

# Employment Outcomes for Students with Intellectual Disabilities in Postsecondary Education Programs: A Scoping Review

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## Abstract

The purpose of this scoping review was to examine research evidence supporting the use of postsecondary education programs as a facilitator of competitive integrated employment for individuals with intellectual disabilities. Despite previous calls for change, most individuals with intellectual disability remain unemployed or segregated in vocational workshops, and do not participate in postsecondary education after exiting high school. This scoping review builds upon the work of previous reviews on postsecondary education programs for students with intellectual disabilities by focusing specifically on employment. This review included a systematic search of peer-reviewed articles and grey literature sources published between 2000 and 2020. A total of eleven studies in the empirical literature and one study in the grey literature met inclusion criteria. The final sample of research articles generally suggests positive results for the effect of postsecondary education programs on employment outcomes that need to be verified through future research and with the help of better reporting. Wide variation in implementation and reporting of employment coursework, applied vocational experiences, and transition processes to employment following program exit were observed across studies. Limitations, implications and recommendations for practice, policy, and future research are discussed.

*Keywords: postsecondary education, employment; transition, intellectual disability*

Persons with intellectual disabilities (ID) are significantly less likely than their peers without disabilities to secure competitive integrated employment (U.S Bureau of Labor Statistics, 2020). In fact, working age adults with ID have strikingly low rates of employment, with only 34% of individuals with ID between the ages of 21-64 working and only 18% in a competitive job (Siperstein et al., 2013). Such low employment rates have led to the development of policies and practices aimed at establishing better transition pathways to employment for students with ID (Carter et al., 2012), including through participation in postsecondary education programs (PSE). Grigal et al. (2011) reported that for students with ID, having attended some PSE at either a two or four-year institute of higher education (IHE) was associated with a greater likelihood of becoming employed.

In an effort to better extend the benefits of PSE

participation to students with ID, the U.S. government passed the Higher Education Opportunity Act (HEOA) in 2008. Prior to HEOA, college programs for students with ID existed (e.g., Comprehensive Transition Programs, mainly non-degree) but there were significant barriers to access for most students. Students with ID faced difficulty funding PSE opportunities because they typically did not meet Title IV eligibility requirements for financial aid, which mandated completion of a high school diploma or equivalent, and enrollment in degree seeking coursework (Grigal & Papay, 2018). HEOA (2008) made federal financial support available for students with ID enrolled in a certificate or other non-degree program (Smith & Beniot, 2013). HEOA also authorized the creation of nation-wide demonstration projects known as Transition and Postsecondary Programs for Students with Intellectual Disabilities (TPSID) along

with a National Coordinating Center (i.e., Think College) tasked with providing program support and disseminating information (Grigal & Papay, 2018). Today, at least 295 college and university programs for students with ID exist across the U.S. (Think College, 2020).

### **PSE Programs for Students with ID**

PSE programs for students with ID comprise a variety of service delivery formats. Programs range in terms of credit (e.g., degree, non-degree, certificate), time to completion, location (e.g., two-year community college, four-year college or university), residential status (e.g., on-campus living opportunities, commuter program), and level of integration. Level of integration refers to the extent to which a PSE program is immersed with other campus courses and activities. Some PSE programs have distinct coursework designed specifically for students with ID (i.e., substantially separate program), while others are designed to fully integrate students with ID into typical college courses with individualized supports to promote success (i.e., inclusive model). Still others offer a combination of both specialized and integrated courses, which is known as a mixed/hybrid model (Cook et al., 2015). Therefore, PSE experiences for students with ID differ vastly across programs.

### **Overview of Literature on PSE Programs for Students with ID and Employment**

To date, few literature reviews have been published on PSE programs for students with ID. Most published reviews have focused primarily on tracking the evolution of types of programs offered during the last few decades (Neubert et al., 2001) and whether participation leads to improved outcomes in a broad range of life domains (Thoma et al., 2011). While these reviews included employment, none focused specifically and comprehensively on employment, and none were able to identify clear links between PSE participation and employment outcomes. A brief description of two noteworthy reviews covering a 40-year time frame (1970-2010) is presented (Neubert et al., 2001; Thoma et al., 2011) along with a summary of pertinent trends and issues (Becht et al., 2020; Grigal et al., 2013).

Neubert et al. (2001) conducted a broad investigation of the literature on PSE for individuals with ID and other significant disabilities spanning from 1970-2000. The aim of the review was to identify practices being implemented across PSE programs and to describe the effectiveness of associated practices. Findings demonstrated large gaps in the research literature across all 30 years, particularly

related to outcome data. Authors concluded, “There was little evidence concerning how program participants obtained paid employment or accessed more inclusive social or recreational activities as a result of attending a post-secondary program” (p. 165). Thoma et al. (2011) extended Neubert et al.’s 30-year review into the 21st century by examining the next decade (2001-2010) of peer reviewed literature. Results echoed the findings from Neubert’s review; articles mainly focused on program descriptions and little was found in the way of evaluating outcomes. Findings from Thoma et al. also revealed a lack of stringent research methodology across studies that would bolster findings for program efficacy. While a variety of research methodology was reported (e.g., qualitative, quantitative, and mixed-method designs), no true experimental designs (i.e., randomized-control trials) were conducted and only 1 in 37 articles utilized a quasi-experimental design by comparing employment outcomes for students in PSE programs with those who did not attend PSE.

