal or family finances
_____Not Applicable, our state does not offer post-secondary/college courses to adult inmates

We now want to ask you a couple of questions about correctional education within your state's correctional facilities.

By adult state correctional facility we mean prison facilities that hold sentenced adult offenders in state custody. It excludes residential treatment or community programs.

5. What was the total number of adult state correctional facilities offering correctional education programs in:

	Fiscal Year 2009	**Fiscal Year 2012**
Total Number of Facilities Offering:		
Academic Programs*	_____	_____

Vocational education/CTE programs _____ _____

*[*Includes adult basic education (ABE), adult secondary education (ASE), GED preparation, adult post-secondary education (PSE), and English as a Second Language (ESL) programs]*

II. CORRECTIONAL EDUCATION CAPACITY

6. Please indicate the time period that your state's fiscal year covers (e.g., January through December; July through June, or October through September):

From: _____ (month) To: _____ (month)

Now we are going to ask you to consider the total number of students in correctional education programs and the number of teachers and instructors.

7. What was the total number of adult students enrolled in your state's correctional education programs in **Fiscal Year 2009 and Fiscal Year 2012**

Types of Educational Service	Fiscal Year 2009 (Number of Adult Students)	Fiscal Year 2012 (Number of Adult Students)
Adult Basic Education (ABE)		
Adult Secondary Education (ASE)		
GED (General Education Development) Test preparation		
Vocational skills		

training/career technical education (CTE)		
Post-secondary education/ college courses		

8. Does your state screen adult inmates for special education needs?

____Yes

____No (please skip to Q5)

8a. If yes, in Fiscal Year 2012 how many adult students were on a formal Individualized Education Program (IEP) plan within your correctional education system?

Number of IEP students: _____

9. What was the total number of academic teachers/ instructors and vocational education/CTE instructors **in Fiscal Years 2009 and 2012**?

	Fiscal Year 2009 (Number)	**Fiscal Year 2012** (number)
Academic Programs		
• Number of **teachers** that are **state employees** (*include full-time and part-time employees in your response*)		
• Number of **contract** instructors		
Vocational Education/CTE Programs		
• Number of **vocational instructors** that are **state employees** (*include full-time and part-time employees in your response*)		

• Number of **contract** instructors		

THE NEXT SET OF QUESTIONS ASK ABOUT WHAT IMPACT, IF ANY, OF BUDGET CUTS OR OTHER FISCAL PRESSURES MAY HAVE HAD ON YOUR STATE'S CORRECTIONAL EDUCATION PROGRAMS.

10. Between Fiscal Years 2009–2012, did your state's correctional education programs (academic and/or vocational education/CTE) experience a **decrease in funding** as a result of budget cuts or other fiscal pressures?

_____Yes
_____No (Skip to 17)

11. What changes, if any, were made to staffing levels and capacity in response to budget cuts or other fiscal pressures during Fiscal Years 2009–2012?

Changes Implemented to Staffing Levels and Capacity	Mark all that Apply
Hiring freeze(s) of teachers/instructors were implemented	
Staff furloughs of teachers/instructors were made	
Did not fill vacant teaching/instructor positions	
Delayed and/or cancelled pay increases for teachers/instructors	
Reduced salaries and/or benefits for teachers/instructors	
Reduced the number of teachers/instructors for:	

• Academic programs • Vocational education/career technical education (CTE) programs	
Reduced or eliminated contracts with community or technical colleges	
Reduced the number of course offerings for: • Academic programs • Vocational education/career technical education (CTE) programs	
Other (please specify): _____	
None	

12. Did your state increase the number of contract teachers/instructors for the following programs during Fiscal Years 2009–2012?

_____Yes, for academic programs
_____Yes, for vocational education/career technical education (CTE) programs
_____No

13. Did your state increase its use of inmates as staff in the classroom during Fiscal Years 2009–2012? If so, briefly describe:

_____Yes, we did increase the use of inmates as staff in the classroom due to budget cuts
or other fiscal pressures
_____Yes, but the increase use of inmates as staff in the classroom was not in direct response to budget cuts or other fiscal pressures
_____No

13a. If yes, in what ways were inmates used:

_____ As peer tutors to assist students with coursework
_____ As a clerk assisting with administrative tasks
_____ To help oversee a computer lab

_____ To assist with vocational education/CTE programs
_____ Other (please specify): _____

14. As a result of budget cuts or other fiscal pressures, did your state change its policies regarding mandatory participation in correctional education programs during Fiscal Years 2009–2012?

