

**I CAN Learn[®] Results in Milwaukee, Wisconsin
9th Grade, 2002-2004**

ed-cet, inc.
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The *I CAN Learn*[®] Education System

The Interactive Computer Aided Natural Learning system (*I CAN Learn*[®]) was created in 1995 as a complete education software system to deliver standards-based algebra and pre-algebra courses to middle and high school students. It is designed as a stand-alone system to be used as the primary mode of instruction, not solely as a remedial or enrichment tool. Students using the *I CAN Learn*[®] curriculum work at their own pace in a classroom with a one-to-one student to computer ratio. Teachers facilitate instruction by offering individual and small-group instruction as needed. The Classroom Explorer management tool enables teachers to track student progress in real time and identify areas of concern on an individual student basis.

Theoretical and empirical support for the *I CAN Learn*[®] system comes primarily from Madeline Hunter's work on direct instruction. Hunter (1993, 1995) concluded that effective teachers consistently use eight elements to present lessons. Her research showed these elements to be effective regardless of the teacher's style, student background, grade level, or subject. The eight elements of effective teaching, according to Hunter are:

- 1) Anticipatory Set - A short activity or prompt to focus the students' attention.
- 2) Purpose – Explicit statement of the reason for learning the day's lesson and how learning will be demonstrated.
- 3) Input - The skills and concepts to be taught.
- 4) Modeling - Teacher demonstration of what is to be learned.
- 5) Guided Practice – Teacher-led student practice of the skills and concepts.
- 6) Checking For Understanding - Mechanism for verifying that the student is acquiring skills and concepts.
- 7) Independent Practice – Student work without guidance during the process but with feedback after completion.
- 8) Closure - A review or wrap-up of the lesson.

Each interactive *I CAN Learn*[®] lesson uses the Direct Instruction method and includes a pretest, review, lesson presentation, guided practice and post-test. Also

included are cumulative reviews, "real world" applications, and cumulative tests to facilitate and assess retention. Every *I CAN Learn*[®] lesson was developed and written by experienced educators and incorporates national and state performance standards.

***I CAN Learn*[®] Algebra I in Milwaukee**

I CAN Learn[®] Algebra I, was installed in five Milwaukee high schools in late Spring 2002. In two schools, nearly every Algebra I student used the intervention. There were enough students in three of the five schools to have both *I CAN Learn*[®] Algebra I classes and traditionally-taught Algebra I classes. These schools are considered in the analyses as they included valid comparison groups.

Instrumentation. The Wisconsin Knowledge and Concepts Examinations (WKCE) are given annually to students at grades 4, 8, and 10. These standardized tests include commercially-developed questions used in schools across the country and questions developed specifically for Wisconsin to improve coverage of Wisconsin academic standards. The WKCE measures achievement in reading, language arts, mathematics, science, and social studies using multiple-choice and short-answer questions. Since September 2002, WKCE scores are used as one of several criteria for advancing students from fourth to fifth grade and from eighth to ninth grade.

Students in 9th grade do not take the WKCE, but it is administered in November of each year to 10th grade students. Thus, the 10th grade scores of students who took Algebra I in 9th grade during the 2002-2003 and 2003-2004 school years are used as the dependent measure in this study. All data were provided by the Milwaukee Department of Instruction and analyzed by the research group, *ed-cet, inc.*

Group Equivalency. Although the students were not randomly assigned to groups, prior year test scores could be used to determine initial group equivalency. Prior to implementation of *I CAN Learn*[®] Algebra I, there were no significant differences in mean scores of the two groups on the WKCE administered in 8th grade—in either the 2002-2003 or 2003-2004 school years. Thus, posttest comparisons could be made without threat of pre-treatment differences.