Finally, a 2013 article by Grigal et al. addressing “critical issues and current trends” identified several actions necessary to improve PSE practices for students with ID. Key points included: (a) operationally defining the term “inclusion” and (b) establishing partnerships with community businesses and workforce agencies to better promote competitive employment outcomes. Variation in the definition of “inclusion” makes evaluating the impact of PSE programs across studies challenging and poses problems for effective replication by other PSE program sites. A recent review of the literature specifically on academic access for students with ID in PSE programs found that less than half of the 43 articles included adequately described levels of integration (Becht et al., 2020). Additionally, a lack of reporting on processes for networking with businesses and adult service agencies such as Vocational Rehabilitation (VR) to promote transition from PSE programs to employment makes successful program replication difficult.

### **Purpose of Current Review**

To date, it has been over a decade since the passing of HEOA (2008), which increased PSE program attendance for students with ID. Empirical reviews on PSE programs for students with ID have focused on general outcomes in a broad range of life domains, but none have focused exclusively or expansively on employment. Research indicates that most PSE programs include some level of employment training. For example, 81% of programs surveyed nationally reported that career preparation and applied vocational experiences are offered to students (Grigal et

al., 2012). Many PSE programs also report collecting work-related information. Chezan et al. (2018) surveyed 52 PSE programs across the U.S. and found that most programs acknowledged collecting employment-related data for students on a variety of variables including employment, job title, location, hours, and pay. However, the extent to which this employment related data has been analyzed and disseminated is uncertain.

The purpose of this scoping review was to examine employment in the context of PSE programs for students with ID in the 21st century, including employment experiences occurring during program enrollment and outcomes observed following program completion. In addition to employment specific information, this review captured other contextually important information recommended by previous researchers, such as level of inclusiveness described by programs, research design methodology, and strategies used to connect students to businesses or adult employment service agencies upon leaving the PSE program. Lastly, this review not only investigated peer-reviewed material but also extended its sources by including a search of grey literature (e.g., non-peer reviewed material issued by credible organizations, experts, or government entities) that could provide insight into this topic.

### Method

Scoping reviews are a method for broadly charting the existing research on a given topic using a systematic protocol (Arksey & O'Malley, 2005). This scoping review comprised two parts: a review of the empirical databases and a grey literature search. The guiding research questions for both searches were as follows:

- a. Which components of PSE programs for students with ID that are implemented during student enrollment focus specifically on employment?
- b. What competitive employment outcomes (e.g., employment status, hours, pay, benefits, etc.) are reported once students with ID exit PSE programs?
- c. What transition-from-PSE-to-employment procedures are reported to promote securing and maintaining employment following program completion?
- d. To what extent is research on PSE programs for students with ID and employment utilizing rigorous methodology to ensure replicability?

### Review Procedures

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) protocol was used (Tricco et al., 2018). A list of empirical databases, grey literature sources, and search criteria used for population, intervention, and outcomes is presented in Table 1. Two experts with over 30 years of experience with PSE programs for students with ID were contacted to solicit suggestions on grey literature sources. All articles were published between the years of 2000 and 2020 and were English or English-translated. This review only included articles published in the U.S. about PSE programs in the U.S. due to differences in legislation, program formats, and diagnostic criteria across countries, all of which would make international comparisons difficult. All levels of research design, methodology and data reporting were included. Because the purpose of this review was to investigate the impact of PSE programs on securing employment, only studies reporting employment outcome data at or after exit were included in the final analysis. Articles collected by search procedures were screened at two levels to determine a match for inclusion criteria; title/abstract review and full text review. Two or more trained researchers conducted inter-observer agreement at 90% or above at both levels of screening. A flow chart of the screening process was created to document total articles included at each stage (see Figure 1).

### Results

#### Results of Empirical Database and Grey Literature Review

Table 2 presents a description of the final sample of peer-reviewed articles. A total of 12 sources were included for synthesis with 11 peer-reviewed articles and one grey literature source (i.e., Grigal, Hart, et al., 2019). On review of the final sample, a meta-analysis of the findings was not attempted because the information presented across articles lacked a common set of attributes that could be accurately combined, including disparities in program descriptions and employment experiences. Findings are organized by the guiding research questions developed for this review.

