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POLICY BRIEF

Accelerated Developmental Reading and Writing Coursework and Student Preparedness for College-level Reading-intensive and Writing-intensive Courses in Texas Community Colleges

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What We Studied

This project examined the effects of a state-wide curricular shift in developmental education course offerings on student success in college-level courses at public community colleges in Texas. Specifically, it evaluated the efficacy of accelerated developmental integrated reading and writing (INRW) courses compared to non-accelerated, separate developmental reading and developmental writing courses in terms of the key metric of students passing their first reading- or writing-intensive college-level course. While results varied according to sampling strategy, the trend in the overall outcomes did not favor the accelerated reading and writing structure. Specifically, the more precise the analysis – particularly in terms of comparisons of matched students – the more likely to be a positive outcome for students who took non-accelerated developmental reading and writing courses than for those who took an accelerated INRW course.

In 2013, a statewide curricular change was enacted in Texas where, in public institutions of higher education, the exit (highest) levels of developmental reading and writing courses were merged and accelerated into one course termed Integrated Reading and Writing (INRW) (Texas Administrative Code, 2013, §4.62). This change was made in an attempt to ameliorate low success rates of students placed into developmental education coursework and shorten the amount of time students spend in developmental education before enrolling in college-level coursework (see Texas Higher Education Coordinating Board, 2014; 2016).

The Texas version of this curricular change from separate developmental reading and writing courses to a single INRW course is an accelerated model of curriculum (Gerber, Miller, Ngo, Shaw, & Daughtery, 2017). Prior to the INRW change, developmental reading courses in Texas had five student learning outcomes (SLOs) and developmental writing courses had six SLOs; the INRW structure mandates 10 SLOs that are in essence a compilation of those for the separate reading and writing courses. However, the time allotted to complete these SLOs was shortened. Previously, each separate developmental reading and writing course was three semester credit hours (SCH) per course, with a maximum of 96 contact hours for each course; a total of six SCH and 192 contact hours across the two courses could be taken by a student if both reading and writing courses were needed. In the INRW curriculum, the course can be up to four SCH for the combination of reading and writing and a student is allowed a maximum of 96 contact hours for the course (see Texas Higher Education Coordinating Board, 2015, for these details).

Thus, INRW is an accelerated model, with a 33% reduction in course time and a 50% reduction in contact hours available to achieve the state's approved SLOs versus taking both reading and writing separately in the previous non-accelerated model.

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How We Analyzed the Data

This study investigated the state-scale curriculum change described above through a causal-comparative research design that utilized a longitudinal, matched control group to examine the differences in student success in a subsequent reading- or writing-intensive college-level course between community college students enrolled in accelerated INRW courses and those enrolled in separate developmental (SD) reading and developmental writing courses. Accelerated sequences are shorter than non-accelerated sequences and the aim is that they deliver students to their first college-level course faster. It is important to note that in this project student success was framed not in terms of speed but in terms of effectiveness. Specifically, the project focused on whether, once students arrive at their first college-level reading-intensive or writing-intensive course, they were more likely to be successful if they came through an accelerated INRW course versus non-accelerated, separate developmental reading and/or writing course(s).

For some of the statistical models, propensity score matching (PSM) was used to match students who enrolled in INRW (treatment group) with students who took separate developmental reading and/or writing courses (control group) for each analysis within a quasi-experimental methodology. Differences were examined in students' success in their first reading- and/or writing-intensive college-level course after the student completed their corresponding developmental education course(s).

The following abbreviations are used throughout this document:
INRW = the accelerated integrated developmental reading & writing course
SD Reading = the non-accelerated, separate developmental reading course
SD Writing = the non-accelerated, separate developmental writing course

The research questions were:
RQ1: Are students who enroll in INRW at community colleges more likely to pass the first reading-intensive, college-level course than students who enroll in SD Reading?
RQ2: Are students who enroll in INRW at community colleges more likely to pass the first writing-intensive, college-level course than students who enroll in SD Writing?
RQ3: Are students who enroll in INRW at community colleges more likely to pass the first reading-intensive, college-level course and the first writing-intensive, college-level course than students who enroll in both SD Reading and SD Writing?