_____Yes, for certain academic programs participation was changed to voluntary
(Briefly describe): _____
_____Yes, for certain inmates participation in academic programs was changed to voluntary (Briefly describe): _____
_____No changes were made to our state's policies regarding mandatory participation in
correctional education programs

15. Do you anticipate any additional budget cuts to your state's correctional education programs in the upcoming fiscal year (Fiscal Year 2013)?
_____Yes
_____No
_____Don't Know

We now want to ask you about the last two fiscal years (Fiscal Years 2011–2012).

16. During the past two fiscal years (2011–2012), has your state's correctional education programs (academic and vocational education/CTE)) experienced an increase in funding?

_____Yes
_____No

16a. If yes, how has the increase in funding been used by your correctional education system? (Mark all that apply)

_____ Increased the number of teachers/instructors for:

- Academic programs
- Vocational education/career technical education (CTE) programs

_____ Increased the number of contractor teachers/instructors for:

- Academic programs
- Vocational education/career technical education (CTE) programs

_____ Increased the number of vocational programs offered

_____ Increased the capacity of:

- academic programs
- vocational education/career technical education (CTE) programs

_____Reinstated the number of post-secondary or college courses offered

_____Expanded the number of post-secondary or college courses offered

_____ Increased classroom space for:

- academic programs
- vocational education/career technical education (CTE) programs

_____ **Increased the number of computer labs**

_____ **Purchased computer equipment**

_____ Other (please specify): _____

USE OF TECHNOLOGY

We now want to ask you about the use of technology in your state's correctional education system. These questions pertain to both academic and vocational education/CTE programs.

17. How many correctional facilities within your state have a computer lab?

Number of facilities with a computer lab(s): _____

18. What types of technology hardware and networks does your state correctional education system use? (Mark all that apply)

_____Local area network(s) (LAN)

_____Statewide or wide area network(s) (WAN)

_____Local area network(s) (LAN)

_____Closed-circuit TV

_____Desktop computers (standalone or networked)

_____Mobile laptops

_____Kindles

_____iPads
_____Other technology (please specify):
_____
_____
_____

19. What means are used to provide instruction for academic programs or vocational education/CTE courses offered: (Mark all that apply)

_____On-site instruction
_____Video/satellite instruction
_____One-way
_____Interactive
_____Internet-based instruction
_____One-way
_____Interactive
_____Correspondence courses
_____Other (please specify): _____

20. In what ways is internet technology being used in your state correctional education classrooms (academic and vocational education/CTE programs) and/or libraries? (Mark all that apply)

_____Only teachers/instructors have access to live Internet technology
_____Students have full access to live Internet
_____Students have restricted access to live Internet
_____Students use simulated Internet programs
_____Students do not have access to any Internet technology
_____ Other, please specify_____

PREPARATION FOR THE 2014 GED EXAM

In 2014, the new GED exam will be implemented along with computer-based testing. We now would like to ask you about your state's preparations for the 2014 GED exam (or another high school equivalency examination) and for computer-based testing.

21. Is your state planning on implementing the 2014 GED exam?

_____ Yes

_____ No, our state is exploring other high school equivalency examinations (skip to Q25)

22. How many correctional facilities within your state are currently set-up or will be by January 1, 2014 to implement computer-based testing for the 2014 GED exam?

Number of correctional facilities: _____

23. Is your state planning to use computer workstations or laptops for inmates taking the GED test (Mark only one)?

_____ Computer workstations only
_____ Laptops only
_____ Combination of computer workstations and laptops
_____ Other (please specify): _____

24. As part of your state's preparations, will professional development training be provided to your correctional teachers/ instructors to prepare them to teach the new GED exam?

_____ Yes, we are providing professional development training for the new GED exam

_____ No (skip to Q25)

24a. If yes, what subjects will your correctional education system's professional development training address? (Mark all that apply)

_____Training on the administration of the test process
_____Training on the test protocols
_____Training on computer literacy
_____Assistance with instruction development
_____Training on instruction aligned with the common core standards
_____Training on test security requirements
_____Other (please specify) _____

25. In your view, what is the likely effect of the new GED exam and computer-based testing requirement on your state's correctional education population:

LIKERT SCALE

1=negative effect 3= no effect 5=positive effect

- On the number of inmates who will be prepared to take the new GED exam
- On the length of time it will take to prepare inmates to take the new GED exam
- On GED completion rates

26. What concerns, if any, do you have about the forthcoming changes to the 2014 GED exam and the move towards computer-based testing? (Mark all that apply)