#### *Employment Specific Components Received During PSE Enrollment*

Wide variation in the description of employment-related components was observed across studies. For the purposes of this review, employment components reported in the literature were organized by employment-focused coursework and applied ex-

**Table 1***Database Search Criteria*

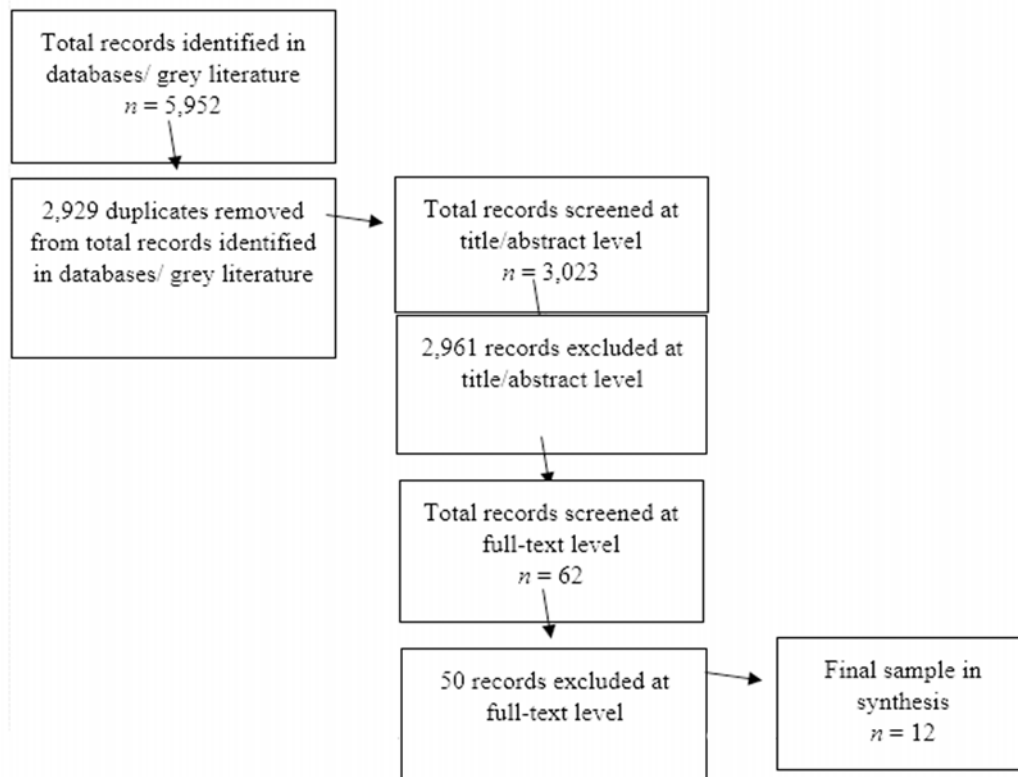
Category	Search Terms
Population	intellectual disab* OR developmental disab* OR IDD OR mental retardation OR MR
Intervention	postsecondary education OR college OR technical school OR trade school OR postsecondary training OR transition and postsecondary programs for students with intellectual disability OR higher education program OR comprehensive transition programs OR dual enrollment OR inclusive postsecondary education
Outcome	employment OR wage OR hours employed OR job retention OR benefits OR occupat* OR vocation*
Empirical Databases	Educational Resources Information Center (ERIC), Education Research Complete, PsychInfo, Academic Search Complete, PubMed (MEDLINE), CINHALL, Psychology and Behavioral Sciences Collection, SocINDEX.
Grey Literature Sources	New York Academy of Medicine Grey Literature Report, GreySource, Think College, State of the Art Conference, Association on Higher Education and Disabilities, National Center for College Students with Disabilities, Inclusive Higher Education Committee Report, Association of University Centers on Disabilities, Office of Disability Employment Policy, U.S Department of Education, National Longitudinal Transition Study 2, National Down Syndrome Congress, Southeastern Postsecondary Education Alliance, Educational Policy Improvement Center/Inflexion, American Institutes of Research, American Youth Policy Forum, National Center for Special Education Research, Georgetown University Center on Education and the Workforce, Autism and Developmental Disabilities Monitoring Network, American Educational Research Association

periences. Findings revealed a greater emphasis on reporting applied vocational experiences over employment coursework. A total of six out of 12 studies described some level of employment coursework in college settings while all but one study (i.e., Zhang et al., 2018) included information about employment experiences. However, three studies reported “other” vocational training and preparation activities (e.g., resume building, interview practice, career assessment, etc.) that were not contextually identified, so it is possible that these practices could have taken place in the context of either courses or applied experiences.

Regarding coursework, some studies simply provided course titles (e.g., *Career Preparation*, *Career Exploration*, *Career Experience*) while others provided general descriptions of employment related skills taught (e.g., how to connect with employers, understand rights and responsibilities on the job, and work ethic). Still others listed brief general statements that noted vocationally focused coursework was included in the program but did not provide specific course-

work information. The number of required credit hours related to employment coursework or curriculum details were not clearly specified in the article sample. It is possible that students in the mixed/hybrid and inclusive programs accrued employment coursework credits by enrolling in integrated classes aligned with their individualized career interests (e.g., Cranston-Gringas et al., 2015), but this information was not discernable among studies. The final sample of articles also included several studies comprising aggregate data from multiple PSE programs, so providing specifics for coursework across programs would have been difficult.

