



ACTION RESEARCH

Integrated Education & Training: A Mechanism to Enhance Student Success & Achieve Institutional Goals

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Abstract

At the heart of Integrated Education and Training is occupationally contextualized adult education and literacy instruction. Through participation in these programs, learners build essential academic skills in context to an occupation or industry while accruing workforce skills within a postsecondary credential. Integrated Education and Training models have been conceptualized as a lever to enhancing student success and their expansion is a priority for the Wisconsin Technical College System. This quantitative study investigates the relationship between participation in Integrated Education and Training and a series of shorter-term, interim, and longer-term student outcomes. Research methods include the use of propensity score matching, logistic regression analysis, and sensitivity analysis. Results demonstrate that participation in Integrated Education and Training programming is significantly and positively associated with each of the analyzed student outcomes including completing college credits in the first semester, college persistence to the second year, achieving a cumulative GPA of a 2.0 or greater, and obtaining a Wisconsin Technical College System credential. Adult education and literacy providers, two-year colleges, and stakeholders who benefit from Integrated Education and Training should invest in the expansion of these programs because they are a strategy to achieving organizational goals and provide learners with clear pathways to college credentials, the workforce, and upward economic mobility.

Introduction

Integrated Education and Training (IET) emerged from the Workforce Innovation and Opportunity Act (WIOA), which was signed into law on July 22, 2014 (U.S. Congress, 2014). The IET model is defined as a service approach that provides adult education and literacy activities concurrently and contextually with workforce preparation activities and workforce training for a specific occupation or occupational cluster for the purpose of educational and career advancement (U.S. Congress, 2014). Integrated Education and Training programs are designed to simultaneously teach adult education and literacy foundational skills, such as math, reading, writing, and English acquisition, along with occupational or technical skills relevant to a particular industry or job.

The Wisconsin Technical College System (WTCS) is a national leader in career pathways, including the development and implementation of IET connected to the System's 500+ industry validated credentials. As Wisconsin's Title II adult education and literacy service provider under WIOA, the WTCS has

leveraged its rich history of career pathways to effectively implement and scale IET programs across the state. The WTCS offers IET programs in a variety of disciplines including tool and die, machinist, and maintenance millwright pre-apprenticeships, nursing, early childhood education, welding, information technology, culinary, and truck driving. To further support the continuous improvement of WTCS IET programming and produce evidence towards policy and practice which advances student success among adult education and literacy learners, this study investigates the following research questions:

1. What is the relationship between IET participation and completing college credits within the fall semester of program entry?
2. What is the relationship between IET participation and second year persistence?
3. What is the relationship between IET participation and achieving a two-year cumulative GPA of a 2.0 or greater?
4. What is the relationship between IET participation and attaining a college credential within two years?

Methods

Treatment & Control Conditions: A treatment and control group were generated to support addressing the four research questions. Enrollment in an IET program during the fall semester of the 2021-22 academic year at one of the 16 WTCS institutions constituted the treatment condition. More specifically, IET programs were characterized by the following features distinguishing them from non-IET adult education and literacy program services: 1) IET programs must meet the federal WIOA requirements of an IET program, 2) IET programs must be approved by the WTCS Office to ensure alignment with the federal IET definition and WTCS IET policy, and 3) student-level IET program participation must be reported through WTCS Client Reporting.

The control condition equated to enrollment in non-IET adult education and literacy program services and enrollment in workforce training, or college courses that count towards a WTCS credential, at one of the 16 WTCS institutions during the fall semester of the 2021-22 academic year. In essence, the control condition was enrollment in adult education and literacy program services and workforce training during the same semester, but without occupational contextualization of adult education and literacy programming.

Data Sample & Variables: Data included all first-time college students participating in the federally funded Adult Education and Family Literacy Act (AEFLA) program under WIOA who met the described treatment or control conditions. The final data sample included 1,297 unique students¹. A total of 301 of these students were enrolled in an IET program. The final data sample included a series of student outcome variables and covariates, which are documented in Appendix 1.

Data Analysis: Three steps were conducted in the data analysis: 1) Propensity Score Matching (PSM) to generate a sample of pairs between the treatment and control groups (Rosenbaum, 1985), 2) binary logistic regression using the comparable sample to address the research questions (Stuart, 2010), and 3) sensitivity analysis to assess the robustness of the treatment effects (Rosenbaum, 1985).

