



The Effects of the Different Ways of Knowing Middle Grades Model on Student Achievement in an Urban School District

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Comprehensive School Reform (CSR):

- Federally funded in 1999
- Schools receive \$50k per year for 3 years
- Whole School Models



Comprehensive School Reform (CSR):

- Elements of CSR
 - Employs proven methods and strategies based on scientifically-based research.
 - Integrates a comprehensive design with aligned components.
 - Provides ongoing, high-quality professional development for teachers and staff.



Comprehensive School Reform (CSR):

- Elements of CSR
 - Includes measurable goals and benchmarks for student achievement.
 - Is supported within the school by teachers, administrators, and staff.
 - Provides support for teachers, administrators and staff.



Comprehensive School Reform (CSR):

- Elements of CSR
 - Provides for meaningful parent and community involvement in planning, implementing and evaluating school improvement activities.
 - Uses high-quality external technical support and assistance from an external partner with experience and expertise in schoolwide reform and improvement.

Comprehensive School Reform (CSR):

- Elements of CSR
 - Plans for the evaluation of strategies for the implementation of school reforms and for student achievement, annually.
 - Identifies resources to support and sustain the school's comprehensive reform effort.
 - Has been found to significantly improve the academic achievement of students or has strong evidence that it will.

What is Scientifically-based Research?

- National Research Council
 - Pose significant questions that can be investigated empirically.
 - Link research to relevant theory.
 - Use methods that permit direct investigation of the questions.

What is Scientifically-based Research?

- National Research Council
 - Provide a coherent and explicit chain of reasoning.
 - Yield findings that replicate and generalize across studies.
 - Disclose research data and methods to enable and encourage professional scrutiny and critique.

Why Educational Researchers need SBR:

- After over 50 years, little valid evidence has been produced about “what works.”
- Tens of 1000s of research studies that have little to do with classroom realities have been published in journals and presented at AERA.

Why Educational Researchers need SBR:

- In the past decade there has been a proliferation of “softer” descriptive and qualitative studies giving impressions rather than proof of program effectiveness.
- It has often been researchers from outside education (sociology, economics, psychology, agriculture) that have produced the more rigorous and influential studies.



What Researchers should like about SBR:

- “Raises the bar” for credibility and applicability.
- Gives more attention to the importance of educational research.
- Elevates the status of educational researchers and the “science” of such research.

The Present Study:

Purpose:

Assess Impacts of Different Ways of Knowing (DWoK) for Middle Grades model.

Context:

Three urban DWoK schools completing two years of implementation.

Research Questions:

How well is the model being implemented at the school sites? High/low fidelity?

In what ways has the model resulted in improvements in student achievement, teacher practice, and other components of comprehensive school reform?



The Different Ways of Knowing Model

- Elementary school model developed in 1989 by the Galef Institute.
- Builds on “multiple intelligences” (e.g., artistic, mathematical, social, language).
- Emphasizes thematic units that integrate the learning of basic literacy and mathematics skills with artistic experiences.



The Different Ways of Knowing Model

- Qualifies as a New American Schools design and is a member of the Public Education Network.
- DWoK for the Middle Grades was developed starting in 2000 and designed to:



The Different Ways of Knowing Model

- provide experiences for young adolescents that are responsive to their academic, developmental, and social needs.
- support schools and districts to meet the requirements of No Child Left Behind.
- Provide a menu of services that reduce achievement gaps for all student groups.



The Different Ways of Knowing Model

- support state-developed essential components and guidelines for effective middle-grades programs.
- operationalize the recommendations of *Turning Points 2000*.



Professional Development Emphasizes:

- Standards-based planning in curriculum, assessment, and instruction.
- Student inquiry and self-directed learning.
- Comprehensive schoolwide literacy program, including expert strategies in reading and writing.



Professional Development Emphasizes:

- Integrating the arts for deeper content learning.
- Shared leadership for results.

Research Design:

Participants

- Three urban schools (implementation/achievement)
- Two rural schools (implementation)

Matching Procedure

- poverty
- student mobility
- Attendance
- special education
- single-parent households
- Accountability Index (AI)

School Level Matching Data for Treatment and Control Schools at Baseline Year

School	N	% Poverty	% Mobility	% Attendance	% ECE	% Single Household	Accountability Index
DWoK A	857	47.3	11.3	93.1	14.1	60.6	65.4
Control A	962	43.2	10.6	94.7	11.0	50.7	64.5
DWoK B	915	39.1	10.6	93.2	13.1	50.8	58.6
Control B	625	41.0	13.2	93.1	13.8	53.5	57.0
DWoK C	945	38.9	12.7	94.4	13.8	54.5	62.3
Control C	831	43.9	12.0	92.6	14.0	53.5	58.6

Note. Accountability Index includes academic (e.g., reading, math, science, social studies) and non-academic (attendance, retention) indicators.