More detailed information was provided for employment experiences. According to the *Year Four Annual Report of TPSID Model Demonstration Projects (2018-2019)* developed by Think College, 93% ( $n = 332$ ) of students participated in at least one work experience during enrollment (Grigal, Hart, et al., 2019). A combination of activities was reported across the peer reviewed literature including paid and

**Figure 1***Article Selection Process by Stage*

unpaid internships (Cranston-Gingras et al., 2015; Francis et al., 2018; Grigal et al., 2019; Kelly & Buchanan, 2017; Moore & Schelling, 2014; Neubert et al., 2004; Ross et al., 2013; Ryan et al., 2019; Sheppard-Jones et al., 2018; Zhang et al., 2018), job shadowing (Cranston-Gingras et al., 2015), volunteering or service learning (Grigal et al., 2019), assessment of job tasks (Kelly & Buchanan, 2017), teaching of skills related to employment such as transportation (Cranston-Gingras et al., 2015), and instruction on attendance and hygiene (Kelly & Buchanan, 2017). Studies reported a range of five to 25 work experience hours weekly. Some articles reported work rotations to vary experiences during the course of the PSE program although most did not specify this information.

Of those that did report rotations, Cranston-Gingras et al. (2015) reported quarterly rotations, Francis et al. (2018) reported a minimum of three required experiences, Ross et al. (2013) described a one-year internship requirement for select students, Ryan et al. (2019) reported a rotation of four

internships, Sheppard-Jones et al. (2018) indicated a requirement of one work experience per semester, and Zhang et al. (2018) reported a semester long practicum experience. Additional information, such as details regarding payment for work experience and integration of experiences in on- and off-campus business locations, varied widely by study. In summary, reporting on the type, format, and level of detail regarding employment related components students with ID received during enrollment was vastly diverse, making the emergence of themes in relation to outcomes difficult to detect.

#### ***Employment Outcomes for Students with ID after Exiting a PSE Program***

Job status was defined as exiting with or securing a job at any point following PSE program completion (Table 2). Since reporting job status was a prerequisite for article inclusion, all included this variable, with 10 studies reporting percentages and one reporting predictors without associated percent-

**Table 2**  
*Postsecondary Education Programs and Employment Outcomes for Students with Intellectual Disability*

Citation	Method/ Population	Program/ Integration	Cred.	Employment Course- work	Applied Experience	Employment After Pro- gram	Transition Processes
Cranston- Gingras et al. (2015)	Quasi-exp. $n = 63$	University; Inclusive recre- ation rather than academics	2	Exceptional student education courses: Career Preparation, Career Experience, Career Exploration	93% in internships (community/ cam- pus location, unpaid/ paid, rotate quar- terly, 10-15 hrs/wk, travel training, job shadowing)	<ul style="list-style-type: none"> <li>50.8% in paid em- ployment at exit vs. 17.5% employed before program</li> </ul>	Not reported
Francis et al. (2018)	Non-exp. $n$ not spec- ified	2-year residen- tial program; Mixed/hybrid	2	University courses on career interests Other: person-cen- tered planning/ work portfolio	Integrated vocational experience (3 rota- tions, on or off-cam- pus, 10 hrs/wk for 10 wks each semester)	<ul style="list-style-type: none"> <li>75% in CIE within 1-year of exit</li> </ul>	Not reported
Grigal, Hart, et al. (2019)	Non-exp. $n = 981$	Aggregate TP- SID data from 2 and 4 year IHEs; Special- ized and inclu- sive	1,2,3	Not reported	93% in one of the following; paid work, job seeking, work- based learning, career exploration/ aware- ness	<ul style="list-style-type: none"> <li>64% working 1-year after exit</li> <li>72% of respondents in paid work 2-years after exit</li> </ul>	39% of interns in VR; Partner with LEAs, IDD agencies, BACs/ private foundations
Grigal, Papay, et al. (2019)	Non-exp. $n = 686$	Aggregate TP- SID data from 2 and 4 year IHEs; Special- ized and inclu- sive	1,2	Vocationally focused coursework	Internships, volun- teering, service learn- ing, paid work	<ul style="list-style-type: none"> <li>Predictors of employ- ment; Paid job before TPSID, 4-year over 2-year program, paid job during program, and IHE credential Living on campus decreased odds of employment</li> </ul>	Not reported

(Table 2 continues)

Citation	Method/ Population	Program/ Integration	Cred.	Employment Course- work	Applied Experience	Employment After Pro- gram	Transition Processes
Kelley & Buchanan (2017)	Non-exp. n not specified	2-year program with on-campus residency; Fully inclusive	2	Not reported Other: Person-centered planning, career assessments	Interest-based internships (paid work on/off campus, 10 hrs/wk every semester, work performance evaluations)	<ul style="list-style-type: none"> <li>80% of program graduates in competitive employment.</li> </ul>	Assist with job placement, network with family, businesses, and VR
Moore & Schelling (2014)	Quasi-exp. n = 34 (matched NLTSS-2 sample)	1 separate and 1 integrated program	2	Not reported	3rd year community employment internships in integrated program, Specialized program employment activities not reported	<ul style="list-style-type: none"> <li>73% integrated and 91% specialized employed vs 37.2% comparison group</li> <li>Specialized worked more hours than integrated</li> <li>Integrated had highest earnings</li> <li>Integrated had most jobs in non-traditional industries</li> </ul>	Not reported
Neubert et al. (2004)	Non-exp. n = 163	2 to 4 year colleges and community sites; hybrid and separate	3	Not reported	87% in vocational training (most off-campus, 73% paid, mean of 15 hrs/wk)	<ul style="list-style-type: none"> <li>Exit data on 58 students</li> <li>65% exited with paid job</li> <li>84% had summer employment</li> </ul>	Formal transition plans with link to adult services
Ross et al. (2013)	Non-exp. n = 125	2 and 3-year community college with on-campus residency; Mixed/hybrid	2	Content on resume building, skill assessment, interviewing, work ethics, time card use, etc.	Optional third year with 20 hr/wk paid internship	<ul style="list-style-type: none"> <li>2-year program</li> <li>84% employed</li> <li>102 part-time/3 full-time</li> <li>Most above minimum wage</li> <li>28% had benefits</li> <li>3-Year Program</li> <li>7 employed</li> </ul>	Transition planning with VR