Student and course records from 2006-2007 through 2016-2017 were used. For each analysis, a logistic regression model with the dependent variable (DV) of passing the first college-level reading-intensive (RQ1) or writing-intensive (RQ2) course or both (RQ3) was used. The independent variables (IVs) used in the model varied depending on the dataset used. Models A-G used a dataset that matched students at the point of entry into the community college (the Community College dataset). Models H-I used a dataset that matched students prior to community college entry, at 10th grade (the High School dataset). The different models also represent different sampling constraints, where Model A is the least accurately specified and Models F-I are the most accurately specified.

For Models A-D, the IVs were: condition (treatment versus control), age, gender, ethnicity, and economic disadvantaged status. PSM was not used to match treatment and control students for these models. For Models E-G, Texas Success Initiative (TSI) compliance in reading, writing, and both reading and writing were added. PSM was not used for Model E, but was used for Models F and G. For Model F, PSM was used with the IVs in the model. For Model G, the model was the same as Model F except the sample included control students who took both developmental reading and developmental writing. Models H-I, which used the High School dataset, started with PSM like Model F, but also included high school IVs: high school graduation year, high school economic disadvantaged status, variables for the different high school diplomas (Recommended, Distinguished), and covariates for Grade 10 state reading Z-score and Grade 10 writing score. Each PSM used nearest-neighbor matching with one treatment student matched to one control student.

Models A-G are described below only relative to Research Question 1 (RQ1) for the sake of brevity, but Table 1 includes findings for all three research questions.

Research Question 1 description: The only sampling constraint imposed for Model A was that students in the SD Read group had to have taken and passed an exit level non-accelerated, separate developmental reading course and the students in the INRW group had to have taken and passed an exit level accelerated integrated reading and writing course. However, the SD Read group potentially includes two sub-groups of students: those who took only SD reading and those who took both SD reading and SD writing. These two sub-groups of students are likely to represent different levels of reading ability. Therefore, to reduce potential noise in the initial Model A results, for Model B the sample was refined by removing the students who took both SD reading and SD writing and included only students who took an SD reading course. Model C involved further constraints on the SD Read group sample because students who also took an INRW course were removed. Model D was the same as Model C except students from the INRW group who enrolled in either SD reading or SD writing were removed. In Model D, students in the INRW group could be in the INRW course because they were not college-ready in reading, not college-ready in writing, or not college-ready in both reading and writing. Because of this sample heterogeneity, Model E was constructed to include the sampling constraints of Model D plus the addition of the three TSI assessment variables that account for some of the basic differences in students' reading and writing ability. Model F used the same sampling constraints and logistic regression variables as Model E, but a PSM-based matching of SD reading and INRW students was conducted after selecting the samples and prior to conducting the logistic regression model. Model G was identical to Model F, except the SD group included students who took both SD reading and SD writing (and not INRW). The most rigorous samples started with the High School data and Model H was based on the same sample constraints as Model F above.

What We Discovered

The models described above are presented in Table 1, with the outcome of the analysis of each model provided in the final column. Unless otherwise noted, the outcomes are significant at the $p \leq 0.05$ level. The directionality of the "greater-than" sign in the rightmost column of the table indicates whether the treatment (INRW) or the control (separate developmental reading and/or writing) condition had the greater positive outcome effect. For example, INRW > SD Read means that students enrolled in INRW were significantly more likely than students who only took separate developmental reading to pass their first reading-intensive course. An equals sign (=) indicates no significant difference between the treatment or the control groups.

Table 1. Analysis Models and Results by Sampling Strategy and Research Question

Community College Dataset Sampling Strategy				
Model	Sample Description RQ1	Sample Description RQ2	Sample Description RQ3	Results
A	CC Students who took SD Reading VS. CC Students who took INRW	CC Students who took SD Writing VS. CC Students who took INRW		RQ1: INRW > SD Read RQ2: INRW > SD Write
B	CC Students who took SD Reading but not SD Writing VS. CC Students who took INRW	CC Students who took SD Writing but not SD Reading VS. CC Students who took INRW		RQ1: INRW > SD Read RQ2: INRW > SD Write
C	CC Students who took SD Reading	CC Students who took SD Writing		RQ1: INRW > SD Read[#]