2002-2003

2002-2003 Sample. The first sample consisted of all students in 9th grade taking Algebra I in 2002-2003 who also took the WKCE in 10th grade in November 2003. It consisted of 806 students—625 in traditionally-taught classes and 181 in *I CAN Learn*[®] classes. Of these, 3.2% of the traditional students and 2.8% of the *I CAN Learn*[®] students had limited English proficiency (LEP). Also, 18.6% of the traditional students and 12.2% of the *I CAN Learn*[®] students had special education classifications. Although Chi square analyses showed that the differences were not statistically significant, these students were not included in the analyses to alleviate the concern that the *I CAN Learn*[®] group may have been more advanced in math achievement. The final sample consisted of 501 traditional students and 156 *I CAN Learn*[®] students.

The *I CAN Learn*[®] sample and traditional sample were statistically equivalent with regard to gender (52.6% and 53.7% female, respectively), ethnicity (96.2% and 95.0% African American, respectively), and percentage of students receiving free or reduced price lunch (76.2% and 73.5%, respectively).

2002-2003 Results. After implementation of *I CAN Learn*[®] Algebra I in 2002-2003, the mean posttest scores on the WKCE administered in November of the 10th grade year showed significant advantages ($F = 5.18$; $p = .02$) for Algebra *I CAN Learn*[®] students. Neither the school nor the school ($F = 2.74$; $p = .07$) by instructional method interaction ($F = .40$; $p = .67$) was statistically significant. The mean comparisons are shown in Table 1 and graphically displayed in Figure 1.

Table 1
2002-2003 10th grade WKCE means by instructional method and school

2002-2003 school year	Traditionally-taught Algebra I students		<i>I CAN Learn</i> [®] Algebra I students	
	<i>n</i>	<i>Mean</i>	<i>n</i>	<i>Mean</i>
10 th grade WKCE				
School 1	142	687.2	64	697.3
School 2	85	674.5	40	687.4
School 3	274	688.8	52	693.1
Total	501	685.9	156	693.4

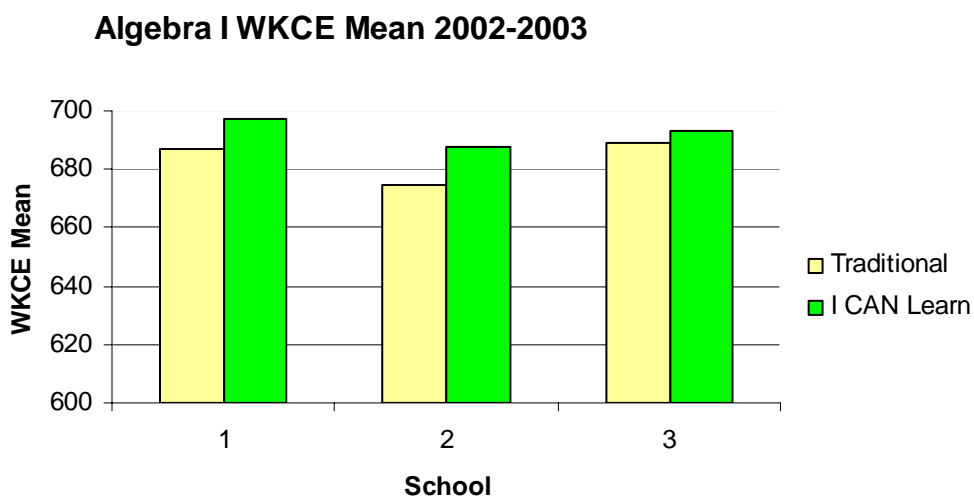


Figure 1. WKCE math means by instructional method

2003-2004

2003-1004 Sample. The second sample consisted of all students in 9th grade taking Algebra I in 2003-2004 who also took the WKCE in 10th grade in November 2004. It consisted of 583 students—430 in traditionally-taught classes and 153 in *I CAN Learn*[®] classes. Again, slightly more *I CAN Learn*[®] students were classified as LEP and in special education. Again, however, the results were not statistically significant. Nonetheless, these students were not included in the analyses. 3.1% of the traditional students and 2.3% of the *I CAN Learn*[®] students had limited English proficiency. 17.9% of the traditional students and 14.4% of the *I CAN Learn*[®] students had special education classifications. The final sample consisted of 346 traditional students and 131 *I CAN Learn*[®] students.

