IN THE COURT OF APPEALS
OF THE STATE OF WASHINGTON
DIVISION ONE

NO. 65036-0-I

SEATTLE SCHOOL DISTRICT NO. 1, IN KING COUNTY, STATE OF WASHINGTON, BOARD OF DIRECTORS OF SEATTLE SCHOOL DISTRICT NO. 1, and MARIA GOODLOE-JOHNSON, Superintendent and Secretary of the Board,

Appellants,

v.

DA-ZANNE PORTER, MARTHA MCCLAREN, and CLIFFORD MASS,

Respondents.

BRIEF OF RESPONDENTS

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TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page

Cases

Statutes

Other Authorities

Constitutional Provisions

I. INTRODUCTION

Although the Seattle School District (District) has wide latitude in selecting educational programs, it must do so with the welfare of all students in mind, and may not make arbitrary and capricious decisions. The King County Superior Court correctly found that the Seattle School Board of Directors (Board)'s selection of Key Curriculum Press' Discovering Series (Discovering Series) of math textbooks was an arbitrary and capricious decision given the weight of evidence in the record that the inquiry-based methodology exemplified in the Discovering Series has failed to adequately educate a significant percentage of the District's students, including having a disproportionate impact on low income and racial minorities.[1] Although the District seeks to cast the Superior Court's reversal as a substitution of the Superior Court's judgment for that of the District, the Superior Court did nothing of the kind. Instead, the Superior Court correctly evaluated the record, found insufficient evidence and an inadequate explanation for why the District

[1] The District's briefing discusses the District's contemporaneous selection of advanced mathematics texts in precalculus, calculus, and statistics. But these texts were not challenged, even though they were adopted at the same time as the challenged texts. The District need not justify its decision to select those separate texts now; the only issue before the Superior Court and this court is the District's selection of the core Discovering Series of Algebra, Geometry, and Advanced Algebra.

reached its decision, and remanded the matter for further consideration by the Board. Rather than accept the remand and reconsider the decision with due regard to the evidence in the record, the District engages in the same failed focus on the procedural steps taken that failed to convince the Superior Court that its decision was anything other than an arbitrary and capricious choice. The Superior Court's remand should be affirmed, and the District required to re-evaluate whether the evidence supports its selection of this series of math texts.

The selection of the Discovering Series was the end-stage of a long, unsuccessful experiment with alternate methods of teaching math. In the early to mid-1990s, the Seattle School District began experimenting with different methods of teaching math,[2] introducing the Integrated Math high school text series; Integrated Math melded algebra, geometry, trigonometry and other topics together into three successive "integrated" texts. In 2008, the District began weighing options for a new series of

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[2] The District was not alone in this experiment. Nationwide, many schools experimented with various different methods of teaching mathematics; disputes over the best method became known as the "Math Wars." Further information on the national debate, and the burgeoning realization across the nation that the various "new math" "reform" methods of instruction are less effective than the traditional method of direct instruction was presented to the Board and can be found in the record at Transcript of Evidence (TE) 1205-1214.

high school math instruction materials. There was little momentum to continue with Integrated Math; instead, the District principally weighed switching high school instruction to the "inquiry based" model that had been adopted in elementary and middle schools, and pointedly ignored a wave of community and expert sentiment urging a return to traditional math instruction methods.

The traditional method of teaching math, known as "explicit" or "direct" instruction, moves through discrete topics allowing students to master them before advancing. According to the U.S. Department of Education, explicit instruction consists of teachers providing clear models for solving a problem type using an array of examples. Transcript of Evidence (TE)[3] 1113. In addition, students receive extensive practice in the use of newly learned strategies and skills, students are provided with opportunities to think aloud (i.e., talk through the decisions they make and the steps they take), and students are provided with extensive feedback.

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[3] A review of school district action is conducted on the transcript of evidence. RCW 28A.645.020. The District produced an incomplete transcript of evidence, and the respondents were required to supplement that transcript. The Superior Court transmitted the original transcript of evidence as an exhibit, but the supplement as clerk's papers. Thus, some TE pages are available as originals, while others are independently also numbered as CP 15-315. Each page is labeled with a TE number, however, and respondents refer to the TE cite herein.

By contrast, the experimental method commonly used by the District, known as "inquiry-based" instruction,[4] focuses instead on presenting students in small groups with a problem, and then encouraging them to devise ways of solving it. Teachers are expressly discouraged from giving examples and strategies; discussion consists of students sharing their approaches to the problem, whether successful or not.

In the last decade, the District has utilized a range of elementary and middle-school math texts, most of which use inquiry-based methods. Unfortunately, both academic research and WASL test scores demonstrate that inquiry-based instruction only works for certain students. Anecdotal evidence suggests that some "mathematically gifted" students, and students who are not distracted from learning by difficulties with English or other life issues, may do well at inquiry-based math. But other students have difficulty, and the District has seen a stagnant achievement gap in mathematics between low-income and higher-income students, between white and non-white students, and between English language learners and native speakers.

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[4] Also known as "constructivist," "discovery," "reform" math, among other names.

Despite clear evidence in the record and in citizen comments that inquiry-based instruction is flawed and is only working for some few of Seattle's students, in May, 2009, the District recommended and the School Board adopted high school math texts – the Discovering Series – that rely on inquiry-based instruction. Some of the reasoning behind that decision consisted of ignoring evidence in the record: In selecting the Discovering Series, the District noted that the Office of the Superintendent of Public Instruction (OSPI) had initially ranked it as the second-highest rated series in a draft report, but ignored the implications of a later report finding that the series was "mathematically unsound." Further, the District ignored the implications of the fact that OSPI ultimately recommended only one of four sets of texts, Holt, which had been rejected by the District's Instructional Materials Committee (Committee) in an early round of discussion. This rejection was a clear indication that the Committee and the Board were predisposed towards inquiry-based curriculum, regardless of evidence of its failures. Other reasoning behind the selection of the Discovering Series appears to be simply arbitrary: The Committee members and then at least one Board member relied on their own non-minority and/or "mathematically gifted"[5] children's experience with the

[5] In the words of an Instructional Materials Committee member.

books, rather than looking at WASL and other objective data in the record demonstrating that similar "reform" or inquiry-based texts were failing a large percentage of the District's students.