	but not SD Writing or INRW VS. CC Students who took INRW	but not SD Reading or INRW VS. CC Students who took INRW		RQ2: INRW > SD Write
D	CC Students who took SD Reading but not SD Writing or INRW VS. CC Students who took INRW but not SD Reading or SD Writing	CC Students who took SD Writing but not SD Reading or INRW VS. CC Students who took INRW but not SD Reading or SD Writing		RQ1: INRW = SD Read RQ2: INRW = SD Write
E	Model D with TSI variables added to logistic regression	Model D with TSI variables added to logistic regression		RQ1: INRW < SD Read RQ2: INRW = SD Write
F	Model E with PSM to match SD Reading and INRW samples	Model E with PSM to match SD Writing and INRW samples		RQ1: INRW < SD Read RQ2: INRW = SD Write
G			Model F (but students took SD Reading and Writing) with PSM to match SD Writing/Reading and INRW samples	RQ3: INRW# < SD Read & SD Write (college-level reading-intensive course) INRW < SD Read & SD Write (college-level writing-intensive course)
High School Dataset Sampling Strategy				
H	CC Students who took SD Reading but not SD Writing or INRW VS. CC Students who took INRW but not	CC Students who took SD Writing but not SD Reading or INRW VS. CC Students who took INRW but not		RQ1: INRW < SD Read RQ2: INRW < SD Write

	SD Reading or SD Writing	SD Reading or SD Writing		
I			CC Students who took SD Reading and SD Writing, but not INRW VS. CC Students who took INRW, but not SD Reading or SD Writing	RQ3: INRW < SD Read & SD Write (college-level reading-intensive course) INRW < SD Read & SD Write (college-level writing-intensive course)

Note: # indicates that the relationship was marginally significant ($0.10 > p > 0.05$).

The more precise the sampling strategy and analysis – particularly in terms of comparisons of matched students – the more likely to be a positive outcome for students who took separate, non-accelerated developmental reading and/or writing courses than those who took an accelerated INRW course.

Importantly, a post-hoc hierarchical linear model was conducted and an effect for the institution was found. There are community colleges in Texas that are successfully implementing this accelerated INRW approach; meaning that in some colleges, students are passing the INRW course, matriculating to college-level courses, and passing their college-level reading- and writing-intensive courses at higher rates than students who take the separate developmental reading and/or writing courses. The findings presented here are for the state as a whole.

The integration of reading and writing processes has a strong theoretical foundation in the field of literacy; however, an accelerated approach is not necessarily a part of that theoretical foundation. The INRW course structure used in Texas and examined here involved an accelerated structure, and the assumption is that the accelerated structure influenced the results.

The goal of this study involved informing whether accelerated INRW coursework outperformed non-accelerated, separate developmental reading and developmental writing coursework in terms of student success in a subsequent reading-intensive or writing-intensive college-level course.

It is important to consider approaches in methodology and sampling when considering the results of this study. The different sampling strategies used in the models presented here progressed from least specific and unconstrained to most specific and constrained, and each progressive model allowed a more sophisticated understanding of which populations were being compared. The population of 3.7 million community college students in the database allowed for a sample of approximately 150,000 students who enrolled in developmental reading, 150,000 students who enrolled in developmental writing, and 45,000 who enrolled in INRW. The large sample size allowed statistical tests to be employed on numbers not usually associated with studies of developmental education. In addition, control and treatment students were statistically matched based on their academic performance during both high school and community college, which is likely to create treatment and control groups that are more similar than was possible in previous studies.

Limitations: The analysis described here only measures the structures, not the curriculum – curricular information is not part of the database. The statewide mandate was specific to exit level courses (highest level), so that is what was measured. There may be different effects of INRW at different placement levels. The outcome metric in this set of analyses was limited to passing college-level reading and writing- intensive coursework, as appropriate. There may be different results if different metrics are used.

Policy Recommendations

The more precise the sampling strategy and analysis that were employed in this project, the more the results indicated that students who completed the accelerated INRW course were less likely to pass their first college-level reading-intensive or writing-intensive course than students who completed the non-accelerated, separate developmental reading course and/or the non-accelerated, separate developmental writing course. The rigorous methods employed in this study provide robust results that colleges may want to consider. While accelerated programs can deliver students to their first college-level courses faster than non-accelerated sequences, colleges may want to weigh the cost of having students arriving in those courses less likely to pass them.

It is likely that the approach of taking two separate courses with separate SLOs and combining them into one accelerated class that allows for 33% less time and 50% fewer contact hours than taking separate developmental reading and writing courses to achieve those educational outcomes plays a role in the effectiveness in the INRW course structure in preparing students for college-level coursework. For that reason, one recommendation is to allow community colleges to offer INRW in non-accelerated formats and track the efficacy of those course structures.

References

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