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ABSTRACT

This monograph presents a case study of a Chapter I reading improvement intervention involving reciprocal teaching in Highland Park, Michigan, that was planned and executed during the 1993-1995 school years. Teachers and paraprofessionals taught reciprocal teaching strategies daily to third-grade students to prepare them for the fourth-grade state assessment examinations in reading and mathematics. One year later the students involved in the reciprocal teaching intervention scored on average double the previous year's scores. These students outperformed their peers state wide (on average), even though their previous ranking was relatively low. This initial positive result marked the beginning of research-based applications of reciprocal teaching strategies in Highland Park. This case study first describes the academic context in which the reciprocal teaching innovation took place, and also describes the environmental factors that provided the backdrop of the pressure which school officials in Highland Park faced as a result of nation, state-level, and local academic goals and expectations. A description of the district follows--its history with the MEAP (Michigan Educational Assessment Program), its typical student performance on tests of measurement, and the environmental factors that militated against efforts to develop students as literate individuals. Next is a description of the intervention undertaken and an account of the methodology employed by the district to launch and complete the innovation, as well as an annual update of student performance results spanning the years 1995-1998. The case study ends with a review of the degree to which reciprocal teaching is currently utilized in Highland Park, in Michigan, and in the United States. Includes 13 notes and 4 tables of data. (Contains 39 references.) (NKA)

INNODATA MONOGRAPHS 8

Educational innovations in action

RECIPROCAL TEACHING:

THE APPLICATION OF A READING IMPROVEMENT STRATEGY ON URBAN STUDENTS IN HIGHLAND PARK, MICHIGAN, 1993-1995

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Foreword

Reciprocal Teaching, developed by education researchers in the United States, is an approach to improving reading skills based on the development of comprehension through direct engagement with the text. Teachers engage in dialogue about the text with students using four comprehension strategies: generating questions, summarizing, clarifying and predicting. The approach fosters self-verbalization techniques and metacognition in readers, enabling them to construct meaning from the written word. This monograph describes the application of Reciprocal Teaching as an innovative approach in the underachieving school district of Highland Park, Michigan, USA, during 1993–95. This attempt to raise reading scores in the state's lowest-performing schools to accepted standards resulted in considerable improvement, with the numbers of fourth grade students in this district who met or exceeded standards rising from 14.4% in 1993 to 39.6% in 1996. Although sadly the strategy was not continued at Highland Park, Reciprocal Teaching is widely applied throughout the United States and increasingly further afield, with marked success in developing reading competence.

Introduction

This monograph presents a case study of a Chapter One[1] reading improvement intervention involving Reciprocal Teaching in Highland Park, Michigan, that was planned and executed during the academic school years 1993–95. Teachers and paraprofessionals daily taught Reciprocal Teaching strategies to third grade students to prepare them for the fourth grade state assessment examinations in reading and mathematics. One year later, the students involved in the Reciprocal Teaching intervention scored on average double the previous year's scores. These students outperformed their peers state-wide (on average)—an astounding feat given the relatively low ranking that Highland Park students previously had achieved.

This initial positive result marked the beginning of research-based applications of Reciprocal Teaching strategies in Highland Park, Michigan.

During the time of the Reciprocal Teaching intervention, the city's population was approximately 20,000. The majority of the population was African-American (93%), whose median household income was $9,805, the lowest among all municipalities in the tri-county metropolitan (Detroit) area. The poverty rate was 42.4%, nearly triple the Michigan rate of 13.1%. More than 50% of Highland Park's residents existed on welfare benefits, and more than one-third were unemployed. Households headed by single parents, mostly female, hovered around 67.6%. The first-year infant mortality rate was 19.9 per 1,000 births, nearly double the state average.

Highland Park's grim statistics at the time of the Reciprocal Teaching intervention demonstrate its inherent problems: a poor city with poverty levels surpassing those of Detroit—itself a large metropolis with one of the highest levels of poverty among major American cities (Byndrian, 1994). Add to this picture the fact that Highland Park's schoolchildren consistently scored among the lowest in the state on measures of basic reading and mathematics achievement, and the reader can properly comprehend the need for proactive intervention.

For the at-risk children of Highland Park's schools, a curriculum intervention was needed to bring about higher academic achievement while providing essential skills that would enhance students' chances of long-term school success. A reading improvement strategy was designed to improve student performance in reading and mathematics, as measured on the Michigan Educational Assessment Program's (MEAP) examinations and the Comprehensive Tests of Basic Skills (CTBS). The innovation utilized a trained team of educators to teach small groups of students Reciprocal

Teaching strategies as a mechanism to improve their reading and learning abilities during assigned textbook reading.

The results were startling! The following year, whereas most fourth grade students in Michigan performed poorly on state assessments, particularly in reading, the students who had been taught Reciprocal Teaching doubled Highland Park School District's average from the previous year (from 14.4% to 28.8%). The significance of this unprecedented gain received little media attention, possibly because Highland Park's test scores still were well below the target goal of 66% for each Michigan school.

For four years, the Reciprocal Teaching innovation was implemented, and reading improvement scores at the elementary level continued to rise until the district, once at the bottom of the Metropolitan Detroit school districts in terms of student performance on state assessments, managed to climb up the ladder. Once labelled the worst school district in the area (Detroit Free Press, 1994), Highland Park schools were able to post scores higher than rural and suburban school districts with considerably more resources and support at their disposal.

The story of Highland Park's academic evolution provides a case study of the inner workings of an urban school district faced with the challenge of responding to state and national legislative mandates with limited resources. It is the story of a newly appointed curriculum director's determination to improve student reading ability, demonstrate that research works, and avoid a state take-over.

This case study begins with a *description of the academic* context in which the Reciprocal Teaching innovation took place. Additionally, the *environmental factors* that provided the backdrop for the pressure which school officials in Highland Park faced as a result of national, state-level and local academic goals and expectations are described.

Following these is a *description* of the district, its history with the MEAP, its typical student performance on tests of measurement, and the environmental factors therein that militated against efforts to develop students as literate individuals. Collectively, these provide the *political, academic and social context* in which the Reciprocal Teaching initiative was undertaken.

This section is followed by a *description of the intervention* undertaken and an account of the *methodology* employed by the district to launch and complete the innovation, as well as an annual update of student performance results spanning the years 1995–1998. The case study ends with a *review* of the degree to which Reciprocal Teaching is currently utilized in Highland Park, the state of Michigan and the United States.

The American educational reform movement

In 1981–82, at the inception of the American educational reform movement, the Second International Mathematics Study (SIMS) obtained achievement test results and a good deal of information about content coverage for eighth graders from twenty countries (in the case of Japan and Hong Kong, seventh graders). Test results were also obtained from fifteen countries for students who were in their last year of high school. Of the twenty countries participating at the eighth grade level, American students ranked tenth in arithmetic, twelfth in algebra, sixteenth in geometry and eighteenth in measurement. Of the fifteen countries participating in the assessment in the senior year of high school, the United States ranked fourteenth in advanced algebra, twelfth in elementary function/calculus and twelfth in geometry.

The level of achievement of American twelfth graders compared unfavourably with that of students in, for example, Japan, Hong Kong, Sweden, Israel, Finland, New Zealand and the United Kingdom and was similar to that achieved by students in Thailand and Hungary (Linn & Dunbar, 1990; McKnight et al. 1987; Miller & Linn, 1989).