Significantly, nowhere in the record is there any indication that the District weighed WASL scores or the achievement gap in considering which math series to choose; the record itself is a disorganized mass of paper, with no explanation for whether the District properly considered any particular piece of evidence, or how it was weighted. By contrast, the Superior Court carefully weighed all the evidence in the record, including working through the texts themselves. Transcript at P. 3, Ln. 16-19. The Superior Court correctly found that the Board's decision was arbitrary and capricious, and remanded the matter for the Board to further investigate.

II. PROCEDURAL STATEMENT OF FACTS

Because the inquiry in this matter is fact-intensive, Plaintiffs present only a procedural summary here, and provide a statement of relevant substantive facts in the argument section.

In January, 2009, the Office of the Superintendent of Public Instruction (OSPI) issued an initial report ranking high school math textbooks, according to their congruence with the new state mathematics standards. OSPI listed a series by the Holt Company (Holt Series) as

number one, and the Discovering Series as number two. TE 652-820. Pursuant to statute, the texts evaluated in the report were then evaluated by an expert committee selected by the Washington State Board of Education for mathematical soundness prior to a final recommendation from OSPI.

While the mathematical soundness of the Discovering Series was still being evaluated by the State, in March 2009, the Instructional Materials Committee selected by the District recommended that the District adopt the Discovering Series of math textbooks for high school basic math instruction. TE 499-516. On March 11, 2009, as required by statute, the Washington State Board of Education published its evaluation of the basic mathematical soundness of the textbooks considered in the January, 2009 OSPI report. TE 821-865. That study found the Discovering Series was "mathematically unsound." TE 824. That fact was communicated to the School Board. TE 1146, 1185, 1218-23. On April 8, 2009, despite the finding that the Discovering Series was mathematically unsound, the Superintendent issued her School Board Action Report, asking the Board to adopt the Discovering Series. TE 521-48.[6] On May 4, 2009, OSPI issued its final recommendations on math texts, recommending only the Holt Series, and not the Discovering

[6] A second report was issued on April 22, 2009. TE 961-85.

Series. TE 1057, 1056, 1064. On May 6, 2009, in a 4-3 vote, the Board chose the Discovering Series as the District's high school math materials. TE 1079. Three citizens – including a parent of a Seattle Public School child, a grandparent of a Seattle Public School child, and a University of Washington professor who has watched the mathematical competence of entering students steadily decline due to reform math – timely filed an appeal. On February 4, 2010, the Honorable Julie Spector reversed the decision of the Board for further inquiry, finding that the decision of the Board was arbitrary and capricious. Judge Spector did not separately find that the District's decision violated the Constitution's guarantee of an equal education for all.

III. ARGUMENT

A. The District Misstates the Superior Court's Holding.

The District argues that the Superior Court "substituted its judgment" for that of the School Board. Brief of Appellants Seattle School District (District's Brief) at 1, and passim. This argument misstates the holding, and misunderstands the Superior Court's authority. The Superior Court remanded the matter for further consideration by the school board – the only action the Superior Court was empowered to take. CP 395-97.

Thus, judgment has not been substituted, and the District has the authority to consider the matter anew.

B. Standard of Review

This court reviews the District's decision under an arbitrary and capricious standard, with de novo review of the Superior Court's decision to remand. It may separately uphold the Superior Court's determination under Article IX, Section I of the Washington Constitution applying a de novo review of the District's action.

RCW 28A.645.010 governs judicial review of school board action and provides in pertinent part:

> Any person, or persons, either severally or collectively, aggrieved by any decision or order of any school official or board, within thirty days after the rendition of such decision or order, or of the failure to act upon the same when properly presented, may appeal the same to the superior court of the county in which the school district or part thereof is situated[.]

RCW 28A.645.030 provides that any decision appealed under RCW 28A.645.010 is heard de novo by the reviewing court. Any decision by the Board adversely affecting a party may be reviewed by a court for whether the agency acted "arbitrarily, capriciously, or contrary to law." *Haynes v. Seattle School Dist. No. 1*, 111 Wn.2d 250, 254-55, 758 P.2d 7

(1988). Respondents Porter et al. contend that review for whether the District's action violated the Constitution is heard de novo: RCW 28A.645.030 sets a de novo review standard, and *Haynes v. Seattle School Dist.* provides that a decision is reviewed for whether it is arbitrary, capricious **or** contrary to law. The District's decision is contrary to the Constitution, and that failure to abide by the law is thus reviewed de novo.

An agency action is arbitrary and capricious if it is willful and unreasonable and taken without regard to the attending facts and circumstances. *Public Employee Relations Comm'n v. City of Vancouver*, 107 Wn. App. 694, 704, 33 P.3d 74 (2001), *citing Towle v. Washington Dep't of Fish and Wildlife*, 94 Wn. App. 196, 209, 971 P.2d 591 (1999). Although the School Board is entitled to discretion in weighing competing information, an action is arbitrary and capricious if it is made without consideration of and in disregard of the facts and circumstances, or if it omits without explanation material facts. *Johnson v. Dep't of Health,* 133 Wn. App. 403, 414, 136 P.3d 730 (2006); see also William R. Andersen, The 1998 Washington Administrative Procedure Act-An Introduction, 64 Wash.L.Rev. 781, 839-41 (1989) (Discussing adjudicative decisions).