The *I CAN Learn*[®] sample and traditional sample were statistically equivalent with regard to gender (48.1% and 54.0% female, respectively), ethnicity (98.5% and 94.5% African American, respectively), and percentage of students receiving free or reduced price lunch (84.7% and 79.2%, respectively).

2003-2004 Results. After implementation of *I CAN Learn*[®] Algebra I in 2003-2004, the mean posttest scores on the WKCE administered in November of the 10th grade year showed significant advantages for the school by method interaction ($F = 5.28$; $p = .005$). Neither the school ($F = .81$; $p = .45$) nor the method alone ($F = .89$; $p = .35$) was statistically significant. The mean comparisons are displayed in Table 2. Students using *I CAN Learn*[®] Algebra I in two of three schools scored higher than their traditionally-taught counterparts.

Table 2

2003-2004 10th grade WKCE means by instructional method and school

2003-2004 school year	Traditionally-taught Algebra I students		<i>I CAN Learn</i> [®] Algebra I students	
	<i>n</i>	<i>Mean</i>	<i>n</i>	<i>Mean</i>
10 th grade WKCE				
School 1	130	696.2	60	683.9
School 2	71	687.2	25	703.8
School 3	145	690.8	46	697.1
Total	346	692.1	131	692.4

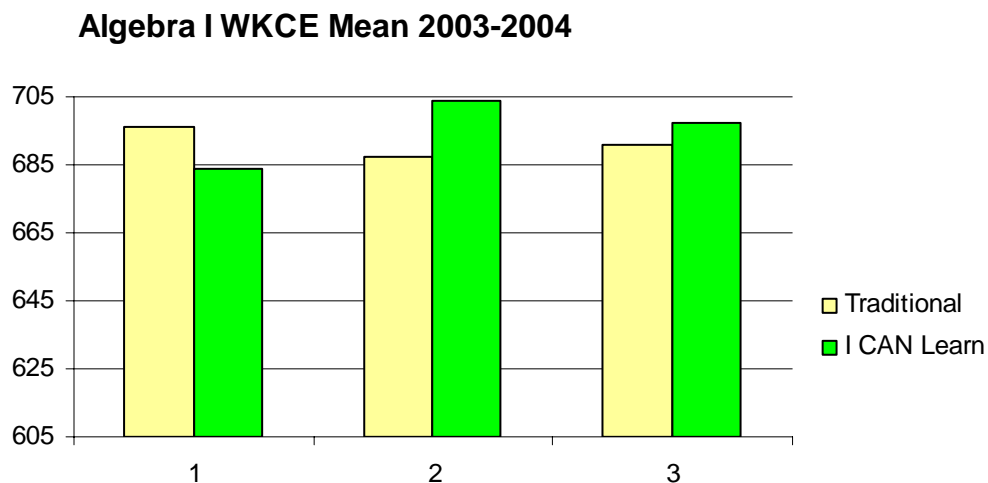


Figure 2. WKCE math means by instructional method

Students with Special Needs

Because the majority of students with Limited English Proficiency (LEP) and/or special needs were in traditionally-taught classes, they were not included in any of the above analyses. Only the group of students with learning disabilities in 2002-2003 was large enough under both teaching methods to compare results. Of the 75 students with learning disabilities in 2002-2003, the *I CAN Learn*[®] students averaged 658.5 on the 10th grade WKCE, while the traditionally-taught students averaged only 646.1. These differences were not statistically significant ($F=.20$; $p=.65$).

Gender, Ethnicity, and Socioeconomic Status

There were no significant differences in test scores based on students' ethnicity, gender, or socioeconomic status as determined by eligibility for free or reduced-price lunch. In general, *I CAN Learn*[®] students outperformed traditionally-taught students regardless of these factors.

Reference

Wisconsin Department of Public Instruction. (April 2003, revised January 2005). No Child Left Behind Act of 2001, *Consolidated State Application Accountability Workbook For State Grants under Title IX, Part C, Section 9302 of the Elementary and Secondary Education Act (Public Law 107-110)*. [Retrieved November 2005 from <http://www.dpi.state.wi.us/dpi/esea/pdf/wiaw.pdf>]