Growing concerns about the performance level of American students, as well as concerns about the need to preserve the American competitive economic edge, spurred a cross-section of academic, political and economic elites to author a spate of studies critical of American schooling. These studies prompted the dawn of the American school reform agenda. An unprecedented number of reform recommendations ignited considerable public debate about the quality of American public schools and fuelled a growing echo for higher standards among American students in terms of their performance on tests of national and international comparisons and the attendant school reform from which better performance would result.

A number of national and state legislative mandates followed in the wake of the research reports, indicating a reform direction for American public education. Key issues recurring in calls for reform were:

- the realization that too many students were leaving high school lacking preparation in the technical and analytical skills required by an information and technological society to fuel its economy;
- declining scores on national assessments;
- unfavourable performance of American students on tests of international comparisons;

- an irrelevant, fragmentary curriculum too diverse to have depth; and
- the special problems of urban students and the challenges urban schools face to re-route student learning.

Collectively, these reports broadly fall into three main categories, identified and described by Armstrong and Savage (1990) and Murphy (1990) as three distinct eras (or waves) of reform during the 1980s.

WAVE ONE: DEVELOP BETTER CONDITIONS AT THE SCHOOL SITE

Wave One reformers, prompted by fears that the American competitive economic edge was threatened unless schools improved, called for mandated, top-down initiatives, especially those from the state level. Wave One reports published in the early 1980s emphasized policy mechanisms, academic and curricular prescriptions, tightly specified resource allocations, and performance measurements that focused on repairing components of the education system. Reformers in this category called for professional development and continuing education among school staff, increased requirements for high school graduation, core curricula, greater academic focus, longer school days and years, and greater accountability from administrators and teachers (Murphy, 1990).

WAVE TWO: DEVELOP BETTER TEACHERS

Wave Two reformers criticized Wave One research reports as surface-level reforms that failed to cut as deeply as needed to re-direct student performance. They clamoured for fundamental revisions in the way schools were organized and governed. Common views expressed by Wave Two reformers include power distribution among stakeholders, including teachers and parents; the terms *empowerment* and *site-based management* were watchwords of this wave. A central theme emerging from the research reports is the belief that at the school site were people possessing the energy and creativity to make decisions on behalf of better schooling for students. Accordingly, the quest for improvement was vested in improving the professionalism of school personnel and the conditions they need to work effectively.

In Wave Two, three broad areas were underscored:

- professionalization of teachers;
- development of decentralized school management systems; and
- the enactment of specific reform topics that were overlooked in Wave One reports—for example, programmes for at-risk children or students identified as gifted (Murphy, 1990).

WAVE THREE: DEVELOP MORE RESPONSIVE SYSTEMS FOR CHILDREN

Wave Three reformers criticized the previous calls for reform as incomplete because they did not address two major problems that schools face: the separation of schools and families and the desire to develop the cognitive capabilities of students. They urged educators to reconsider the methodologies employed to educate children and called for a major overhaul of programmes for children that have at their centre a system that supports both families and schools (Murphy, 1990). A primary focus of Wave Three reformers is their consistent calls to replace the unco-ordinated and unconnected series of approaches for taking care of children with an integrated, inter-organizational, inter-professional service model (Murphy, 1990).

FROM RESEARCH TO ACTION

In all, these reports emphasized recurring themes that show themselves in national and state school-reform legislation passed during the 1990s, in particular in the following curriculum-based themes:

- a call for a coherent, co-ordinated school curriculum;
- a de-emphasis on breadth replaced by an emphasis on curricular depth in English, mathematics, science and social studies;
- a focus on student learning or attainment of curricular goals; and
- an emphasis on a curriculum in the context of work.

These provided the perfect background for the unprecedented action taken by President Bush, who called the nation's governors together to take part in a historic educational summit.

Accordingly, in 1989, the nation's governors gathered in Virginia and focused on how to change America's educational emphasis in two principal areas: from process to performance, and from complacency to high expectations for achievement. The summit resulted in the establishment of six National Education Goals and with these a mandate to achieve them by the year 2000:

- All children in America will begin school ready to learn;
- The high school graduation rate will increase to at least 90%;
- Students will leave Grades 4, 8 and 12 having demonstrated competency in English, mathematics, science, history and geography;
- Students in America will be first in the world in science and mathematics;
- Every adult American will be literate and possess the knowledge and skills required to compete in a global economy; and
- Every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

PUBLIC ACT 25: THE MICHIGAN SCHOOL IMPROVEMENT ACT OF 1990

Following the release of the National Education Goals, the Michigan State Board of Education became the first state educational agency in America to endorse and adopt them. Shortly after, the Michigan Legislature passed into law historic school reform legislation, Public Act 25: the School Improvement Act of 1990.

Public Act 25 directs local boards of education to involve the district's stakeholders in the curriculum development process. Stakeholders include school administrators, teachers, students, parents and community representatives. Further, Public Act 25 requires local boards of education to establish a system for monitoring the development and implementation of the core curriculum and to ensure that each school makes available an annual education report that apprises stakeholders of the progress it has made in implementing the core curriculum and ensuring that each student masters the core curriculum outcomes across all educational levels.

The act introduces Michigan to state-endorsed diplomas that are tied to student performance on state assessments administered through the MEAP. Beginning with the class of 1994, only students who successfully completed local graduation requirements and demonstrate mastery of MEAP objectives in reading, mathematics and science on the state assessments would receive endorsements on their high school diplomas.

Public Act 25 spells out the standards for school accreditation and directs the State Board of Education to establish a system for state-wide accreditation of schools in Michigan. In 1990, school accreditation status could be awarded to any school in Michigan that could meet or exceed state standards in seven areas: administration and organization, curricula, staffing, school plant and facilities, school and community relations, school improvement plans, and student achievement of core curriculum outcomes. In the case of the last standard, at least 66% of the school population must score at the state standard in mathematics, reading and science.

Schools that fail to meet accreditation standards for three consecutive years face one or more of the following sanctions: loss of funding, school closure, state-appointed administration (at the district's expense) or vouchers for parents to send their children elsewhere, presumably to a higher-performing school. The nucleus of Public Act 25 is student achievement. The act aims to stimulate activities at all schools that result in quality schools and quality students who can demonstrate mastery of core curriculum outcomes—outcomes based on a model core curriculum provided by the Michigan Department of Education.

To nudge along these reforms, provide guidance in the process, and to monitor compliance, Public Act 25 directs the Michigan State Board of Education to establish an assessment system that measures students' progress in attaining the core curriculum outcomes. For over thirty years there has been only one state assessment administered to all students in selected grades to measure students' proficiency in reading, mathematics, and, of late, science skills and concepts—the MEAP assessments.

The MEAP assessments yield the only uniform achievement data available in Michigan. It was used prior to 1990 by the Michigan Department of Education to determine trends in Michigan education and to help determine the highest incidence of pupils with specific skills deficiencies in the target areas of reading, mathematics and science. The results provide information on the status and progress of Michigan's basic skills education, and prior to 1990, the MEAP was administered, analysed and reported on, and the results were filed away for future reference.

In 1990, Michigan students in Grades 4, 7 and 10 were being assessed annually in reading and mathematics proficiency and Grades 5, 8 and 11 were assessed annually in science proficiency and knowledge.

Highland Park: the city and its schools

At its height, Highland Park, 2.98 square miles in area, located in the centre of Detroit, was a thriving industrial city with a school district composed of eight public schools, two parochial schools and a junior college. Residents could attend school up to junior college completion without charge. In 1950, the city was rated one of the top ten school districts in America by the Carnegie Foundation (Conyers, 1984).