C. The District's Decision Was Arbitrary and Capricious, and Violated the Washington Constitution's Guarantee of an Equal Education for All.

1. The District's focus on the procedural steps taken in selecting the Discovering Series is misplaced.

The District focuses heavily on the procedure undertaken in selecting these particular textbooks, rather than the substantive information presented to the Board, including a heavy focus on the various committees formed by the District to evaluate these texts. District's Brief, esp. at pp. 4-17. But it is the School Board that has the final determination on whether to purchase a recommended set of textbooks, and the Board's decision that is subject to review for whether it is arbitrary, capricious, or contrary to law. RCW 28A.320.230; *Haynes v. Seattle School Dist. No. 1*, 111 Wn.2d at 254-55. The District's argument both replaces function with form and fails to disclose a key change in the information available to the various committees, as opposed to that available to the Board: the OSPI initially recommended the Discovering Series based on congruence with State standards, and that recommendation was relied on heavily by District committees. TE 587 (Instructional Materials Committee recommendation); 652-820 (OSPI initial recommendation); 966 (adoption committee recommendation). After the committees made their

recommendation, the OSPI completed its mathematical soundness review, and found the Discovering Series mathematically unsound. TE 821-865. The court's function in an administrative review is not to simply ensure that an adequate number of meetings were held or that deliberations took a particular amount of time; the arbitrary and capricious standard is not a rubber stamp. *Swinomish Indian Tribal Community v. Western Washington Growth Management Hearings Bd.*, 161 Wn.2d 415, 435, n.8, 166 P.3d 1198 (2007). The Board's failure to meaningfully evaluate the evidence in the record, and the District's decision to ignore the OSPI's findings and rely on outdated committee recommendations is arbitrary and capricious.

2. There is a significant difference between inquiry-based and explicit-instruction texts.

In this case, the Board considered which math texts to adopt for the District's high schools. A key inquiry was whether to continue with "integrated" (a non-traditional curriculum which intersperses algebra, geometry, trigonometry and other topics rather than introducing them in discrete order) math materials at the high school level, to switch the high school curriculum to a traditionally ordered explicit instruction system with algebra I, algebra II, and geometry presented in separate texts, or to

switch to a traditionally ordered inquiry-based system. There was little momentum for continuing with the integrated system, which had been in place during a time of stagnant test scores for many students. The difference between explicit instruction, as defined by the National Math Advisory Panel, and inquiry-based instruction is significant.

"Program Highlights" of the Discovering Series (TE 1020) provides a description of the inquiry-based structure of the curriculum:

> [S]olve problems based on contexts, often using technology, and in this way do mathematics through discovery. A typical day begins with an investigation that is structured through a series of questions designed to lead students through an opportunity to uncover or apply a mathematical concept. There are open-ended aspects to the investigation as students "practice" along the way with numbers or attributes they select.

TE 1020. By contrast, explicit instruction:[7]

> [M]eans that teachers provide clear models for solving a problem type using an array of examples, that students receive extensive practice in use of newly learned strategies and skills, that students are provided with opportunities to think aloud (i.e., talk through the decisions they make and the steps they take), and that students are provided with extensive feedback.

[7] Sometimes referred to as "direct instruction."

TE 1113.

Although the Discovering Series is an inquiry-based series, the publisher also produces separate "condensed lessons" that purport to deliver explicit instruction. TE 929-942. The "condensed lessons" are not in the primary textbooks, and appear to be available only online as a downloadable PDF file. They provide an alternative teaching method, but neither the text nor the District's adoption indicate that this alternative method should or can be used. In addition, the "condensed lessons," presented as an adjunct to inquiry-based texts, are severely truncated and cannot be said to represent high quality explicit lessons.

A simplified comparison between explicit and inquiry-based instruction can be found by comparing the main text of the Discovering Series to one of the condensed lessons. In Lesson 2.1 of the Discovering Algebra text, Proportions, the inquiry-based text of the primary book states:

> You can easily guess the value of *M* in the proportion 2/3 = M/6.
>
> In this investigation you'll examine ways to solve a proportion for an unknown number when guessing is not easy. It's hard to guess the value of *M* in the proportion M/19 = 56/133.

> Step 1 Multiply both sides of the proportion $M/19=56/133$ by 19. Why can you do this? What does M equal?
>
> Step 2 For each equation, choose a number to multiply both ratios by to solve the proportion for the unknown number. Then multiply and divide to find the missing value.
>
> A. $p/12 = 132/176$
>
> B. $21/35=Q/20$
>
> C. $L/30=30/200$
>
> D. $130/78 = n/15$.
>
> Step 3 Check that each proportion in Step 2 is true by replacing the variable with your answer.
>
> Step 4 In each equation in Step 2, the variables are in the numerator. **Write a brief explanation of one way to solve a proportion when one of the numerators is a variable.**

Discovering Algebra, Lesson 2.1, at p. 97 (bold emphasis added).

Learning through direct instruction, as cursorily presented in the "Condensed Lessons" would teach the same lesson this way:

> Steps 1-4 When you multiply both sides of an equation by the *same number*, the two sides remain equal to each other. You can use this idea to solve proportions

with a variable in one of the numerators. For example, you can solve *M*/19=56/133 by multiplying both sides by 19.

M/19=56/133

19**M*/19= 56/133*19

Multiply both sides by 19.

M=56/133*19

19/19 = 1

Multiply and divide.

You can check that the solution is correct by replacing *M* with 8 and making sure the resulting proportion, 8/19=56/133, is true.

TE 929 (italics emphasis in original). Thus, in inquiry-based instruction, students are presented with a problem and asked to "write a brief explanation" of the mathematical rule after experimenting. In direct instruction, students are told the rule, and then asked to apply it.

