



AMERICAN INSTITUTES FOR RESEARCH

**THE 2000-2001 EVALUATION OF THE
READING AND WRITING FOR
CRITICAL THINKING PROJECT**

EXECUTIVE SUMMARY

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
THE READING AND WRITING FOR CRITICAL THINKING PROJECT (RWCT).....	2
CONCEPTUAL MODEL FOR THE EVALUATION	4
STUDY DESIGN AND DATA COLLECTION	5
STUDY LIMITATIONS	5
EVALUATION RESULTS.....	6
Teaching Practices	6
RWCT Teachers' Views about RWCT	10
Pupil Critical Thinking Skills.....	12
CONCLUSION.....	15



THE 2000-2001 EVALUATION OF THE READING AND WRITING FOR CRITICAL THINKING PROJECT:

EXECUTIVE SUMMARY

In April 2000, the Open Society Institute (OSI) commissioned the American Institutes for Research (AIR) to conduct an evaluation of the Reading and Writing for Critical Thinking (RWCT) project. OSI asked AIR to examine three research questions:

1. To what extent do RWCT teachers maintain the fidelity of the RWCT model in their teaching practices?
2. To what extent do pupils whose teachers participate in RWCT¹ have higher critical thinking skills than pupils in a non-RWCT control group?
3. To what extent do RWCT teachers' and pupils' attitudes about teaching and learning differ from those of teachers and pupils in control groups?

The evaluation sought differences among pupils and teachers in RWCT classrooms and in control-group classrooms in four countries: the Czech Republic, Kyrgyzstan, Latvia, and Macedonia. Findings from the evaluation indicate that participation in RWCT is positively and significantly associated with each of these aspects of teaching and learning:

Teaching practices:

- RWCT teachers maintain the fidelity of the RWCT model by spending less classroom time than their peers lecturing, engaging pupils more frequently in small group activities, and encouraging more pupil-led classroom discussions;
- RWCT teachers spend more time than their peers promoting "authentic pedagogy," including higher-order thinking, substantive conversation, connections to the world outside of the classroom, and an appreciation for multiple approaches to problem solving;

¹ These pupils are referred to throughout the executive summary and evaluation report as RWCT pupils and their teachers as RWCT teachers.



Teacher and pupil attitudes:

- On affective scales, RWCT teachers strongly support the project and are more likely than control-group teachers to enjoy their jobs;
- RWCT pupils are more likely than pupils in control groups to enjoy classroom activities in which they can be active participants in the learning process; and

Pupil critical thinking skills:

- RWCT pupils on the whole demonstrate higher critical thinking skills than pupils in non-RWCT control groups, differences that are largely attributable to classroom communication patterns and teachers' integration of critical thinking principles into teaching practices.

This executive summary highlights key findings from the evaluation report as well as the companion *Institutionalization and Impact Study* and cost analysis of the RWCT project. Although this summary focuses almost exclusively on overall evaluation results, country-by-country results are discussed in the evaluation report.

THE READING AND WRITING FOR CRITICAL THINKING PROJECT (RWCT)

RWCT is a professional development project for educators, the purpose of which is to provide participants with strategies for interactive methods of teaching that prepare pupils for citizenship in open societies. In its first three academic years, 1997-2000, more than 12,200 teachers completed RWCT training workshops in 24 countries throughout Eastern Europe and Central Asia, and many thousands more participated in short-term RWCT seminars and mini-courses. When a country first joins RWCT, four educators who have volunteered through the International Reading Association (IRA) travel to the host country to train 20-40 teachers to use RWCT strategies. These volunteers offer a series of four workshops over the course of 12-15 months. During that time, participating teachers practice the curriculum and adapt RWCT strategies based on individual circumstances. Between workshops, RWCT participants meet monthly with colleagues to discuss progress in mastering RWCT strategies. They also receive feedback from peers and RWCT volunteers who observe their classroom teaching. After completing the entire RWCT course, first-year participants are expected to become trainers for future generations of RWCT teachers.



RWCT training is designed to be applicable to educators at every grade level, from primary school through post-secondary education, and is not limited to specific subject areas. Teachers learn strategies to help pupils use self-reflection to solve problems and to engage actively in the educational process. They are then supposed to incorporate these strategies into their instructional practices—using reading and writing activities to encourage pupils to examine the implications of their ideas, exposing those ideas to polite skepticism, balancing ideas against opposing points of view, constructing supporting belief systems to substantiate the ideas, and taking a stand based on those structures.

Between the calendar years of 1998 and 2000, OSI spent approximately \$809 per certified RWCT teacher, including direct program costs and overhead. Average participant expenditures, however, decreased over time as more teachers began to participate in the project, from a high of \$1,912 in 1998 to a low of \$503 in 2000. Cost estimates do not include the in-kind contribution of IRA volunteers and in-country teacher educators. IRA volunteers alone contributed approximately 5,000 days of time to the RWCT project between 1998 and 2000.