Between 1910 and 1930 the Caucasian population in Highland Park grew from 4,000 to 50,000, while the African-American population grew from 200 to 4,000. Prompting the explosive growth was the dawn of the mass-produced automobile and the unheard of wages offered by the Ford Motor Company—$5 a day. Immigrants flocked to the city for employment.

However, Highland Park underwent major socio-economic change in the 1960s, with racial transition and the exodus of residents, businesses and industries to Detroit suburbs. The population outflow caused a steady, sharp decline in school-age enrolment. By 1992, the city was seriously degenerating.

A SCHOOL DISTRICT IN TROUBLE

In 1993, with the publication of Public Act 25, a polemic erupted in Highland Park as educators debated the merits of what some viewed as high-handed state take-overs of independent school districts. The issues debated were varied and came from a wide variety of Michigan perspectives. They included issues such as equity (the unfair advantage of suburban schools over urban schools), the role of the state as opposed to that of local school boards in curriculum decisions and the merits of endorsed diplomas.

Another controversial issue was the nature of the curriculum itself. The Michigan Department of Education issued a model core curriculum document that described the specific outcomes for each of eleven core curriculum areas at every level (elementary, middle school and high school). The areas included science, mathematics, language arts, art, music, technology, cultural and aesthetic awareness, career and employability, social studies, health and physical education, and life management skills. The Michigan Department of Education made it clear that the MEAP test items would be derivatives of the model core curriculum.[2]

In spite of the controversy, Michigan school districts started developing school improvement plans and focusing their attention on the MEAP, now a test of students' proficiency in terms of the core curriculum outcomes de-

scribed in the Michigan model core curriculum document. The state-wide student performance on the MEAP in 1992 and 1991 was dismal (see Table 1); in all cases except in science, state-wide students averaged less than a 50% success rate. The significance of the scores was that two-thirds of the tested population would be enrolled in schools in 1994 when endorsement became a reality. This realization jarred school districts into motion and throughout Michigan preparation plans were being developed, resources located, and interventions for increasing student performance on the MEAP were underway.

TABLE 1. Michigan MEAP scores (%), 1992 and 1991

Subject	Grade	1992 state average	1991 state average
Reading	10	38.3	38.7
	7	32.8	29.9
	4	36.7	34.7
Mathematics	10	23.2	18.7
	7	35.4	32.0
	4	42.3	36.3
Science	11	46.5	40.3
	8	57.1	53.5
	5	71.0	69.4

In this environment, Highland Park existed as the single most challenging school district in Michigan. Indeed, a review of the 1992–93 district's performance on MEAP assessments indicates a tendency for students to score in the single digits and for students' scores to decline in percentage as they progressed through the school system. In science, the scores posted by the students were higher than the reading and mathematics scores, but still considerably less than desirable and well below the state averages.

For example, in science, Highland Park students posted 7.9% (Grade 11), 31% (Grade 8) and 31.7% (Grade 5), whereas state-wide, students averaged 46.5% (Grade 11), 57.7% (Grade 8) and 71% (Grade 5). In the area of reading, students posted the following scores in 1992–93: 22.4% (Grade 10), 8.6% (Grade 7) and 9.8% (Grade 4) (see Table 2). The worst scores were in mathematics: 3.2% (Grade 10), 5.7% (Grade 7) and 7.6% (Grade 4).

Student performance on the MEAP over a three-year period revealed that students in Highland Park were not progressing in MEAP proficiency, which indicated that they were not mastering the core curriculum objectives from which the MEAP assessments are derived. This signalled a dire need to concentrate on student mastery of core curriculum outcomes.

TABLE 2. MEAP reading scores at Highland Park (%), 1991–93

Grade	1993	1992	1991
4	14.4	9.8	8.6
7	10.9	8.6	12.8
10	13.3	22.4	10.6

The poor performance of the students provided indicators of the difficulty each school would encounter in an effort to achieve accreditation status. Accreditation was determined on the basis of student performance on the MEAP, which would result in one of the following three designations: summary accreditation, interim accreditation or unaccredited. *Summary accreditation* was reserved for schools that met all standards, including 66% of the students scoring at the state standard. *Interim accreditation* was reserved for schools that had not met all the requirements for accreditation but were making progress in achieving MEAP standards. *Unaccredited* was the designation reserved for schools like those in Highland Park where the performance of the students indicated that the school was a considerable distance away from

TABLE 3. Highland Park CTBS reading and mathematics scores, 1992–93

	Grade	Number of students tested	Students at/above grade level
Reading	2	298	110
	3	238	57
	4	263	88
	5	231	94
	6	272	83
	7	240	66
	8	275	110
Total		*1,281*	*441*
Mathematics	2	296	69
	3	237	99
	4	259	62
	5	230	74
	6	264	53
	7	236	34
	8	275	60
Total		*1,264*	*283*

achieving accreditation standards, especially in terms of student performance on the MEAP assessments.

As troublesome as the students' performance on the MEAP assessments that were criterion-referenced was their performance on standardized assessments. The CTBS, which was administered in 1992–93 to all students in Grades 2–8 as pre-post standardized assessment of students' growth, was required by Chapter One regulations (see Table 3).

In Highland Park, the CTBS scores posted by the elementary students failed to meet the Chapter One National Curve Equivalent Standard (NCE) regarding improvement in reading and mathematics.[3] As a result, the district faced state oversight with planning and direction for Chapter One. We were informed by the Michigan Department of Education that three out of four schools were designated for programme improvement, a status reserved for schools that failed to meet the NCEs designated by Chapter One regulations.

OTHER FACTORS INFLUENCING THE INTERVENTION

It should be understood that even though poor student performance on state and national reading and mathematics assessments were the elements that drove the interventions regarding Reciprocal Teaching, every measure of student achievement available and every indicator of school success were reviewed. For example, we examined high school students' final grade point average for 1992–93 and discovered a mean of 1.82 overall grade point average. This included the following departments in the high school: social studies (2.15), mathematics (.90), science (1.62), language arts (1.73), foreign language (1.60), business education (1.50), industrial-technical (1.73), home economics (1.85), physical education (1.60), special education (1.73), music (2.77) and Reserve Officers Training Corps or ROTC[4] (2.67).

Additionally, we reviewed high school enrolment trends, which revealed a serious loss of students nearly each year. For example, in a five-year period (1988–93), the high school population declined from a high of 1,347 to 938 for a net loss of 419 students. Additionally, the high school enrolment data indicated a decline in the number of students who entered as ninth graders and who graduated with their entering class. On average, 50% of the ninth graders who entered Highland Park High School failed to graduate with their entering class.

Other areas reviewed included staff and student attendance trends so as to determine the degree to which absenteeism might be a factor in student performance. We examined parent involvement in schools, suspensions (month by month, school by school, and by district), and the degree to which students participated in honours' activities.[5]

We found extremely low indicators of school effectiveness in every standard of measurement we examined. The prospects for improvement of student performance on state and national assessments like the MEAP and the CTBS were dismal and with them the inevitability of take-over unless an effective initiative could be employed.

TACKLING THE PROBLEM

Consequently, at the beginning of the academic school year 1993–94, the superintendent declared a 'state of emergency' and informed the central office administrators of his intent to steer student achievement from the central office by placing the Office of Curriculum and Instruction in charge of improving student performance.