3. The Board was heavily split on selecting the Discovering Series.

The Board voted 4-3 to adopt the Discovering Series, over heavy opposition from Board members who understood that the Discovering Series would not aid every student. One of the Board Members who voted in favor of the Discovering Series mistakenly believed it was not an

inquiry-based series and relied on her own daughter's ability to use the texts, without considering the implication on children from different backgrounds. TE 1299. By contrast, dissenting Board President Michael DeBell understood the importance of selecting a particular series:

> Our role is critical in setting the goals and principals relative to the instructional materials . . instructional materials adoption has an extraordinarily long cycle. It tends to outlive Boards and Superintendents. . . [o]nce we adopt, we carry on with the quality of materials that we have chosen and the limitations of those materials become our limitations – for many years.[8]

Director DeBell noted issues with the Discovering Series' impact on students other than affluent native English speakers:

> San Diego Unified School District has abandoned this particular text and has adopted a different text. I tried to understand their reasoning for that. It is always complicated, but they have a high poverty, high ELL[9] school population. And what I learned in particular was that the text-rich nature of this instruction and the lack of real value as a reference material was particularly troubling, especially when it came to geometry, which was pointed out by

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[8] The District has provided DVDs rather than transcripts of Board meetings. Director DeBell's comments are found at TE 1085, from 3:00:27 on (Ch. 19 on the DVD). His comments have been excerpted but not otherwise intentionally edited here.

[9] English Language Learner.

> several folks in testimony that geometry is presented as a series of conjectures and that really goes against the nature of math instruction for the last many, many generations.

Director DeBell also noted the negative impacts of choosing an inquiry-based series on an entire generation of schoolchildren of varying math ability:

> This is where we should really be paying attention. This is where we as a School District, as a city, should really be alarmed and take pause and say: We need the best instruction we can get. We need the best texts we can get. Because our jobs are being exported to those countries where there is technical fluency, where blueprints can be done on computers by Indian students, or what have you. . . . I say all of that because when I look at the kinds of instruction that is used in those countries, it is much more of a traditional nature – directed instruction. And much more based on mastery, and much less of an inquiry-based model. The United States has really uniquely tried this experiment. It has gone on for a long time. I believe this text is still based on that kind of pedagogy, and therefore I can't support it.

The record supports Director DeBell's concerns, and demonstrates that the four board members who voted for the series did so for either mistaken or arbitrary reasons, without considering the impact of the Discovering Series on the entire student population.

4. The selection of the Discovering Series violates the Washington Constitution's guarantee of an equal education for all and is arbitrary and capricious because empirical evidence in the record demonstrates that inquiry-based instruction does not work for many ethnic minority, ELL, and low-income students.[10] The selection of a math instruction method that has demonstrably failed to improve standardized testing scores is arbitrary and capricious.

In selecting a math textbook, the District recognized that there was an achievement gap between racial groups, and that gap could best be evaluated by looking at district-wide 2008 10th grade WASL data under existing instructional methods. TE 522-23. The District then failed to take the necessary next step and look at WASL data for high school experiments with inquiry-based instruction, and other grades wherein the district relied on inquiry-based instruction. TE 522-23. This data was provided by citizens and District teachers to the Board, and demonstrated that inquiry-based instruction is ineffective.

Article IX, Section I of the Washington Constitution provides that it is the "paramount duty of the [S]tate to make ample provision for the education of all children residing within its borders, without distinction or

[10] The Superior Court did not find that the selection of the texts violated the Washington Constitution. This court reviews the matter de novo, and may rely on any basis to affirm.

preference on account of race, color, caste, or sex." Article IX, Section I is not merely a statement of moral principle but, rather "sets forth a mandatory and judicially enforceable affirmative duty." *School District's Alliance for Adequate Funding of Special Educ. v. State*, 149 Wn. App. 241, 246, 202 P.3d 990 (2009), *quoting Seattle School District No. 1 of King County v. State*, 90 Wn.2d 476, 500, 585 P.2d 71 (1978). In discussing the parameters of this duty, the Washington Supreme Court has recognized that the Constitution mandates keeping up with changing information on what must be taught. *Seattle School District No. 1*, 90 Wn.2d at 517-18. The court noted that "[t]he constitutional right to have the State 'make ample provision for the education of all (resident) children' would be hollow indeed if the possessor of the right could not compete adequately in our open political system, in the labor market, or in the market place of ideas." *Id.*

Parents Involved in Community Schools v. Seattle School District No. 1, 149 Wn.2d 660, 72 P.3d 151 (2003), involved a constitutional challenge to the Seattle School District's 'open choice' assignment plan. The Washington Supreme Court ultimately held that the plan did not discriminate against or grant preferential treatment to any individual on the basis of race, color, ethnicity, or national origin and in fact, made

available an "equal, uniform, and enriching educational environment to all students within the district." *Id.* at 690. In this case, the selection of the Discovering Series, an inquiry-based curriculum, disadvantages racial and other minorities and thus violates the Constitution's guarantee of an equal education.

The District's experimental use of inquiry-based mathematics at Cleveland High School demonstrates that it hurts racial minorities disproportionately. The inquiry-based texts were used in 2006-07 and 2007-08:

Year	Percentage of all 10th grade students passing WASL testing in math at Cleveland High
2002-03	9.0
2003-04	4.8
2004-05	23.2
2005-06	21.1
2006-07	17.9
2007-08	12.2

TE 1131. At Cleveland, for reasons that have never been explained, test scores rose dramatically in 2004-05; the introduction of inquiry-based math coincided with a decline of scores by more than three full percentage points in 2006-07, and by five more points in 2007-08.