¹Initial analysis of the data file revealed that nine English Language Learning students were enrolled in IET during the study period. The initial data sample was subsequently limited to non-English Language Learners due to the small sample size of English Language Learners participating in IET.

Results

Students participating in IET programs are more likely to complete college credits in the first semester, persist to the second year, achieve a cumulative GPA of 2.0 or higher, and complete a WTCS credential compared with students who did not participate in IET programs. See Appendix 2 and 3 for statistical results including PSM balancing tests and logistic regression odds ratio values.

When tracked over the two-year study period, IET students in the matched sample earned a total of 7,971 credits that count towards a WTCS college credential while the similar comparison group earned 6,859 credits (Figure 1). The surplus of 1,112 credits earned among IET learners within the matched sample demonstrates the promise of IET in supporting colleges to achieve institutional enrollment goals.

In addition to producing more credits earned, the group of IET learners were awarded more WTCS credentials. Within the matched sample, students enrolled in IET programs were awarded 295 WTCS credentials during the two-year study period while the similar comparison group not enrolled in IET were awarded 114 WTCS credentials (Figure 2). The difference of 181 awarded WTCS credentials further demonstrates the promise of IET in aiding colleges to achieve institutional goals and has potential economic implications. More specifically, IET is a lever to accelerating degree completion towards employment and meeting regional workforce needs.

Students enrolled in IET programs had an increased likelihood of achieving a 2.0 cumulative GPA or higher during the two-year study period compared with like students. Descriptive statistics reveal the median cumulative GPA among the IET group was 3.3 while the comparison group was 2.8 (Figure 3). The difference of 0.5 GPA points not only demonstrates the promise of IET to support achieving college student success goals, but also has implications for mastery of learning and transferability of skills in future employment.

Figure 1. Total Credits Earned Towards a WTCS Credential

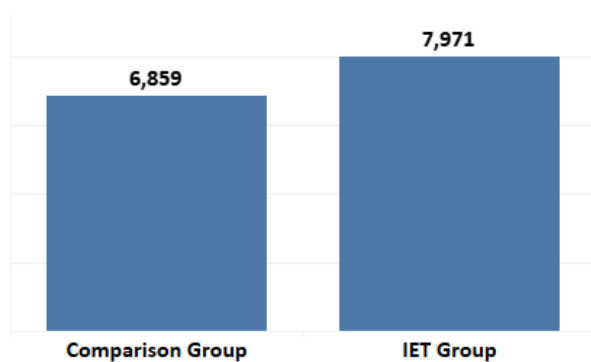


Figure 2. Total WTCS Credentials Awarded

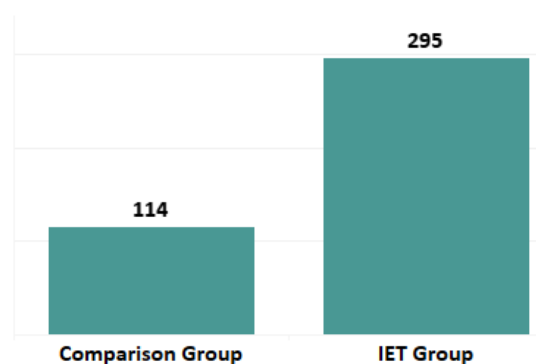
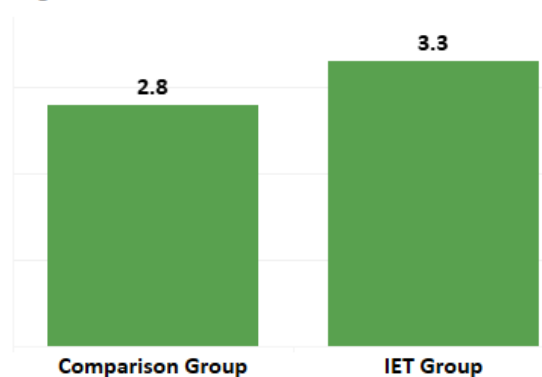


Figure 3. Median Cumulative GPA



Implications for Policy & Practice

Several implications for policy and practice emerged from this study. These implications do not operate in a silo. Rather, practitioners and policymakers should view these implications as complex and intersecting concepts that come together to advance adult education and literacy learner outcomes.