At that time, the Office of Curriculum and Instruction, renamed the Office of Educational Quality, consisted of two administrators: an assistant superintendent (the author) and a curriculum assistant. Additionally, there were two consultants–one in mathematics, the other in social studies. The Chapter One Supervisor was not officially a part of the office, but functioned as a full partner in decision-making and supporting learning initiatives. The office was supported by a part-time elementary science consultant, several high school department chairpersons, and several reading specialists whose salaries were paid through Chapter One. Providing day-to-day leadership was a deputy superintendent who oversaw state and federal projects, of which Chapter One was a main source of discretionary funds. Three teacher educators from nearby universities provided technical assistance and teacher support. Three secretaries supported the team.

The superintendent's declaration of a state of emergency was based on the following conclusions. The first is obvious—all indicators available revealed that Highland Park was far from complying with state legislation, i.e. Public Act 25, on all fronts.

Another conclusion was that the achievement deficits among Highland Park students at all levels indicated the need for leadership on this issue beyond what had previously been provided by school principals. The analysis revealed that principals, with the exception of one, seldom led learning initiatives, but left learning interventions up to the Chapter One teachers or reading consultants, concerning themselves mostly with administrative issues.

Further, the school improvement plans developed at each school site lacked a viable approach to increasing student achievement for significant numbers of students. Overall, without exception, the plans failed to analyse students' performance as beginning points. They were mostly generic goals that indicated that the school was working on reading or mathematics improvement.

Though one plan came close to having a core focus on strengthening students in skill and content knowledge, most were unfocused and certainly not developed with the students, or the schools' needs in mind except in the most general sense. The plans did not reflect research findings, except the one that mentioned specific reading strategies, but again, these were not focused on an analysis of actual students' needs.

The superintendent authorized the Office of Curriculum and Instruction to set in motion the process that would begin the intervention in the 1993–94 school year and carry it forward into the 1994–95 school year. In authorizing this office to take the necessary steps to re-route student achievement, he stripped a considerable area of power from the principals and the Chapter One Director. The superintendent joined the district at the close of the 1992–93 school year, so the changes he mandated were planned with limited (almost no) teacher or principal input as they took place during the summer months of 1993.

To ensure some dialogue about the problem and its resolution, in the absence of access to the teachers, a two-tiered leadership structure was developed to help create the plan for increasing student performance. The leadership team was expected to oversee the projects and provide technical assistance and support to the teachers. The first tier consisted of outside advisers who provided technical assistance to teachers and served as district consultants. These primarily included university professors, each with a particular interest in urban education. In addition to the assistant superintendent, who was in charge of the project, the internal leadership team consisted of other district educational staff, education consultants and representatives of high school departments. It was responsible for the day-to-day planning, supervision and oversight of all curriculum areas.

The team worked to develop and draft an educational quality framework to communicate to staff that profoundly different changes were underway in the district. The Educational Quality Framework (Carter, 1993) provided information on:

- the results of the assessment of achievement data indicators;
- the recommended response to re-routing low student achievement; and
- the specific steps and actions the central office staff would take to provide assistance at every level of schooling.

The intervention's goals

The first goal was to bring elementary student achievement to at least the minimum standard required by the Chapter One programme. Making the challenge even more daunting were the new core curriculum mandates from Public Act 25 that required teachers who were accustomed to a traditional time-based curriculum to shift and teach students an outcomes-based curriculum. Not only were there curriculum development activities associated with a significant philosophical shift, but also there was the problem of increasing the knowledge base of all teachers to include the recommended core curriculum outcomes in their background knowledge. Teachers needed to learn new teaching strategies to parallel an outcomes-based curriculum. Also, Public Act 25 and the correlating Michigan Department of Education policy required districts to choose two core curriculum areas per year and modify the existing school curriculum by adding the core curriculum outcomes to the district curriculum at all levels in all courses.

Additionally, the legislation required the formulation of school improvement teams (composed of teachers, administrators, parents, community representatives and, where appropriate, students). These teams had the responsibility of drafting school progress plans that were targeted to better student performance on the MEAP assessments. School improvement teams were to be typically chaired by teachers, not administrators.

Further, teachers at each school were required to develop and make public an annual education report that recapped the activities and events of the school and indicated the progress the school made in increasing student performance on the MEAP and on any other measures of assessment. These required activities consumed even more teacher time.

The second, parallel goal concerned secondary-level student achievement, which was perhaps even more dismal. In 1993–94, Michigan adopted a two-tier high school diploma system: endorsed and standard. Examinations for these diplomas began in Grade 10, through the MEAP. *Endorsed* diplomas were those in which students met only minimal standards (at about the 50% level) in reading, mathematics and science. *Standard* diplomas represented satisfactory scores (at about the 75% level) in the examination.

Thus, endorsement standards were lower than the state standard for satisfactory performance. Accordingly, students can receive 'endorsement' even when they fail to attain a satisfactory score on the MEAP. However, their school cannot receive accreditation unless 66% of the students have met or exceeded the state standard.

In 1993–94, fewer than 30% of Highland Park's graduating seniors had attained scores high enough to qualify even for endorsed diplomas. In fact, of 707 high school students in Grades 10–12, only fifty-one students had achieved endorsement status based on their performance on the MEAP.

The Michigan Department of Education provided opportunities to re-test for high school students who were unsuccessful in their first attempt to score at the state standard, so it was decided to incorporate these additional opportunities for success into the interventions to be designed, even though re-test results tended to be discouraging. Previous test preparation efforts had generated few students whose scores improved as a result of the intervention. The typical average percentage of students improving was less than 5%. Nevertheless, the Highland Park curriculum office developed what we called a 'quick-fix test preparation intervention' to help high school students, particularly the seniors, score higher on the MEAP.

SEEKING A RESEARCH-BASED SOLUTION

The leadership team felt that careful planning and the provision of sufficient support for teachers and principals would allow the mounting of an aggressive district-wide campaign that would—on the basis of our reading of the research—'jump start' student learning. For both goals—increasing student performance on the MEAP and increasing student performance on the CTBS—the team surveyed the research on Chapter One students, that of *cognitive science,* and that of *reading development.*

WHAT WAS LEARNED ABOUT CHAPTER ONE STUDENTS, GRADES K-3 AND 4–8

Stanley Pogrow's (1993) research on Chapter One students suggests that their learning problems differ and are set in specific grade spans. For example, he suggests that kindergarten through third grade students primarily suffer from a knowledge deficit and benefit from interventions that build background knowledge and skill in common content areas. Students in the fourth through eighth grade span, however, suffer from what Pogrow calls an inability to construct a sense of understanding about how to integrate ideas. He argues that for these children, the interventions utilized in early grades seldom work. He describes three distinct types of Chapter One students and categorizes them on the basis of specific learning problems they manifest: meta-cognition deficits; construction of meaning deficits (what he refers to as undiagnosed dyslexic students); and deficits that accompany borderline 'mentally educable' students and result in their inability to generalize in sophisticated ways.

Pogrow concludes that the largest group of students and those most likely to benefit from interventions are students who suffer from meta-cognition deficits.[6]

Overall, Pogrow offers three important observations that we took into consideration while planning the Chapter One response for Highland Park students. He suggests that the programmes be developed with the following characteristics in mind: that they are focused on the problems which students have in learning; that they utilize the best teachers and provide them with highly specialized training in learning interventions such as meta-cognitive strategies; and that the interventions are not typically carried out in the regular classroom.