The results of this experimental program at Cleveland and Garfield on English Language Learners (ELL) were even more stark:

Year	Cleveland WASL 10th grade pass rate	Garfield WASL 10th grade pass rate	District-wide WASL 10th grade pass rate	Program
2006	11.1%	18.8%	16.3%	Integrated
2007	5.0%	15.4%	13.6%	Cleveland and Garfield inquiry-based; most of the rest of District Integrated
2008	0.0%	4.8%	19.5%	Cleveland and Garfield inquiry-based; most of rest of District Integrated

TE 1310. In adopting the Discovering Series of high school textbooks, the Board had the further advantage of years of inquiry-based instruction at the elementary and middle-school levels in reviewing standardized test scores. The Board's decision to ignore this data was arbitrary and capricious. District-wide, 4th grade achievement in math declined slowly between the years between 2004 and 2009 – years in which Seattle was using a variety of math teaching techniques in various schools, primarily inquiry-based learning.[11] TE 1373. Evidence in the record unequivocally demonstrates that inquiry-based learning does not work for students with challenges in learning math. As recognized in the District's Action Report to the Board recommending adoption of the

[11] The EveryDay Math curriculum having been formally adopted in the spring of 2007.

Discovering Series, the National Math Advisory Panel (NMAP) recommended that "students with learning disabilities and other students with learning problems receive, on a regular basis, some explicit systematic instruction . . . [s]ome of this time should be dedicated to ensuring that students possess the foundational skills and conceptual knowledge necessary for understanding the mathematics they are learning at their grade level." TE 1113, #27.1. The NMAP recognized that "[m]athematically gifted students with sufficient motivation" were able to learn mathematics at a much faster rate and also that other students needed some direct instruction. TE 1113-14.

Other WASL data available to the Board demonstrates a generally stagnant or increasing achievement gap between elementary-age white and minority children, most of whom were taught using inquiry-based methods of instruction. TE 1372-95. A failure to analyze this data – and figure out whether the inquiry-based methods could be grasped equally well by all children in the District – is a failure on the District and Board's part to guarantee equal education for all.

5. The District's selection criteria arbitrarily focused on inquiry-based instruction, rather than effective instruction for all students.

In making its selection of the Discovering Series, the District convened an Instructional Materials Committee of teachers and citizens, and created criteria guiding and limiting the Instructional Materials Committee's inquiries. TE 477-494. In forming selection criteria, although the District recognized that the selection of a particular text might have racial and cultural implications,[12] the District's "Comprehensive Screening Tool" for mathematics materials adoption created a set of criteria that encouraged adoption of the Discovering Series, and not an explicit instruction series. TE 479-483. Included in the criteria the District's screening committees were to use were: whether "Mathematics as problem solving is an integrated part of the program at all levels" and whether "Mathematics connections are clear and relate to the real world and other disciplines." TE 480. Criteria also included that "Students are given the opportunity to develop their own understanding of the mathematics." TE 481. With these criteria, the Instructional Materials Committee would have been hard-pressed to pick any book that was not

[12] TE 41 (Noting that student needs include "Culturally Responsive Instruction").

inquiry-based. Although viewing mathematics as "problem solving" and "relat[ing] to the real world" sound like reasonable generic goals, they in fact are the tenets of inquiry-based learning, and not explicit instruction. Nowhere was it suggested that the committee insist on statistically valid evidence showing the efficacy of the methodology with disadvantaged learners. Moreover, there was no requirement that the program selected be weighed for its ability to teach mathematics concepts as measured by math achievement on any standardized test or other criteria. By creating a set of criteria that embodies the tenets of inquiry-based learning, and ignores data showing impacts on racial and other minorities as well as studies of basic effectiveness, the District's decision making was arbitrary and capricious, and ignored the Constitution's mandate to provide equal education for all.

6. The Instructional Materials Committee's decision to recommend the Discovering Series was arbitrary and capricious.

The Instructional Materials Committee eventually recommended the Discovering Series. The Committee's report is rife with opinion and conclusions but bereft of any analysis of data. TE 587-88. The Committee was initially split on which text to recommend, with the Discovering Series achieving a bare majority of recommendations.

TE 588. In rejecting an explicit instruction model and choosing the Discovering Series, the Committee noted that Discovering "provided the richest real world problems," while the direct instruction text "seems focused on algebra for algebra's sake." TE 588. One Committee member summed up the differences between the two math instruction methods: "Prentice-Hall is linear – do this, then this, then this." TE 593. This Committee member rejected explicit instruction in favor of inquiry-based learning based on working with his own "mathematically gifted" son on the quadratic formula. TE 593-94. The Committee member noted that inquiry-based learning "does force [his son] to think deeper about the material, and presents some more challenging thinking than Prentice Hall [direct instruction], which is kind of easy sometimes." TE 593. The Committee member noted that "Key [Discovering] offers a clear emphasis on active learning that I believe is valuable, and frankly the main reason I think the committee chose the book." TE 593. This Committee member accurately summed up the differences and problems with inquiry-based learning. A student who has the basic building blocks to understand math, a knowledge of English sufficient to understand complicated "real life" problems, and a parent with the time and ability to help the student "think deeper" about math does well with inquiry-based learning. Unfortunately,

these students are only a portion of the Seattle School District's population, and ignoring the series' impact on the rest of the population is arbitrary and capricious.

Moreover, the Instructional Materials Committee claimed that the Discovering Series supported a diversity of teaching styles and learning approaches, was highly ranked in State materials rankings, and addressed "ELL, Special Education, Advanced Learners, Education Gap." TE 504. The report cited to no evidence in support of these conclusions, and as described herein, these claims were unsupported by the record. Crucially, the Instructional Materials Committee completely failed to look at WASL data for the District's experimental use of another inquiry-based text at Cleveland and Garfield High Schools, or the District's experience with inquiry-based math in other grades.