A summary of analyses comparing DWoK to control schools on student achievement

Outcome Measure	Year ^a	Analysis	Covariate(s)
7 th Grade KCCT Reading	2001-02 ^a	ANCOVA	6 th Grade CTBS Reading Gender
6 th Grade CTBS Reading Language Arts Mathematics	2002-03 ^b	MANCOVA	Race Poverty ^b
7 th Grade KCCT Reading	2002-03 ^b	ANCOVA	6 th grade SDRT
7 th Grade KCCT Humanities & Arts	2002-03 ^b	ANCOVA	6 th grade SDRT

Note: KCCT = Kentucky Core Content Test, CTBS = Comprehensive Test of Basic Skills, SDRT = Stanford Diagnostic Reading Test

^aYear 1 of DWoK implementation; ^bYear 2



Results:

Implementation Progress

- At one of the three schools implementation was strong.
- At a second school, implementation went well overall, although the school is committed to many other programs and initiatives.
- At a third school, implementation was “surface level.”

Results:

Implementation Progress

- Most schools were interested in receiving the professional development services rather than being true “co-developers” of the model.
- At two of the schools, there was solid teacher support for DWoK.
- Most effective elements were viewed as involvement in literacy and standards-based curricula.



Results:

Implementation Progress

- Least effective element was lack of planning.
- Student learning, cooperation, and enthusiasm were viewed as improving.



Results:

Implementation Progress

- Improvements were observed in teacher sharing and engagement in professional development sessions.
- Parent support and involvement has been low at most of the schools.

Achievement Results: Year 1

Overall sample: 7th Grade KCCT Reading

- ANCOVA: 6th grade (CTBS Reading and Gender)
- Significant program effect:
 $F(1,1281) = 3.94, p = .047, \eta^2 = .003$
- School comparisons:

Pair A: DWoK > Control

Pair B: No difference

Pair C: DWoK > Control

Achievement Results: Year 2

Overall sample: 6th Grade CTBS Subtests

- MANCOVA (race, poverty) on CTBS reading, language arts, and mathematics
- Significant overall program effect,
 $F(3, 1605) = 6.18, p < .001$
- Follow-up univariate tests were significant (all p 's $< .001$ on all three subtests:

Effect sizes all favored DWoK, ranging from +0.16 to +0.18

Achievement Results: Year 2

7th Grade KCCT Reading Test Scores

- ANCOVA (fall SRDT scores)
- Significant Program effect
[$F(1, 1589) = 5.81, p = .016, ES = +0.17$]
- DWoK ($M_{adj} = 511.78$) > Control ($M_{adj} = 508.84$)

Achievement Results: Year 2

7th Grade KCCT Arts & Humanities Test

- ANCOVA (fall SRDT scores)
- No Program effect, [$F(1,1569) = .002, p = .962$]

Student Attendance Results:

Overall Sample

- DWoK school attendance decreased by about 0.60 of a percentage point from the baseline year to Year 2 of implementation.
- Control schools decreased by 1.37 points.
- Repeated measures ANOVA:
(DWoK vs. control) x (three years of attendance).

Student Attendance Results:

Overall Sample

- Significant program x year interaction
[$F(2, 2490) = 9.73, p < .001, \eta^2 = .08$].

In Year 3 (2002-03) only:

DWoK ($M = 94.74$) >

Control mean ($M = 93.61$), $t(1245) = 3.35, p < .001,$
 $ES = . +0.19.$



Conclusions:

- Positive DWoK implementation and achievement outcomes.
- Overall advantages (ES = +0.19) over matched control schools on seventh-grade KCCT Reading (Year 1).

Conclusions:

- Effect sizes of +0.10-+017 in Year 2 on all three CTBS subtests in sixth grade and on KCCT Reading in seventh-grade.

(Borman et al.'s found effect sizes of .15 to .21 for models having the "strongest evidence of effectiveness.")



Conclusions:

- DWoK appeared to positively impact on student sharing, engagement, and enthusiasm, and teacher instruction and involvement.
- Future research needs to focus on sustainability and more in-depth analyses of implementation and classroom activities.