WHAT WAS LEARNED FROM COGNITIVE SCIENCE

Historically, in current and past practice, the findings of cognitive science research were seldom considered as beginning points for Chapter One programme development, nor were they always present or even frequently so in programme planning. Yet considerably more of a return on the investment could be realized if these findings were a mainstay of the development of Chapter One programmes.

The research on cognitive science provided the psychological theories that undergirded the intervention and convinced us that a new approach was needed. To determine a course of action based on the main goal—learning—the team believed it would identify the answers to the problem of low student achievement and, at the same time, establish a common body of knowledge that we all understood.

The research indicated a connection between social interaction and concept development and the need for adult intervention in children's thinking because children master intellectual skills progressively (Bruer, 1993).

Vygotsky cited three ways in which students acquire new knowledge and skills: through social interaction, concept development, and use of the *zone of proximal development*. He describes the zone of proximal development as the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers. Teachers (and advanced peers) foster intellectual growth by providing guidance within a student's zone of proximal development through *scaffolding*, a method wherein teachers lend a hand to students to help them advance to the next level of performance. When using scaffolding, the goal is to help only as much as needed and to withdraw assistance as the student gains skills and competence.

Reading development as a means of improving student performance: the choice of Reciprocal Teaching

Our team wished to demonstrate to teachers that students they believed to be hopeless in terms of reading development could, in fact, be helped to read better if reliance on and the application of the research were mainstays of their instructional response. Our review of cognitive science research had convinced us that a team approach to improving student performance could provide the social interaction so needed in learning situations. We created an Academic Response Team as the mechanism we would deploy, district-wide, to reverse low student performance on state and national assessments.

We realized that we would have to create a mechanism that would 'jump-start' learning at all relevant levels to ensure that the students benefited in terms of their performance and to ensure that we made fast progress towards the goal of higher student performance and school accreditation status. Because we recognized reading as the route to all learning for all content area subjects, we set out to locate a reading development strategy or set of strategies that would raise the reading levels of students. It was our intent from the outset to focus on two areas: MEAP reading scores (and to the degree we could impact on them, mathematics scores as well) and student performance on standardized reading assessments (like the CTBS). We agreed to focus on reading improvement (generally speaking) and better equip the students to learn in all content areas.

The discovery of Reciprocal Teaching was based on cognitive science research, and its record of validation was bona fide; student reading comprehension improved in *every* trial and the results remained constant over time. Among reading experts and practitioners, the technique had been heralded as effective in helping students improve their reading ability in pre-post trials or research studies (Pearson & Doyle 1987; Pressley, Snyder & Cariglia-Bull, 1987). Additionally, Bruer (1993) reported that Reciprocal Teaching helps novice readers learn and internalize in a short time the strategies excellent readers employ, and they are able to retain the skills and apply them in other content area subjects. That the technique was short in duration, twenty days, was also part of its appeal.

The Office of Curriculum and Instruction thus saw Reciprocal Teaching as an ideal intervention, one that matched both what we had learned about Chapter One students from Pogrow's research and the research findings from

cognitive science, social interaction, concept development and scaffolding. It was also an intervention simplistic enough for long-term training and development to be unnecessary, while providing numerous options for teaching and reinforcing the strategies. We believed that getting the teachers' support would be considerably easier than if we asked them to learn a completely new instructional model. Because the technique is easily understood and mastered by both teachers and students, regardless of the level of training in reading research and applications (or even ability to read), we felt confident that this technique would provide us with a model we could use to teach parents (and volunteers) how to help promote comprehension among their children—and therefore reinforce reading skills that would help students develop further.

We concluded that we could capitalize on the strategy on a variety of fronts: as a mechanism to develop staff (we would plan staff development initiatives where the text to be read would be read in small groups using Reciprocal Teaching methods); as a technique we could teach to parents and students alike (and have faith that regular application of the technique would generate positive returns); and as a technique that the Academic Response Team could teach to classroom teachers to ensure the likelihood of more widespread application.[7]

The origins of Reciprocal Teaching

Bruer (1993) traces the cognitive science research related to Reciprocal Teaching and tells the story of its evolution as a comprehension-fostering strategy. According to Bruer, Anne-Marie Palinscar, co-creator of Reciprocal Teaching, reviewed Meichenbaum's (1985) self-verbalization techniques, which had demonstrated success with impulsive children, to determine whether they could be useful in regulating children's cognitive processing, particularly those that impact and result in reading competence. Meichenbaum suggested that Palinscar strengthen self-verbalization by incorporating ideas and research on meta-cognition and referred her to Ann Brown, an expert on meta-cognition.

Together, Palinscar and Brown developed Reciprocal Teaching on a theoretical basis wherein they analysed the task's demands, developed a theory of task performance based on expert-novice studies (cognitive science) and formulated a theory of instruction that might improve task performance (Palinscar & Brown, 1987). From their analysis and review of research, they had previously identified six functions that most researchers agreed were essential to expert reading comprehension. The competent reader:

- understands that the goal in reading is to construct meaning;
- activates relevant background knowledge;
- allocates attention or cognitive resources to concentrate on major content ideas;
- evaluates the constructed meaning (referred to as the gist) for internal consistency;
- draws and tests inferences (including interpretations, predictions and conclusions); and
- monitors the five previous functions to see if comprehension is occurring.

Palinscar and Brown identified four simple strategies that, when used in concert, would tap all six functions needed for comprehension. The strategies are summarizing, questioning, clarifying and predicting.

What is Reciprocal Teaching?

Reciprocal Teaching is characterized as a dialogue taking place between the teacher and students (or student leader and members of the group) that results in students learning how to construct meaning when they are placed in must-read situations (tests or assignments). The approach derives from the theory that reading for meaning and retention—what is referred to as study reading—requires effort, a full repertoire of comprehension strategies (namely, summarizing, generating questions, clarifying and predicting), and the flexibility to use these strategies as the situation requires. Each of the strategies helps students to construct meaning from text and monitor their reading to ensure that they are in fact understanding what they read. These strategies inform them when they have wandered off, missed the point, are confused, cannot predict what is coming up, or are not following the gist of that to be learned (Bruer, 1993).

Reciprocal Teaching thus parallels the new definition of reading that describes the process as a dynamic interaction between the reader and the text in the reader's attempt to construct meaning from the text. Using prior experience as a channel, readers learn new information, main ideas, make connections, and generally make sense from the text as intended by the author. Readers construct meaning by relying on prior experience to parallel, contrast or affirm what the author suggests. All excellent readers do this construction. Otherwise, the content would be meaningless alphabetic squiggles on the page. Without meaning construction, learning does not take place. Reciprocal Teaching is a model of constructivist learning, exactly what Chapter One students need, especially the ones who fit Pogrow's description as unable to construct meaning from print.

Strategic readers consistently employ two ongoing mental activities as they read: they read and understand the content while at the same time remaining alert for instances when they are not achieving full comprehension, and taking appropriate steps to remedy the situation. Generating questions, summarizing, clarifying and predicting were selected to comprise the Reciprocal Teaching technique because they meet both needs of the strategic reader, the ability to read for meaning and to simultaneously monitor for comprehension.

When engaging in Reciprocal Teaching strategies, the novices are practising and developing the skills required to comprehend and learn, or they are mimicking the behaviours of expert readers. With proper scaffolding by the teacher or a more advanced peer, the student internalizes the strategies and applies them successfully. Trials employing Reciprocal Teaching have consistently indicated that the technique promotes reading comprehension as measured on standardized reading tests.