The Committee's note that the Discovering Series was highly ranked in State materials rankings is especially problematic. In January, 2009, the State Office of the Superintendent of Public Instruction issued its 2008 High School Mathematics Core Comprehensive Review & Recommendations Report – Initial Recommendations. TE 652-820. This report analyzed texts for congruence with state mathematics standards. Although it noted numerous concerns with the Discovering Series, that

report ranked the Discovering Series as the second choice. TE 674. On March 11, 2009, as required by statute, the Washington State Board of Education published a second, follow-up study evaluating the textbooks from a different standpoint. TE 821-865 (the Soundness Study).[13] The initial report evaluated whether the texts considered aligned with general State standards. The Soundness Study looked at such things as the coherence, completeness, correctness, and logical structure of the mathematical content, and the basic mathematical soundness of the textbooks considered in the January, 2009 OSPI report. *Id.*, esp. TE 830. The Soundness Study was authored by two nationally prominent mathematics professors, each with a PhD. TE 851-865. OSPI was prevented by legislative mandate from making a final recommendation prior to receiving the Soundness Study. TE 830. The Soundness Study found the Discovering Series to be "mathematically unsound." TE 824. The Soundness Study noted, among other problems, that the Discovering Series "often side-step[s] the use of formal algebra" and that the program would not help students "build an understanding of the structure of

[13] Plaintiffs have termed this report the Soundness Study, for ease of reference, given the range of similarly-named studies in the record. The full name of the report is the High School Mathematics Curriculum Study. TE 821.

algebra." TE 825. The report found that "a major problem of *Discovering* is that the fundamentals of mathematics are not well represented in this program." TE 838. The Soundness Study further found math errors; on one problem, the Soundness Study found that a proof in the Geometry section was simply wrong: after correctly defining the initial steps, "[a]t this point the proof breaks down." TE 841.

The above mentioned experts retained by the State to evaluate the mathematical soundness of the Discovering Series also provided their own individual reports. In his March 2009 report, mathematician Dr. Stephen Wilson found that in one section of Discovering Algebra:

> The foundational necessities of mathematics are missing from the graphing of linear functions. The material is developed, but the emphasis is not on the structure of algebra and the importance of symbolic manipulation is minimized.

TE 1226. The Wilson Report found further problems with other sections of Discovering Algebra and Discovering Advanced Algebra, including problems with "basic foundational issues" and other mathematics flaws. TE 122-24, 1231, 1233-36, 1241-44, 1246-47. In evaluating Discovering Geometry, Dr. Wilson noted that:

> The text consists of 690 pages of inductive geometry followed by a short attempt to do

> rigorous deductive geometry. Unfortunately, the rigorous attempt depends on vague and "discovered" definitions scattered throughout the first 690 pages. **This is a highly unsatisfactory geometry text.**

TE 1243-44 (emphasis added). Dr. Wilson later noted that "Geometry is important, so the unacceptable nature of geometry in *Discovering* and *Core-Plus* makes these programs unacceptable." TE 1246. Likewise, an evaluation of the OSPI's finalists and other texts by Dr. Guershon Harel for the State Board of Education was intensely critical of the Discovering Series, noting problems in both instructional practice and mathematical soundness. TE 1257-62. In summary, Dr. Harel concluded regarding Discovering Algebra that:

> Consistently the text generalizes from empirical observations without attention to mathematical structure and justifications.

TE 1262.

Regarding Discovering Geometry, Dr. Harel noted that:

> It is difficult to learn from this text what a mathematical definition is or to distinguish between a necessary condition and sufficient condition.

TE 1262.

The Soundness Study and the work of Drs. Wilson and Harel led the Washington Superintendent of Public Instruction to recommend only one book: the Holt Series, passed over in an early round by the District in favor of the mathematically unsound Discovering Series. TE 1064.

Even without the benefit of the Soundness Study's finding that the Discovering Series was mathematically unsound, the Instructional Materials Committee expressed doubts about the Discovering Series' effectiveness in communication to the School Board. TE 544. The Committee noted a "[c]oncern about use of vocabulary and terminology" and a "[c]oncern about mathematical rigor." TE 544.

The District's belief that the Discovering Series was more accessible for English Language Learner (ELL) students because its "[p]ictures and diagrams match with problems" is unsupported by WASL scores of 10th graders[14] piloting a similar, inquiry-based text, and by a common-sense reading of the materials. TE 954. Although the books do have pictures and diagrams, the photos or diagrams are incomprehensible without reading the English-language text. For example, on page 253 of Discovering Algebra, a photograph of students passing a bucket is shown. The written text explains that the bucket brigade is a practical exercise

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[14] As described, *supra*.

demonstrating data points. But without that explanation, it is simply a bunch of kids and a bucket. Likewise, a drawing of two people pulling on a jar of coins on page 230 is an interesting demonstration of scatter points – but without the English skills to read the text, it provides no useful information.

The Instructional Materials Committee also noted that the materials provided "'real' real life" problems, and were aligned with the existing middle school texts, the inquiry-based ConnectedMath Project II. TE 504. But as WASL scores demonstrate, the middle school texts have led to a stagnation of math ability, and a widening achievement gap; the use of exclusively "real life" problems – and the insistence that students figure them out for themselves without benefit of instruction in the rules of math – is clearly associated with this disparity and stagnating achievement, and is not a benefit to the program.

The Instructional Materials Committee's decision to recommend Discovering despite the patent problems associated with inquiry-based curricula may have arisen from the District's failure to include any Instructional Materials Committee members who were willing to express opposition to inquiry-based math. The District chose not to include a tenured University of Washington mathematics professor familiar with the

District's middle school math adoption and with considerable expertise in the field of secondary math education on the panel. Instead, the District relied on teachers with varying educational levels, and pointedly excluded teachers or community members willing to publicly question reform methodology. TE 1129. The District's argument that the members of these committees were "blindly" selected because the selectors did not know their names does nothing to change the bias of the committee towards inquiry-based texts, or excuse the Board's deference to the committee's recommendation despite that bias and without looking closely at the record supporting – or refuting – the committee's conclusions.