(Table 2 continues)

Citation	Method/ Population	Program/ Integration	Cred.	Employment Course- work	Applied Experience	Employment After Pro- gram	Transition Processes
Ryan et al. (2019)	Non-exp. n = 25	Basic 2-year or extended 4-year program with residential component; Mixed/hybrid	2	60 min/wk on employment for 2 semesters	2-year program (4 unpaid, 1-month internship, 360 min of job coaching/wk, paid job on/ off campus for last year) Extended 4- year program (work 20-25 hrs/wk)	<ul style="list-style-type: none"> <li>Combined programs; 96% had at least one paid job after exit</li> <li>84% employed at follow-up</li> <li>Most working 20 -39 hrs</li> <li>8% had medical benefits and 4% had dental/vision</li> </ul>	Not reported
Shepard-Jones et al. (2018)	Quasi-exp. n = 19 (matched NCI-ACS group)	PSE programs; All coursework inclusive	1,3	Not reported	1 work experience per semester	<ul style="list-style-type: none"> <li>Data for current and former students aggregated; 37% in community employment vs. 13% comparison group</li> </ul>	Not reported
Zafft et al. (2004)	Quasi-exp. n = 40 (non-PSE comparison)	College Career Connection; Inclusive	4	Not reported Other: person-centered planning, service collaboration	Not reported	<ul style="list-style-type: none"> <li>Of those working, 100% PSE were in integrated jobs over sheltered work vs. 43% of comparison</li> <li>Non-PSE worked more mean hours (23 vs 13/wk)</li> <li>PSE wages above federal minimum</li> <li>PSE students needed less employment support</li> </ul>	Not reported
Zhang et al. (2018)	Non-exp. n = 38	2-year program; Inclusive	2	Enrichment courses targeting job readiness skills	Semester long paid practicum experience with onsite evaluation	<ul style="list-style-type: none"> <li>84% competitively employed at exit</li> <li>88% of those employed at exit still employed at 1-year</li> <li>Most earned over min wage</li> </ul>	Not reported

Note. BAC= Business Advisory Committees, Cred. = credentials (1 = degree/college credit, 2 = certificate of completion, 3 = audit, 4 = not reported), Hrs = hours, IHE = Institutes of Higher Education, LEAs = Local Education Agencies, NCI-ACS = National Core Indicators – Adult Consumer Survey, NLTS = National Longitudinal Study, Non-exp. = non-experimental, Quasi-exp. = quasi-experimental, Wks = week



ages (i.e., Grigal et al., 2019). Half of the total sample ( $n = 6$ ; 50%) only reported job status without any supplementary information such as wage, hours, or industry. Employment outcomes were overall high for most studies with rates of 91% (Moore & Schelling, 2014), 96% (Ryan et al., 2019), 84% (Ross et al., 2013; Zhang et al., 2018), 80% (Kelly & Buchanan, 2017) 75% (Francis et al., 2018), 65% (Neubert et al., 2004), and 50.8% (Cranston-Gingras et al., 2015) of PSE participants securing employment upon or after program exit. Longitudinal data were lacking but a post-graduation survey of 272 students completing a TPSID between 2015 and 2018 indicated that 64% ( $n = 175$ ) were in paid employment one year after exit (Grigal, Hart, et al., 2019).

One study reported a significantly lower employment rate (37%), but this sample included a mix of current and former students (Sheppard-Jones et al., 2018). Since the researchers did not report the number of students yet to exit the program and seek employment, these outcome data should be considered with caution. Despite the mixed sample, this article was still included in the final collection because it is worth noting that even the 37% job status rate was still considerably higher than job status rates reported for a comparison control group (13%) who did not attend PSE. Regarding other studies using a quasi-experimental design, findings indicated enhanced employment outcomes. While the 50.8% employment rate reported by Cranston-Gingras et al. (2015) was considerably lower than rates reported by other studies, it is vastly higher than the 17.5% of the same sample who had achieved competitive employment prior to entering their PSE program. Moore and Schelling (2014) reported that 73% of students completing an integrated program and 91% of those completing a specialized program secured competitive employment upon program completion versus only 37.2% of a matched sample comparison group.