Summarizing text provides the opportunity for readers to identify, paraphrase and integrate important information in the text. It requires the reader to recall and state the gist he (or she) has constructed. Therefore, a reader who can summarize has activated background knowledge to integrate information appearing in the text, allocated attention to the main points, and evaluated the gist for consistency. The inability of the reader to summarize text indicates that comprehension is incomplete.

When readers generate questions, they first identify the kind of information that is significant enough that it could provide the substance for a question. Then they pose this information in a question form and self-test to ascertain that they can answer their own question. Generating questions about text, likewise, depends on the gist and the function needed for summarizing, but with one additional demand: that the reader monitor the gist to pick out the important points. To generate questions, the reader is required to re-process the information read into question format. The inability to formulate appropriate questions about text is another indicator that comprehension has not occurred.

When readers clarify the text, their attention is called to the many reasons why text is difficult to understand: new vocabulary, unclear references and unfamiliar or difficult concepts. When a reader clarifies a point, he/she must allocate attention to the difficult points and engage in critical evaluation of the gist. In short, clarifying directs the reader to look for parts of the passage that are confusing and unclear. The reader must ask the question: 'Is there anything in this segment that I don't understand?' If there are unclear segments which block understanding, the reader is signalled to re-read, read ahead or ask for help.

Predicting requires the reader to hypothesize about what the author might discuss next in the text. This provides a purpose for reading: to confirm or disprove the hypothesis. Additionally, with predicting an opportunity has been created for the readers to link the new knowledge they will encounter in the text to the knowledge they already possess. It also facilitates the use of text structure as students learn that headings, sub-headings and questions embedded in the text are useful means of anticipating what might occur next. To predict, the reader must read with anticipation and expectancy, watching for text clues indicating where the author is going next. The inability to predict may also be an indicator that comprehension is inadequate.

Palinscar established five requirements to guide her development of a prototype (of an instructional model) that could be used to teach the four strategies to students; then she designed Reciprocal Teaching to satisfy all five of the requirements. The requirements, in brief, are:

- For strategy instruction to be successful, teachers have to make the strategies overt, explicit and concrete by modelling them for the students;

- Secondly, to avoid inert strategies, teachers should teach strategies as a functioning group (as opposed to in isolation) and should link them to the context in which they are to be used. (This suggests that reading strategy instruction should take place during reading-comprehension tasks, where the goal is to construct meaning);
- Instruction must be informed—the student should be aware of why the strategies work and when and where they should use particular strategies;
- Students should be aware that the strategies work regardless of their level of performance and they should receive feedback from their teachers about their success based on their abilities; and
- Finally, to ensure that students are spontaneous strategy users, the responsibility for comprehension must be transferred from the teacher to the student, gradually, but as soon as possible (Bruer, 1993).

Understanding that successful strategy instruction must include practice on specific task-appropriate skills (the cognitive aspect), explicit instruction on how to supervise and monitor these skills (the meta-cognitive aspect), and explanations of why the skills work (the informed instruction aspect), Palinscar experimented with one-to-one tutorials in the first trial involving Reciprocal Teaching.

After twenty days of Reciprocal Teaching sessions (thirty minutes each) 96% of the students in this trial could raise appropriate questions, 64% of the questions addressed main ideas, and 60% of the summaries captured the gist of the passages. Student reading comprehension improved as well. On daily comprehension tests, scores improved from 10% to 85% correct and stayed at this level for at least six months after the Reciprocal Teaching intervention was ended. In the second trial involving Reciprocal Teaching, Palinscar repeated the study, only this time she worked with two students at a time and obtained the same results (see Palinscar & Brown, 1987).

Subsequent Reciprocal Teaching trials involved small-group sessions facilitated by trained reading specialists, small-group sessions taught by general classroom teachers with no specialized training, whole-group instruction in the technique by teachers with no specialized training, and small-group sessions led by students who were peers of the students in the groups (Bruer, 1993). In all cases, student comprehension improved, even in the groups facilitated by students.

HOW DOES A RECIPROCAL TEACHING DIALOGUE TAKE PLACE?

At the outset of a session, the teacher explains to the students that they will be learning how to use four reading comprehension strategies that will help them read and retain information in their texts. The teacher also discusses with the

students why the strategies are effective and when they can be used. Students are provided with definitions for each strategy and given opportunities to practise each one. Once students have a good understanding of the kind of processing each strategy entails, the actual Reciprocal Teaching dialogue can begin.

The teacher selects a segment of the text, preferably at the sentence or paragraph level. As the students progress, longer segments (sub-heading to sub-heading, for example) can be used. The teacher decides the size of the instructional group (usually six to eight, although the strategies can work with a whole class, partners or groups of four). Students are told to read a segment of the text silently. The teacher begins by asking questions about the text and the students respond. Next the teacher summarizes the text, modelling how the summary was constructed. The teacher clarifies the text, directing the students' attention to segments of the text that might impede comprehension (unclear parts, unclear referents, complex concepts, poor organization, etc.). Finally, by pointing out clues in the paragraph, the teacher makes a prediction about the next segment of the text. Throughout the modelling of these strategies, students are encouraged to add their own ideas and to participate in the dialogue.

A student reader becomes the 'teacher' when the reading resumes and he (or she) follows the same procedure described above. Each student is given the opportunity to lead the dialogue and to experience the cognitive processing involved in using the four strategies. The teacher assists the student 'teacher' as much as needed and relinquishes control of the dialogue to the students as soon as the students demonstrate an ability to carry the Reciprocal Teaching dialogue without teacher prompts or clarifiers. In this way, the Reciprocal Teaching technique involves scaffolding students and helping them until they demonstrate an ability to read competently.

Implementing Reciprocal Teaching at Highland Park

We began the experiment in the autumn of 1993 with some specific objectives in mind: to ensure that students at highest risk received instruction in monitoring and regulating their reading comprehension; to help teachers realize first-hand the benefits of small-group dialogues as vehicles of comprehension because these matched the new definition of reading exactly; and to encourage a new basic requirement among teachers—proficiency in using the Reciprocal Teaching technique.

Our next task was to develop a system for introducing Reciprocal Teaching to Highland Park teachers and students. We carefully chose the teachers who would be working with the most challenging students, seeking out former reading instructors and mathematics teachers who demonstrated an interest in problem-solving. Using Chapter One funds, we established (and later expanded) a team of ten professional and paraprofessional educators at each school, except the high school. At our Kindergarten-Grade 2 school, we deployed two teachers and two paraprofessionals. We selected paraprofessionals who had worked in reading classrooms and were comfortable with tutoring students. Collectively, we called these teams the Academic Response Teams.

Annemarie Palinscar of the University of Michigan (Ann Arbor), co-creator of the strategy, was engaged as our initial trainer, devoting one day to introducing Reciprocal Teaching to the Highland Park teachers. Following this, the Academic Response Team members were divided in two groups: mathematics and social studies, each group led by a consultant in the subject area. Team members were invited to dialogue about the Palinscar presentation and to (collectively) construct meaning from it on the basis of their experience as classroom teachers and tutors. Paraprofessionals were assigned to teacher members on the Academic Response Team, and were expected to conduct Reciprocal Teaching dialogues just as teachers were.