The Board's decision to adopt the Discovering Series was based in significant part on the initial ranking of Discovering as OSPI's second choice textbook, and the ensuing recommendation from the Instructional Materials Committee. TE 965-67. In its briefing to this court, the District disingenuously focuses on this early, preliminary study.

But the preliminary ranking did not evaluate the mathematical soundness of the texts, and after mathematical soundness was evaluated, OSPI dropped the Discovering Series from its ranking, and recommended only the Holt Series. Although the Instructional Materials Committee may not have had the benefit of the Soundness Study when it published its

report, the Superintendent did. Pursuant to District policy, the Superintendent created an "Action Report" recommending that the Board adopt the Discovering Series. TE 521-48. This Action Report was created and sent to the Board long after the Soundness Study was complete, but inexplicably contains no mention of the Soundness Study's findings. Instead, the Action Report only states that the "[t]he program ranked 2nd overall on the **initial** state standards review" and indicated merely a "concern about mathematical rigor." TE 966 (emphasis added). The District's continued reliance on this preliminary report in its briefing highlights the arbitrary and capricious nature of its reasoning.

The Superintendent's Action Report and the Board's decision is arbitrary and capricious, because it failed to acknowledge that the Soundness Study found the recommended texts to be "mathematically unsound." These decisions are also arbitrary and capricious because they relied on OSPI's initial recommendation but gave no credence to OSPI's later decision to recommend only the Holt Series and not the Discovering Series.[15]

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[15] The Holt series was summarily rejected by the Instructional Materials Committee in an early round – further evidence of its lack of expertise and bias against explicit instruction.

7. The District's claim that there were competing expert reports on mathematical soundness is not supported by the record.

The District acknowledges that the Discovering Series was found to be mathematically unsound by two mathematicians commissioned by the State to evaluate the texts, and acknowledges that the OSPI eventually dropped its recommendation of the Discovering Series, but then claims that there were "several perceived flaws and biases in Drs. Harel's and Wilson's analysis." District's Brief at 19, and claims the texts had "previously been determined to be mathematically sound by Drs. Bright and King." District's Brief at 18.

What the District fails to mention is that both King and Bright are well known, vocal advocates of the inquiry-based mathematics movement, and conducted only a cursory review of the Discovering Series. Dr. King was the director of the Professional Development Cubed pilot project (a collaborative effort of University of Washington College of Education, University of Washington Department of Mathematics, and Seattle Public Schools funded by the National Science Foundation) at Cleveland and Garfield High Schools; the project piloted a reform text, the Interactive Math Program, and involved extensive teacher mentoring and coaching from the UW and Seattle Public Schools' curriculum specialists.

TE 1300-01. This pilot project showed that the inquiry-based math text, even heavily supported as it was, was ineffective – during the three-year project, scores among Black students declined at Cleveland and Garfield, and among English Language Learners, scores dropped dramatically. TE 1310, 1382. Dr. King's opposition to explicit instruction was presumably the motivation for his refusal to include a West Seattle High School initiative in that pilot project – the West Seattle teachers requested to pilot an intervention program for struggling 9th graders which used the Singapore (explicit) text materials, but Dr. King summarily rejected their proposal. TE 1315. Dr. Bright was in the employ of OSPI as a special assistant on mathematics through 2008, a period of time when OSPI was pushing inquiry-based math. TE 1277.

In addition, crediting King and Bright with a soundness analysis of Discovering is specious. King and Bright evaluated a range of texts; regarding the Discovering Series, the King & Bright report consists of Dr. Bright's one page of observations, in book report format, on Discovering Algebra I and II. TE 740, 1219. This report, touted by the District as assessing mathematical soundness, consisted merely of citations of instances where various topics were mentioned. The report does not cover Discovering Geometry. Dr. King, charged with evaluating

the top-rated geometry texts, did not review Discovering Geometry at all, because it was ranked sixth. TE 655 (table of contents, showing geometry books reviewed). In other words, Bright alone wrote a cursory opinion of Discovering Algebra I and II, and neither King nor Bright evaluated Discovering Geometry.

Rather than providing an in-depth analysis of Discovering Algebra I and II like the Wilson and Harel reports, Dr. Bright offered speculative comments such as "[t]his approach provides coherence and would seem to make the mathematics more easily learned," and claimed that the texts "....should help students develop rich cognitive understanding that can be retained permanently" without explaining how. This vague appraisal is in vivid contrast to the in-depth analyses offered separately by Dr. Wilson and Dr. Harel and combined into the Strategic Teaching Evaluation by Linda Plattner. TE 1223-1276.

Similarly, the District's claim that there were "flaws and biases" identified in the finding of mathematical unsoundness is unsupported by credible evidence in the record. The District first cites to TE 502, which is a slide from a Powerpoint presentation to the Board by District staff. That slide has bullet points for "Responses to Strategic Teaching Report – University Faculty" and "Key Curriculum Press," but there are no attached

documents. If documents were provided to the Board, they are not in the record, and cannot be used to support the District's decision. The District's citation to TE 625-36 similarly fails to support their claim. TE 625-26 is a letter addressing whether it was proper to use the term "conjecture" in mathematics, and explaining that a criticism that a serious treatment of proof was left to the last chapter in Discovering Geometry could be remedied by reference to another book, entitled "Tracing Proof in Discovering Geometry." That this basic mathematics text needs a guidebook should have been a compelling indicator to the Board that it might not be the right choice for the District. TE 627-32 is a document entitled "Comments on Mathematics Soundness of Discovering Series." There is no author listed, and the comments therein are almost exclusively unsupported opinion. They include a note that one of the reviewers who found that the text was mathematically unsound also cited some positives to the Discovering Series, and a claim that "[o]ne wonders how a book with a lot of positives becomes 'unsound'". TE 628. These unattributed notes are not an evaluation of mathematical soundness, nor an expert report. TE 633-36 is a report from the publisher of the series, Key Curriculum Press. Key argued that a bias against inquiry-based instruction influenced OSPI's finding; in its defense of its own use of

inquiry-based instruction, Key relied on citations to "scientific research" and claims that "studies show" various claims about inquiry-based teaching, without citing actual studies. The one study cited relied on a population sample of one student. TE 634. The District's claim that there were competing expert reports or that flaws and biases in the finding that the texts were mathematically unsound is simply unsupported by the record, and the Board's failure to either select a different series of texts or at least inquire further, with competent experts who actually evaluated the texts, is an arbitrary and capricious decision.