✓ **Commit to Expanding IET Programming**

Two-year colleges and providers of adult education and literacy services must commit to the expansion of IET programming. The delivery of IET directly benefits students and is an institutional enrollment and student retention strategy. Integrated Education and Training is an onramp to college credentials and tuition paying students. These programs are vital to the survival of two-year colleges facing declining enrollments and reductions in local, state, and federal funding. Further, IET is a strategy to addressing local workforce challenges. Integrated Education and Training provides a clear roadmap to attaining college credentials and engagement in the workforce pipeline to meet industry labor needs.

✓ **Stakeholder Investment in IET Expansion**

Stakeholders who benefit from IET should invest in IET expansion efforts. National environmental scans have documented that the implementation of IET is resource intensive (Cronen et al., 2021). The costs associated with IET vary widely by the occupational focus of the program, such as in manufacturing, business, and healthcare (Mortrude, 2017). Employers and WIOA partners should invest in IET program expansion because these innovative offerings are supportive of their needs and goals.

✓ **Fostering Faculty Skills to Efficiently and Effectively Deliver IET**

To fully reap the benefits of IET, faculty delivering IET instruction must have the necessary skills. Faculty must understand the defining components of IET and how to execute IET instruction in an efficient way that benefits students. Institutional front-end planning is vital to fostering positive faculty perceptions of IET and enhancing faculty capacity to plan and deliver IET programming.

✓ **Addressing English Language Learner Needs through IET**

The English Language Learner population is projected to grow across the nation (Najarro, 2023). As more English Language Learners access adult education and literacy programming, it is crucial that IET programs are structured to meet this populations academic needs. Doing so will ensure English Language Learners have a pathway to college credentials, the workforce, and upward economic mobility.

Resources to Support IET Expansion

The following resources may be helpful to adult education and literacy service practitioners and policymakers in their IET expansion efforts.

- ❖ [WTCS Innovative Practices Summary of IET](#)
- ❖ [WTCS IET Design Camp Resources](#)
- ❖ [WTCS IET Planning Tool](#)
- ❖ [WTCS Action Research Brief: Wisconsin's Equity Informed Approach to Expanding IET Access](#)
- ❖ [American Institutes for Research IET Resources](#)
- ❖ [LINCS IET Resources](#)

Appendices

Appendix 1. Variable Descriptions

Variables	Description	Variable Coding
<i>Dependent Variables</i>		
Completed college credits	Completed college credits, in the fall semester of the 2021-22 academic year, that count towards a WTCS credential	Yes = 1, No = 0
Second year persistence	Continuous enrollment at the same WTCS institution to the second year	Yes = 1, No = 0
2.0 GPA of higher	Attained a cumulative GPA of a 2.0 or greater during the two-year study period	Yes = 1, No = 0
College credential completion	Completed a WTCS credential during the two-year study period	Yes = 1, No = 0
<i>Independent Variable</i>		
Integrated Education and Training enrollment	Enrolled in an Integrated Education and Training program in the fall semester of the 2021-22 academic year	Yes = 1, No = 0
<i>Covariates</i>		
Single parent	Unmarried or legally separated and have custody or joint custody of one or more minor children or who are pregnant	Yes = 1, No = 0
Economically disadvantaged	Receiving need-based financial assistance or self-identified	Yes = 1, No = 0
Gender (Female)	Student self-disclosed gender is female	Yes = 1, No = 0
Age 25 or older	Student age is 25 or older as of the beginning of the 2021-22 academic year	Yes = 1, No = 0
Student of Color	Race or ethnicity self-identified as Black, Hispanic, Asian, Native American, or more than one race	Yes = 1, No = 0
Prior college credit	Student has attained some college credit prior to enrollment	Yes = 1, No = 0
Prior college credential	Student has attained a college credential prior to enrollment	Yes = 1, No = 0
Entering educational proficiency	Entering educational proficiency is between ninth and twelfth grade as measured by a basic skills assessment administered at program entry	Yes = 1, No = 0
Enrolled in a two-year degree	Student is enrolled in a two-year WTCS credential rather than a less than two-year WTCS credential	Yes = 1, No = 0
Enrollment intensity	Student is full-time in the fall semester of the 2021-22 academic year i.e., enrolled in 12 credits or more during the fall semester	Yes = 1, No = 0