Few studies reported extension variables of job status, such as wage, hours, or industry, and little could be gleaned across studies in terms of themes associated with employment outcomes. However, Grigal, Papay, et al. (2019) reported three significant predictors of employment after exit, which included earning a credential from an institute of higher education, attending a four-year rather than two-year program, and paid work experience during enrollment. In fact, students who worked paid jobs while enrolled in a TPSID were 15 times more likely to exit the PSE program in paid employment (Grigal, Papay, et al., 2019). Other notable findings included graduates of fully inclusive programs earning more than those of substantially separate programs and a non-PSE con-

trol group, though those in fully inclusive programs also worked fewer average hours per week than both the separate and non-PSE groups (Moore & Schelling, 2014). These findings echoed Zafft et al. (2004) who also found that PSE program graduates were more likely to be employed than non-PSE comparison students but worked fewer hours on average per week than the control group. Overall, findings from this scoping review underscored the need for greater efforts to be made in collecting and reporting quality extension variables (e.g., wage, hours, benefits, etc.) related to employment.

### ***Processes and Supports for Transition from PSE to Employment***

Information regarding processes for transitioning individuals from PSE programs to employment, or installation of follow-up procedures to ensure job retention was omitted from the majority of articles in the sample. Only four articles provided some description on outreach to community businesses and adult service agencies such as VR (e.g., Grigal, Hart, et al., 2019; Kelly & Buchanan; 2017; Neubert et al., 2004; Ross et al., 2017). Reported processes in these four studies included PSE program staff assistance with job placement activities and networking with local businesses, connection to adult services prior to PSE program exit, and involvement of agencies in transition planning. The *Year Four Annual Report of TPSID Model Demonstration Projects (2018-2019)* issued by Think College reported that only 34% received employment services from VR during enrollment. Some articles briefly mentioned other planning procedures such as person-centered and service collaboration within the general description of the PSE program, so it is possible that processes are occurring to a much greater extent than what is reported within the literature. Still, effective methods for transitioning from PSE to employment is a critical area which deserves more emphasis in reporting.

### ***Research Methodology in Reviewed Articles***

Finally, several other important features that bolster empirical support for findings and produce replicability of effective program outcomes were examined including methodology, integration, and credentialing. First, included studies were evaluated based on highest to lowest level of rigor—experimental, quasi-experimental, and non-experimental. Of the articles in the final sample, nearly all used a non-experimental design and reported descriptive statistics about program outcomes. A total of three used a quasi-experimental design including matched samples as a comparison (Moore & Schelling, 2014,

Sheppard-Jones et al., 2018; Zafft et al., 2004) and one reported pre- to post-employment data (Crans-ton-Gingras et al., 2015). None utilized a true exper-imental design with randomization of groups. When combined with previous reviews, this translates into 50 years of literature (1970s to present) without any identified experimental randomized control designs.

Second, the literature offered information on a range of different types of programs in terms of level of integration (i.e., separate, mixed/hybrid, and inte-grated). Several studies aggregated data from dif-ferent types of programs, so comparisons based on level of integration were hard to ascertain. In general, descriptions regarding the level of integration were brief and in most cases vague. The term “inclusive” needs to be operationally defined by programs during reporting. Only one article attempted to quantify inte-gration by offering an estimation of time students with ID spent with non-disabled peers (Moore & Schelling, 2014). Lastly, most articles described pro-grams that only offered specialized certificates of completion ( $n = 9$ ) to PSE graduates while other arti-cles described programs that offered a combination of program certificates, institutional degrees, or record of course audit. On account of previous research suggesting that credentials are a known predictor of employment following PSE completion (Grigal et al., 2019), more consistent reporting of this infor-mation in PSE program literature for students with ID is warranted.

### **Excluded Articles**

Although the inclusion criteria initially used to search the databases returned a large volume of arti-cles, the overwhelming majority were unrelated to PSE programs for students with ID and employment (see Figure 1). Most articles largely focused on PSE program descriptions without employment data (e.g., Blumberg et al., 2008; Carroll et al., 2008; Giust & Valle-Riestra, 2017; Green et al., 2017; Hendrickson, Carson, et al., 2013), described transition from high school to PSE rather than transition from PSE to em-ployment (e.g., Grigal et al., 2011), evaluated other outcome variables such as psychological well-being or parent experiences (e.g., Hendrickson, Vander Busard, et al., 2013; Scott et al., 2018), or assessed the experience or benefits of PSE programs to individuals other than the student with ID, such as college peers and professors (e.g. Carter & McCabe, 2020; Caus-ton-Theoharis et al., 2009). Many empirical articles were also excluded from the final analysis because they were preliminary reports, so the information was published before any students completed the pro-gram and thus the provision of outcome data was not

possible (e.g., Folk et al., 2012; Hafner et al., 2011). While it is acknowledged that tracking employment outcomes longitudinally may be problematic for in-dividual PSE programs due to finances or logistics, more diverse measures of quality employment out-comes beyond simply employment status is needed.