8. The District and Board were informed of the problems with the Discovering Series.

The District and Board were directly informed of the problems with inquiry-based math by members of the public. One public comment from a former Seattle Public School teacher noted:

> These so-called "exemplary" and "promising" programs are among the worst math books and programs in the country. They radically de-emphasize basic skills in arithmetic and algebra. Uncontrolled calculator use is rampant and calculators are often introduced starting in kindergarten. Fuzzy math books claim to teach conceptual understanding, but they don't. Instead they squander valuable class time on aimless projects with little or no intellectual content. One can draw a parallel between the

> philosophy that underlies the failed "whole language learning" approach to reading, and these NSF/NCTM math programs.

TE 1170. Other letters pointed out problems with the Instructional Materials Committee process, and provided anecdotal proof that inquiry-based instruction programs in place in the elementary and middle schools led to problems with math comprehension from students who were not mathematically gifted. [16]

As one expert, Dr. Jack Lee, noted "it is a rare student who is able to synthesize experience into a correct and precise statement of mathematical truth." TE 594. One Vancouver, Washington parent, whose child had attended Beaverton schools and used the Discovering Algebra series previously, noted that, when they traveled out of the country together:

> I could not find one useful formula in the chapter . . . My son and I gave up on the book, and I taught him what I recalled from memory, going back to my high school days in 1971. He came back to school ahead of his class in Logarithms. The teacher was still trying to decide how to make sense of the chapter!

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[16] The record is rife with public comments, from a variety of sources, criticizing the Discovering texts. TE 1129-1371 (comments and attached reports). They are not reproduced here for brevity.

TE 1311. The District summarized public and student criticism of the Discovering Series as "not enough math," "too wordy/too many stories, "hard for ELL." TE 979. By contrast, another series was criticized for having "no color – boring" and "no examples," among other complaints. TE 979. Ignoring this public testimony pointing out the key flaws of the Discovering Series over other mathematically sound, albeit monochrome, series without explanation is arbitrary and capricious.

In addition to the public comments from citizens, and the Wilson, Harel, and Soundness Studies, numerous studies were cited to the Board and District criticizing the basic premises of the inquiry-based mathematics and "reform math" movement. These studies criticized reform math on a variety of grounds, including teaching effectiveness as well as mathematical soundness, noting that:

> The opposition of the mathematics and science community to "reform math" came to a crescendo with the publication of the landmark open letter to Education Secretary Riley . . . The letter is a protest in the strongest possible terms to an October 1999 endorsement of ten "reform math" curricula issued by a Department of Education panel. More than 200 prominent mathematics and science experts strongly protested the competence, objectivity, and conclusions of the panel endorsing the reform math curricula. The list includes seven Nobel

> Laureates and Field Medalists (the Mathematics equivalent of the Nobel Prize) as well as mathematics department chairs from many top U.S. universities, as well as some state and national education leaders.

TE 1207. The experience of other school districts with the Discovering Series bolsters the conclusions of experts and citizens that the series is fundamentally flawed: San Diego adopted and then abandoned Discovering. TE 1297.

9. The School Board arbitrarily rejected other evidence and capriciously relied on anecdotal personal experience and other irrelevant information.

The School Board arbitrarily relied on improper anecdotal evidence in selecting the Discovering Series. One parent wrote the District and noted that her son "struggled with inquiry-based math and required tutoring all throughout high school." TE 1298. While this parent wanted to help her child, she "couldn't understand the materials, and there are no examples in the book I could use to help him understand the concepts." *Id.* In response, Board Member Carr stated that she went through a lesson with her own child, and found that her child was able to grasp the methods presented therein. TE 1299. Although Board Member Carr did not describe her child as "mathematically gifted," as did one Instructional

Materials Committee member when using anecdotal evidence to support selecting the Discovering Series, there is no evidence that her child is illustrative of any type of student other than a white, upper/middle class native English speaker with a fair aptitude for school. Board members' reliance on anecdotal evidence earned with their own children is an arbitrary and capricious method of picking a text for a District as diverse as Seattle.

A separate, explicit-instruction based series, the Prentice Hall texts, was also considered but rejected by the District. This series was not included in the Soundness Study. The explicit-instruction based Holt series, rejected early on by the IMC, was top-ranked by the OSPI in its initial recommendations, and the only series eventually recommended by the Superintendent in the final report. TE 674. It was rated mathematically sound by the Soundness Study. Rejecting the top-ranked, mathematically sound Holt series from consideration in favor of the mathematically-unsound Discovering Series, and rejecting the Prentice Hall explicit instruction series without adequate explanation is arbitrary and capricious.

Moreover, completely absent from the District's consideration is test scores. TE 965 (Action Report, describing committee processes). The

WASL score is the only objective measure of District math success available; the District's decision to rely almost exclusively on the unsupported opinions of Instructional Materials Committee members, some of whom relied on improper methods like how well their own children did using the materials, shows an arbitrary and capricious disregard for the needs of all students.

IV. CONCLUSION

For the reasons argued herein, Respondents respectfully request that the court affirm the decision of the Superior Court remanding the decision to the District for further evaluation.

Dated this 25th day of June, 2010.

Respectfully submitted,

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