Appendix 2. Results from balancing tests*

	Pre-matching			Post-matching		
	Control group MD	Treatment group MD	SMD	Control group MD	Treatment group MD	SMD
Single parent	16.77%	15.95%	-0.02	14.95%	15.95%	0.02
Economically disadvantaged	62.45%	55.81%	-0.13	57.81%	55.81%	-0.04
Gender Female	66.37%	59.14%	-0.15	59.14%	59.14%	0.00
Age 25 or older	41.27%	45.51%	0.09	45.85%	45.51%	-0.01
Student of Color	40.36%	27.24%	-0.29	26.91%	27.24%	0.01
Prior college credit	18.57%	36.21%	0.37	34.22%	36.21%	0.04
Prior college credential	6.93%	10.63%	0.12	10.96%	10.63%	-0.01
Entering educational proficiency	13.86%	9.30%	-0.16	6.98%	9.30%	0.08
Enrolled in a two-year degree	75.10%	69.10%	-0.13	72.09%	69.10%	-0.06
Enrollment intensity full-time	26.41%	49.17%	0.46	49.50%	49.17%	-0.01

*Marginal distribution (MD) refers to the probability of being in the treatment or control group. Standardized mean difference (SMD) refers to the difference of the mean of the marginal distributions between the treatment and control group after being standardized by the joint standard deviation. Methods scholars suggest a balanced sample is achieved when the SMD is less than 0.1 post-matching (Stuart et al., 2013). The pre-matching and post-matching sample size of the control group is 996 and 301 respectively. The pre-matching and post-matching sample size of the treatment group is 301 and 301 respectively.

Appendix 3. Results from regression analysis and sensitivity analysis

	Shorter-term outcomes			Interim outcomes			Longer-term outcomes					
	Completed college credits			Second year persistence			Cumulative GPA of 2.0 or higher			College credential completion		
	B	(SE)	Odds Ratio	B	(SE)	Odds Ratio	B	(SE)	Odds Ratio	B	(SE)	Odds Ratio
Baseline Model												
IET Enrollment	0.78	0.31*	2.20	0.47	0.19*	1.61	0.69	0.21*	2.00	1.22	0.17*	3.38
Covariate Model												
IET Enrollment	0.85	0.32*	2.34	0.52	0.19*	1.70	0.72	0.21*	2.06	1.37	0.18*	3.95
Covariates												
Single parent	-0.32	0.39	0.72	-0.47	0.26	0.62	-0.52	0.27	0.58	-0.30	0.27	0.73
Economically disadvantaged	-0.55	0.34	0.57	-0.11	0.20	0.88	-0.24	0.21	0.78	0.10	0.18	1.11
Gender Female	-0.28	0.38	0.74	0.33	0.22	1.40	-0.03	0.23	0.96	-0.13	0.20	0.87
Age 25 or older	0.41	0.35	1.51	0.10	0.22	1.11	0.46	0.24	1.58	0.20	0.21	1.22
Student of Color	0.34	0.37	1.41	-0.33	0.22	0.71	0.33	0.25	1.39	-0.29	0.22	0.74
Prior college credit	0.27	0.37	1.32	0.14	0.22	1.16	0.36	0.23	1.43	0.39	0.20	1.48
Prior college credential	-0.25	0.50	0.77	0.42	0.35	1.53	0.48	0.39	1.62	0.57	0.31	1.78
Entering educational proficiency	0.55	0.76	1.74	0.28	0.38	1.33	0.06	0.39	1.06	0.24	0.33	1.27
Enrolled in a two-year degree	0.85	0.33***	2.35	0.77	0.21*	2.18	0.53	0.23***	1.70	0.25	0.21	1.28
Enrollment intensity full-time	1.41	0.42*	4.12	0.72	0.23*	2.07	0.39	0.40	1.48	1.25	0.21*	3.49

*** significance level 95%, ** significance level 99%, * significance level 99.9%

Sensitivity Analysis Results: Results from sensitivity analysis demonstrate that the findings would be rather insensitive to unobserved covariates. The significance of the treatment effect would hold until the odds of unobserved covariates (i.e., Γ) increased up to 1.50 for college persistence and 1.70 for WTCS credential completion. These figures represent the lower and upper end of the range across the analyzed student outcomes.

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