_____Cost of purchasing equipment for computer-based testing
_____Fewer students may be ready to take the 2014 GED exam due to length of time it takes to prepare them for the new exam
_____ Limited access to computers may preclude some students from taking the GED exam
_____More extensive preparation required for the 2014 GED exam may make it difficult for some students to complete their test preparations while they are in prison
_____Security concerns about access to the Internet for the GED exam may make it more difficult to do testing
_____Teachers may not be prepared to teach the new GED exam
_____Teachers may not be prepared to implement computer-based testing
_____Other (please specify) _____
_____No concerns

OUTCOMES/PERFORMANCE INDICATORS

27. Which of the following outcome indicators does your state's correctional education system track for academic and vocational education/CTE programs: (Mark all that apply)

_____ Gains in reading or math skills

_____Number of

- GED tests passed
- GED certificates earned
- High school degrees awarded
- College credits earned
- College degrees earned (e.g., Associate degrees)
- Vocational certificates awarded
- National or industry-recognized certificates awarded

_____Other (please specify): _____

28. What post-release indicators does your state's correctional education system consider to be important outcome measures? (Mark all that apply)

_____Post-release employment

_____Job retention

_____College attainment

_____Degrees awarded

_____Enrollment in vocational training programs

_____Enrollment in post-secondary education/college courses

_____Recidivism

_____Other (please specify): _____

29. What national or industry-recognized certifications, if any, does your state's correctional education system offer? (Mark all that apply)

_____National Center for Construction Education and Research (NCCER)

_____National Institute for Automotive Service Excellence (ASE)

_____Microsoft Office certification (please specify): _____

_____American Welding Society

_____Occupational Safety and Health Administration (OSHA) training programs

_____Apprenticeship cards (e.g., plumbing, electrical)

_____Other (please specify): _____

_____Other (please specify): _____

_____Other (please specify): _____

ORGANIZATION OF CORRECTIONAL EDUCATION WITHIN YOUR STATE

By program authority we refer to the agency or department with decision-making authority with regard to correctional education policy and administration for incarcerated adults.

30. How is correctional education administered within your state's correctional institutions? (Mark only one)

_____ The majority of correctional education program authority is vested within one central state agency

_____ Correctional education program authority is vested among several state agencies

_____ Other (please specify): _____

31. Which of the following is the lead agency(s) for administering adult correctional education within your state? (Mark all that apply)

_____ Department of Public Safety

_____ Department of Corrections

_____ Department of Education

_____ Department of Adult Education

_____ Department of Labor

_____ Other (please specify): _____

FUNDING ISSUES

32. What was the total amount of your state's correctional education budget in Fiscal Years 2009 and 2012?

Total Correctional Education Budget

	$ Mil.	Thou.	Dol.
Fiscal Year 2009			000
Fiscal Year 2012			000

33. In which federal, state or private grant programs does your state's correctional education system **currently** participate in or receives funding from (Mark all that apply)?

_____ESEA (Elementary and Secondary Education Act), Title I, Part D

_____ESEA, Title II, Part A
_____Workforce Investment Act, Title II (also known as the Adult Education Family Literacy Act)
_____Federal Second Chance Act (SCA) grants
_____Office of Juvenile Justice and Delinquency Prevention (OJJDP)
_____Bureau of Justice Assistance (BJA) grant funding (other than Second Chance Act)
_____National Institute of Justice (NIJ)
_____Foundations (e.g. Sunshine Lady) (please specify): _____
_____
_____

34. Please indicate the amount of funding your correctional education system received in 2012 from the following three sources:

Amount of Funding Received From:

	$ Mil.	Thou.	Dol.
Workforce Investment Act, Title II			000
Perkins Act			000
State higher education/aid resources for post-secondary education or training			000

Thank you for participating in this data collection effort. Please provide in the space below any comments or feedback you may have about it.

_____
_____
_____
_____

_____

_____

_____

GLOSSARY OF TERMS USED IN THE SURVEY

The following definitions are provided to assist you in completing this form.

Adult Basic Education (ABE): basic skills instruction in arithmetic, reading, and writing

Adult Secondary Education (ASE): instruction to complete high school or prepare for a certificate of high school equivalency, such as the General Education Development (GED)

General Education Development (GED): tests that are a group of subject tests which, when passed, certify that the taker has American or Canadian high school-level academic skills.

Adult Postsecondary Education (PSE): college-level instruction that enables an individual to earn college credit that may be applied toward a two-year or four-year postsecondary degree

Vocational education or Career Technical Education (CTE): training in general employment skills and in skills for specific jobs or industries

Adult state correctional facility: prison facilities that hold sentenced adult offenders in state custody. It excludes residential treatment or community programs.

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