### **Discussion**

Findings from this scoping review reveal general-ly positive support for the efficacy of PSE programs in promoting employment outcomes for students with ID. However, these findings should be regarded with some caution given the lack of more rigorous research methods used. Compared to previous reviews (e.g., Neubert et al., 2001; Thoma et al., 2011), a marked increase was noted in the overall use of employment outcome measures. Several common program com-ponents related to employment appeared in multiple included studies, such as career-related coursework, integrated internship experiences, and interagency collaboration, but it is difficult to establish from the reviewed research whether these PSE components are responsible for the employment outcomes report-ed. Overall, results from this review reiterate con-cerns expressed by previous reviews; there remains a pressing need for more rigorous research methodol-ogy and more detailed and comprehensive reporting of key program components. Recommendations for future research, policy, and practice are summarized in Table 3.

### **Implications for Practice**

The extant literature includes numerous studies detailing program descriptions with wide ranging levels of detail concerning different program areas. Consistent efforts by PSE program staff to operation-ally define key characteristics when disseminating information would help the field to begin establish-ing effective links between program elements and employment outcomes. Based on the findings of this review, along with previous reviews, those key components include better descriptions of program types (e.g., mixed, separate, inclusive) with metrics provided to clarify level of integration. Information linking the type of credential obtained to employment outcomes is needed. Efforts to better detail career de-velopment program components within the context of coursework and hands-on paid and unpaid experi-ences (e.g., volunteer, paid jobs, internships, etc.) and the relation of these components to employment out-comes is suggested. Reporting more expanded em-ployment measures beyond simply job status at exit and post-exit would also help establish a more com-

**Table 3***Recommendations for Future Research, Policy, and Practice to Promote Employment Outcomes*

Area	Category	Description
Research	Stringent Research Methodology	<ul style="list-style-type: none"> <li>• Experimental designs with randomized control comparison groups/ quasi-experimental designs</li> <li>• Longitudinal studies to track job retention and upward mobility</li> <li>• Impact of PSE programs on diverse demographics (age, race, gender, socio-economic status, etc.)</li> </ul>
	Detailed Reporting	<ul style="list-style-type: none"> <li>• Thorough descriptions defining program features (e.g., integration, credentials earned, courses, and number of activities)</li> <li>• Extent of PSE program (e.g., program length and/or course credits required for completion)</li> <li>• Processes for teaching work skills based on individualized needs</li> <li>• Consistent inclusion of information about work experiences during enrollment (e.g., paid or unpaid, on-campus or community integrated, hours, supports)</li> </ul>
	Quality Outcomes	<ul style="list-style-type: none"> <li>• Post-graduation data beyond job status (e.g., hours, wage, industry, benefits, match with career interests, job supports, level of integration, job retention, and upward mobility)</li> </ul>
Policy	Funding	<ul style="list-style-type: none"> <li>• Expand grant funding opportunities for longitudinal and experimental research</li> </ul>
	Collaborations	<ul style="list-style-type: none"> <li>• Future legislation should include formal partnerships and linkages with both K-12 and adult service providers</li> </ul>
	Federal and State Guidance	<ul style="list-style-type: none"> <li>• Policy guidance to inform how PSE provisions of HEOA intersect with IDEA transition planning, WIOA (2014) pre-ETS services, and other vocational services funded through VR, Home and Community Based Services (HCBS) or other sources.</li> </ul>
Practice	Evidence-based employment practices	<ul style="list-style-type: none"> <li>• Paid, community-based work experience included as an essential component of all PSE programs</li> <li>• Incorporate general evidenced-based practices for employment in the absence of more specific PSE research-based predictors currently available</li> </ul>
	Transition from PSE to Employment	<ul style="list-style-type: none"> <li>• Develop processes for connecting students with adult service agencies</li> <li>• Develop procedures for networking with local businesses</li> <li>• Plan for provision of follow-along support by PSE program staff</li> <li>• Plan for job development by PSE program staff at exit</li> <li>• Family involvement or other transfer of support strategies</li> </ul>

prehensive picture of the benefits of PSE programs. Lastly, detailed processes for connecting students to employment service agencies in addition to the impact those connections yield is warranted.

In the absence of clear directives from research related to the specific PSE program activities leading to improved employment outcomes, it is important for staff to ensure general predictors of employment success already established for youth with ID are incorporated, mainly paid work opportunities (Carter et al., 2012; Mazzotti et al., 2016). Favorably, most studies in this review did include applied work experiences. Having a paid job during high school remains one of the strongest predictors of post school success with regard to securing employment. Other positive correlates include independence in self-care and better social skills (Carter et al., 2012). While a few studies reported teaching skills associated with employment success, more detailed descriptions of these components in the future would also be beneficial.

There is also a need for expanded efforts by program staff to define the role and benefits of collaboration between adult service agencies and PSE programs for students with ID. During this review, studies discussing processes for transition from PSE to service agencies were located but ultimately not included because employment outcome data were not provided. For example, Petcu et al. (2015) found that 74.5% of PSE programs collaborated with VR and 75% collaborated with local businesses to provide employment related services during enrollment. Folk et al. (2012) reported that VR funding was used for students in a PSE program for tuition and textbooks, and services were used to develop an individualized plan for employment to secure employment experiences during enrollment. However, few studies were located that provided information on both employment outcomes and connection to employment services. Reasons for a lack of reporting on connection to employment services after exit are unclear. It can be speculated that perhaps this is due to a lack of discussion on the pertinent role of such agencies. Results of a survey by Plotner and Marshall (2016) revealed that PSE administrators are often confused about the role of VR in PSE programs and feel that VR does little in the way of providing services beyond funding. In other cases, VR may refuse to fund PSE services (Lee et al., 2018). Clarifying the role and benefits of these agencies in the future is recommended.