EXPERIMENTING WITH THE TECHNIQUE IN THE HIGH SCHOOL

The Academic Response Team was temporarily reassigned to the high school to provide them with an opportunity to get comfortable with this new approach to teaching reading and to provide support for the students at the high school level who had not acquired endorsement status based on their MEAP performance. Students were to be 'pulled' from high school mathematics and

social studies classrooms and taught the techniques of Reciprocal Teaching daily for thirty minutes, twenty days in a row. The team devised a process for identifying social studies and mathematics students without endorsement status and met with their teachers to co-ordinate the intervention. After planning and practising for two weeks, in mid-September 1993 the team began working with high school students as preparation for working with the elementary students.

The teams worked with small groups of students who experienced difficulty in mathematics and reading achievement. The aim was to teach each child how to boost his or her learning through the Reciprocal Teaching technique. Accordingly, each hour, members of the Academic Response Team 'pulled' six to eight students from each Grade 11 and 12 social studies classroom. The regular classroom teacher kept a similar number of students and taught the class as normal. The Academic Response Team member served as a super tutor for the group, reading the textbook passages with the students and engaging them in discussions using Reciprocal Teaching strategies. This procedure was repeated in Grades 11 and 12 mathematics classes. In some instances, a member of the Academic Response Team would team-teach with the classroom teacher and help him or her structure group-based learning dialogues using Reciprocal Teaching strategies.

In some cases, students had the opportunity to use the strategies twice a day for fifteen days. At this time, the Michigan Department of Education tested students in October; accordingly, we had only four weeks to apprise teachers of the new direction, provide initial training for the members of the Academic Response Team, and provide whatever assistance we could for the unendorsed high school students.

Team members met daily in home school groups and created plans for using the techniques and for stimulating interest among their colleagues.

EXPERIMENTING WITH THE TECHNIQUE AT THE ELEMENTARY LEVEL

Following the short-term training programme with teachers and high school students, our next step was to launch the programme at the elementary level. We wanted to boost all students' abilities to comprehend the symbols and words they encounter in their classes. We planned to monitor the students throughout the school year to determine if they had improved. The Academic Response Teams developed plans for teaching Reciprocal Teaching techniques to identified elementary students (within their home schools) and the entire Grade 3 population (who would be taking their first MEAP test the following year, 1994–95).

Teams of mathematics teachers, reading teachers and paraprofessionals were deployed to each elementary school, and in early November 1993 began the intervention. One team of three reading teachers, two mathematics teachers and five paraprofessionals was assigned to each elementary school, with one exception. (Cortland School is a primary school with kindergarten through Grade 2 only. It received a reading teacher, a mathematics teacher and two paraprofessionals.) Each Grade 3 teacher was also provided with video courses in reading research (teaching reading in the elementary classroom and developing literacy) and Reciprocal Teaching strategies were used to generate daily, weekly and monthly dialogues among the teachers regarding the research and its meaning in an effort to familiarize them with the technique and to ensure the development of a common body of knowledge about reading.

Whereas the Academic Response Team taught Reciprocal Teaching strategies to *all* students if they were in a school-wide programme and taught the strategies to targeted students in schools under the Chapter One programme, particular focus was given to the third grade students. The goal pursued was a simple one: to replicate the techniques used at the high school with one significant exception i.e. ensure that the third grade students who would take the MEAP the following year received two daily doses of Reciprocal Teaching, one to interact with text (in social studies) and the other to use the strategies to construct meaning in mathematics and thereby solve mathematics problems.

To ensure that the third grade students would have the opportunity to construct meaning in a content area, perhaps more challenging than mathematics or social studies, we partnered with the Berlitz Language Institute and offered the Berlitz Jr. programme for six weeks to each group of third grade students. The Berlitz Jr. approach is an immersion-oriented foreign language programme. It provided each third grade class with twice weekly foreign language lessons from a native speaker who talked only in French as he taught them fundamental words, phrases and sentences.

It was the author's belief that when poor readers encounter text, they sometimes are placed in the same condition as the one who struggles to make sense from a foreign language unknown to him or her. I believed that the foreign language experience was the perfect metaphor for constructing meaning in that students really would have to search for clues to facilitate understanding or to construct meaning. This experience lasted for six weeks—the period for which resources were available.

The Academic Response Team would sometimes work in their own classrooms and sometimes in the classrooms of their partner teachers. Other times, they met with students in resource rooms. Our programme was designed to accommodate both a 'pull-out' and a 'push-in' programme. Selected team mem-

bers led weekly and monthly staff development sessions related to curriculum and instruction issues, and all teachers were challenged to incorporate Reciprocal Teaching techniques into their staff development sessions by offering training in the approach for any who desired it.

PROBLEMS ENCOUNTERED DURING THE RECIPROCAL TEACHING INTERVENTION

The transition was not as smooth as had been envisioned. Although co-operation among all segments of staff was exceptional, internal struggles in the district did surface. For example, the members of the Academic Response Team encountered difficulty, initially, as they tried to introduce Reciprocal Teaching dialogues. These were teachers who were accustomed to either skills-based or whole language reading instruction. Accordingly, teaching reading by modelling and by using a dialogue format was difficult for them at the outset.

They remedied this problem by creating mechanisms that served as crutches, which helped them launch and sustain the dialogues. These included assigning roles to students (one summarizes, one clarifies, one questions and one predicts—and they rotate these roles), using prompts such as cards that specify a certain strategy and activity related to the text, and relying on questioning strategies such as the journalistic 'who, what, when, where, why and how'. Relying on these and continuing to research and learn about Reciprocal Teaching aided them tremendously.

In addition, team members were each provided with a compilation of research articles on Reciprocal Teaching and were encouraged to read and discuss these (in the Reciprocal Teaching style) in an effort to increase their familiarity with the technique. They also attended professional staff development sessions for other school districts and participated in conference presentations organized by the assistant superintendent, the project co-ordinator.

Some teachers expressed concern about the process and the time it took to follow it in their classrooms, despite the team support provided. Others resented the central office interference with school matters and complained that Chapter One rules (for target-specific and school-wide programmes) were violated by allowing staff paid with Chapter One money to work with students not identified on the teachers' Chapter One rolls.

Another point of internal strife was concerned with reporting roles. Some staff, including principals and central office personnel, resented the supervision of the Academic Response Team. With hindsight, it would have been better to have adopted a more collaborative approach. Relations with principals became hostile and tense, and the level of trust was extremely low, although support improved throughout the school year. Elementary principals resented the loss of

staff they suffered as their Chapter One teachers and paraprofessionals were re-assigned to the high school during the crucial month of September. They resented the intrusion into the internal affairs of their schools and were only marginally supportive at first of the Reciprocal Teaching initiative.

INITIAL DISTRICT RESULTS AFTER RECIPROCAL TEACHING

One convincing result of the programme was that our high school students seeking endorsement in reading and mathematics made significant gains in MEAP scores. This time, instead of the customary 2–3% re-test gains, Highland Park students posted gains that exceeded 25% in some of the test areas. As a result, more students received endorsed diplomas than had been anticipated. For seniors, 29% received three endorsements on the first test; on the re-test, 43% received three endorsements. This suggested that students were learning how to learn and were understanding more of what they read.

Another encouraging result was the improvement in the scores of the fourth grade students (who had been the third grade students who were taught Reciprocal Teaching strategies). The 1994 state assessment reports were a delightful surprise. Whereas most Michigan school districts experienced a decline in their Grade 4 reading scores, Highland Park fourth graders doubled theirs—from 14.4% to 28.8% in one year (see Table 4). And they more than doubled their scores in mathematics. Armed with these encouraging results (and the feedback from teachers and students regarding the benefits of Reciprocal Teaching), we provided more staff development in reversing low student achievement.

TABLE 4. Comparison of Highland Park MEAP Reading Scores (%), 1991–94

Grade	1994	1993	1992	1991
4	28.3	14.4	9.8	8.6
7	9.3	10.9	8.6	12.8
10	23.3	13.3	22.4	10.3

Note: Percentages represent the proportion of students meeting state standards in reading. The fourth graders tested in 1994 had received intensive instruction in Reciprocal Teaching reading comprehension strategies in the 1993–94 school year. Reading scores for the next two years' groups of fourth graders continue to improve: for 1995, 31.5%; for 1996, 39.6%.

One of the professors participating in the initiative submitted a proposal describing the Highland Park Reciprocal Teaching intervention to the Conference Co-ordinators for the Third International Council of Teachers of

Social Studies International Conference and received an invitation to present the innovation to the conference in Nairobi, Kenya, in the summer of 1994.

TAKING RECIPROCAL TEACHING FURTHER IN HIGHLAND PARK

The entire 1993–94 year was devoted to developing staff proficiency in using Reciprocal Teaching strategies: we became convinced that the programme should become a staple of classroom teachers, and it did for quite a number of the teachers and team members. In 1995, 31.5% of fourth graders met or exceeded the state standard in reading. The following year, the percentage had increased to 39.6%. However, the upward spiral in test scores abated as a result of an early retirement incentive offered to veteran teachers in Highland Park in 1997, with a number of the trained teachers retiring. Even though the scores attained are nothing to brag about, the urban Highland Park students, most of whom are from minority families with low socio-economic status, achieved higher scores than many students in urban, rural and suburban school districts in Michigan.

Reciprocal Teaching today: in Highland Park and in the United States of America

Few remnants of Reciprocal Teaching remain in Highland Park today. A change in superintendents (three times since the intervention) has resulted in a host of new priorities being established and pursued, even though the need remains constant for a reading improvement strategy that works.

In contrast to Highland Park, however, the state and country-wide exposure to Reciprocal Teaching has increased through the years. Currently, the strategy has found its way into textbooks involved with the teaching of reading as well as in the practice of teachers across a wide spectrum. Examples include Kelly et al. (1994), who assessed the effects of Reciprocal Teaching on the comprehension of poor readers and found significant improvement in comprehension that was maintained after an eight-week follow-up. Another example is a replication study conducted by Alfassi (1998), which investigated the effects of strategy instruction on reading comprehension and concluded that strategy instruction was superior to traditional reading methods in fostering reading comprehension as measured by standardized reading tests.

King and Parent-Johnson (1990) reviewed the experiences they had in involving fifth grade teachers in studying Reciprocal Teaching and found that when teachers consistently and clearly modelled all four strategies, students monitored their comprehension and gained deeper insight into text concepts.

The research pool concerned with Reciprocal Teaching has likewise increased significantly. Practitioners have a wealth of information available to them through home pages and web sites, specialized bibliographies, descriptions of the process and the modifications tried in trials, and training materials. Examples of these include a training programme sponsored by the Florida Department of Education in which training materials were developed to acquaint middle school teachers in eight schools with Reciprocal Teaching.[8] Patti's Electronic Classroom provides descriptive information on Reciprocal Teaching and provides training aids such as cards and scripts.[9] A theory on practice monograph describes Reciprocal Teaching and provides practitioners with answers to the most commonly asked questions about the approach.[10]

The North Central Regional Educational Laboratory, an educational resource laboratory, has a web site that explains Reciprocal Teaching and summarizes the research from which it comes.[11] The University of Washington

posts a Reciprocal Teaching Home Page that reviews the research and concludes that the technique is effective.[12] In fact, an Internet search to locate Reciprocal Teaching resources received 24,000 hits. This increase signals wide-ranging interest in Reciprocal Teaching, far beyond the twenty or so research articles I encountered in my preliminary research on the technique.

Further, Reciprocal Teaching has aroused international interest as well. An example includes the *European Union: Challenges to integration*, which integrates both higher-order thinking skills and Reciprocal Teaching. In Canada, Hewitt (1995) published a review of Reciprocal Teaching that concludes that the technique is attractive for its simplicity of form and success in realizing its goals.[13]

Notes

1. In 1992, the United States Congress appropriated 6.1 billion dollars for basic Chapter One services to states and school districts. These funds served more than five million children, approximately one out of every nine school-age children in the United States. The Chapter One programme represents the government's largest investment in elementary and secondary education, accounting for 19% of the Department of Education's total budget. Participation in federally funded programmes such as Chapter One was restricted to students who came from poverty backgrounds. The federal legislation allows each state to decide the standard by which to determine poverty status. In Michigan, the official standard for the determination of poverty status is whether a school-age child receives lunch that is subsidized or provided free of charge through a federal free lunch programme. The percentage of students receiving free lunches determines the percentage of the state's Chapter One allocation that a school district receives. (Note: since this time, Chapter One has been renamed Title One and currently requires student achievement on state assessments in all core content areas, which extends the intent far beyond reading and mathematics improvement.)
2. Some of the main issues of the curriculum debate included the merits of including the selected eleven curriculum areas as opposed to others; the nature of some of the outcomes; and multiculturalism, the inclusion of social studies themes, and related issues. Some questioned the legitimacy of the content and of the curriculum writers.
3. Normal curve equivalents (NCEs) are described as a statistic similar to percentiles with a mean of 50 and a standard deviation of approximately 21. The standard is that students should gain in percentile rank from year to year. Chapter One guidelines, in an effort to promote school accountability, placed particular focus on schools that failed to show progress in student achievement after receiving Chapter One funds.
4. Reserve Officers Training Corps (ROTC) is a programme offered at colleges and universities in the United States that trains college students to be officers in the active army, reserve and national guard.
5. The main indications of honours' activity were: an invitation to an annual honours dinner wherein all students with excellent grade point averages gather with their families and are feted for their scholarship; and a scholarship programme for high school students where winners are acknowledged at a special dinner. Another indication was honour roll status. We found that less than one-third of the students were involved in honours' activities.
6. Ironically, these students receive limited access to Chapter One services because the federal guidelines current in 1990 required schools to serve those most in need first. This invariably limited services to the 'borderline mentally educable' students for the most part, while the students most likely to benefit from interventions remain underserved in Chapter One programmes.
7. A related intervention is described in the Framework (Carter, 1993) that sought to develop common background knowledge about teaching reading. I selected two graduate-level, video-based reading instruction courses for teachers of Grades K-3. The Academic Response Team served as professional staff developers who facilitated small group dialogues (using Reciprocal Teaching strategies) wherein teachers dis-

cussed the contents of the videos in an effort to construct meaning from the tapes and to ensure that lower elementary teachers were all exposed to a uniform approach to developing reading skills in students.

8. For a description of the project, see http://www.miamisci.org/tec/projectmerit.html
9. http://www.suite101.com/article.cfm/reading/45021
10. http://www.sdcoe.k12.ca.us/score/promising/tips/rec.html
11. http://www.ncrel.org/sdrs/areas/rpl_esys/collab.htm
12. http://depts.washington.edu/centerme/recipro.htm
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