Finally, little information was provided across studies concerning the role of other entities on campus such as Career Counseling Services or Disability Resource Offices (DRO) in supporting students with IDD during coursework or applied vocational experi-

ences on campus. Postsecondary education programs for students with IDD are unique compared to other campus programs because varying layers of disability support are already provided by program staff. However, as PSE programs for students with IDD continue to evolve across the United States, establishing more clearly defined and effective ways DROs can collaborate with program directors, mentors, faculty and employers to provide accommodations and modifications is needed. Disability resource offices can provide valuable guidance regarding which entity (the DRO or PSE program) is responsible for providing certain types of support and help by including PSE program students in educational trainings and information dissemination campaigns about disability topics along with other non-PSE program students. Reporting on successful processes for establishing and maintaining partnerships between PSE programs and campus DROs is needed.

### **Implications for Research**

Use of more rigorous research methods, including experimental designs is truly needed to investigate efficacy as no studies used designs that might investigate a causal relationship between PSE and employment. Additionally, longitudinal studies examining whether PSE graduates retain employment and experience career advancement in the years following program exit are needed. Research using component analysis is also suggested along with an investigation of dosage to determine the influence of time and intensity of specific coursework, training, and internship activities on employment outcomes. One study excluded from this review because it reported outcomes during the final year rather than at or after exit did report preliminary findings suggesting that inclusive coursework, work experience prior to enrollment, volunteer or community service activities, and participation in social events on campus were associated with higher than minimum wage earnings during the most recent year TPSID program data was collected (Qian et al., 2018). A specific investigation into these particular components in the future is warranted. Future studies should also clearly note which work experiences are paid and community-integrated. While not the focus of this paper, information related to demographic factors like race, ethnicity, gender, socioeconomic status, and age would provide greater potential for generalizability of findings, and allow for a meta-analysis to explore whether interventions are both equitably provided and also equally effective for diverse groups of participants.

### **Implications for Policy**

Policy has no doubt worked to increase opportunities for students with ID over the past few decades. Despite the considerable federal investment, it remains unclear the extent to which these efforts are improving student employment outcomes both in comparison to other service options and sustainably over time. While the National Coordinating Center continues to proficiently track PSE student data, the purpose of the center is not to strategically investigate causal relationships (Think College, 2020). Funding to enable individual programs to conduct comparative research and longitudinal tracking of student outcomes is needed. Reauthorization of HEOA (2008) should continue to enable students with ID access to federal financial aid via work study or grant opportunities in order to attend PSE programs.

Future legislation regarding PSE should work to clarify guidelines for how programs should coordinate with K-12 and adult agency partners. Each PSE student experience is different with regard to connection to K-12 (e.g., some are dually enrolled, some have exited high school, etc.) and VR eligibility (e.g., some do not qualify), so making the roles and responsibilities of these entities as clear as possible will maximize opportunities for collaboration. In 2019, the U.S. Department of Education released a Q&A on how VR and local and state educational agencies can assist students in PSE programs. Even with this resource, additional guidance is needed to inform how PSE provisions of HEOA (2008) intersect with pre-employment transition services mandated under the Workforce Innovation and Opportunity Act (2014).

### **Limitations of the Review**

Several limitations were associated with this review. The inclusion of only U.S. studies due to legislative and diagnostic differences internationally could have omitted important findings on employment and PSE education for students with ID reported abroad. This study also restricted the search to established PSE programs and thus did not capture students with ID who may attend institutes of higher education via other avenues. While the search did not impose an age restriction on population, the majority of PSE programs described in the review serve students in their late teens and 20s, and, therefore, generalization to populations of older students with ID attending institutes of higher education should be made with caution. It should also be stated that lack of reporting on certain program components or procedures related to employment does not equate with a lack of occurrence, and, therefore, the information in this analy-

sis is restricted to what was offered in the literature. Findings from this review thus provide insight into areas of need in reporting as well as practice.

### **Conclusion**

The empirical and grey literature offer general support for the efficacy of PSE programs for students with ID in promoting competitive employment outcomes. The majority of programs describe rich vocational training opportunities during enrollment in applied settings. While limited, the outcome data that is available suggests higher rates of employment upon exit compared to prior to participation in a PSE program, and in relation to comparison groups. These findings warrant further investigation into which specific program components are associated with enhanced employment outcomes after program completion. More descriptive reporting on program elements, such as level of integration, type of credential, employment experiences during enrollment, and processes for connection to adult service agencies, will enable better evaluation of program effectiveness and enhance replication efforts by other sites serving students with ID in PSE settings. Moving to more stringent design of research methodology, specifically designs that include randomization, will help to further establish whether PSE programs for students with ID are an effective pathway to competitive employment. While great strides have been made in providing more opportunities for students with ID to receive advanced training, there is much left to be done by researchers and practitioners to help advance PSE programs and continue assisting students with ID in securing long term employment outcomes.

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