Interviews with policymakers, university faculty and students, school administrators, teachers, and pupils in the four RWCT countries that were selected for this evaluation (the Czech Republic, Kyrgyzstan, Latvia, and Macedonia) support the evaluation findings that RWCT has made a substantial impact on teaching practices, classroom dynamics, and students and pupils' critical thinking skills. Respondents in all countries reported that RWCT has increased communication among pupils and between pupils and teachers inside and outside of the classroom. Primary and secondary school pupils and college students in all countries report that they are learning more with teachers who had participated in RWCT and that they appreciate the instructional methods that teachers are using. Parents, however, continue to be concerned about whether RWCT teaching methods will have an adverse effect of their children's achievement on national examinations.

Interviews further indicate that country coordinators have been successful over the past three to four years in integrating the RWCT model and principles into local schools and national-level educational reform efforts. Examples of national-level integration include the following:

- A section of the new national school curriculum reform plan in the Czech Republic (written by the RWCT country coordinator) that establishes the enhancement of pupils' critical thinking skills as a recommended instructional goal for all teachers;



- A decision by the national Ministry of Education in Kyrgyzstan to recognize RWCT as an approved in-service professional development program for teachers;
- The incorporation of language about the importance of pupil critical thinking skills as one of the most important goals of teaching into Latvia's national primary school standards;
- The general incorporation of RWCT teaching methods into the teacher education program at the Institute of Pedagogy, one of the premiere pre-service teacher education programs in Macedonia.

RWCT projects in these four countries are also partnering with academic institutions and non-governmental organizations to ensure the continuation of workshops after the three-year OSI funding period has ended.

CONCEPTUAL MODEL FOR THE EVALUATION

Guiding the evaluation is a conceptual model of how professional development activities for teachers can lead to changes in pupil outcomes.² According to the model, professional development directly influences teachers' knowledge and skills. Teachers then change their attitudes about teaching and learning and alter their teaching behaviors based on their reaction to the professional development experiences. They may also change their underlying beliefs about teaching and learning. Ultimately, changes in teachers' instructional practices affect pupils' attitudes, behavior, and psychological functioning. These changes can also influence pupils' achievement, knowledge, and skills. Finally, changes in one teacher's instructional practices can affect programmatic structures at the school level. School-level changes, such as changes in teaching requirements, pupil assessments, and enhanced schoolwide professional development opportunities, increase the likelihood that the benefits of instructional change will be institutionalized for teachers and pupils in the long run. This evaluation examines the three research questions listed on page 1 of this executive summary by measuring the direct link in the conceptual framework between professional development and teachers; the direct link between teachers and pupils; and the indirect link between professional development and pupils.

² Kutner, M. et al. (1997). *Evaluating Professional Development: A Framework for Adult Education*. Washington, DC: U.S. Department of Education, Division of Adult Education and Literacy.



STUDY DESIGN AND DATA COLLECTION

The RWCT evaluation was conducted in four countries that represent the geographic diversity of the RWCT project: the Czech Republic, Kyrgyzstan, Latvia, and Macedonia. Within each country, the primary sampling unit was two cohorts of RWCT teachers. Cohort 1 consisted of fourth or fifth year pupils and their teachers; Cohort 2 consisted of seventh or eighth year pupils and their teachers. Power analyses determined that it was necessary to select at least 36 RWCT teachers and 36 control-group teachers per country to measure moderate RWCT effects. AIR selected RWCT teachers at random from the population of eligible teachers in each country (i.e., those who were teaching pupils in Cohort 1 or Cohort 2 during the 2000-2001 school year) and then three pupils randomly per teacher. Eighty-eight percent of teachers who were identified through the sampling process participated in the study (i.e., agreed to classroom visits and completed teacher surveys). RWCT country coordinators then identified control-group teachers to match RWCT teachers based on the geography and demographics of teachers' schools as well as teachers' educational background and work experience.

Teams of five to seven in-country data collectors conducted data collection activities in each country. AIR trained data collectors in survey administration and classroom observation. Each data collector conducted approximately 10-15 visits to RWCT and control-group classrooms—double blind to the extent possible and with a random distribution of RWCT and control group classes—and observed classroom activities for at least 45 minutes per class. Data collectors then asked the teacher to complete a 45-minute survey and administered a 45-minute survey to three pupils whom they selected at random from the class. When data collectors were surveying fourth- and fifth- grade pupils from Cohort 1 classrooms, they read all of the questions aloud.

STUDY LIMITATIONS

The data collected for this evaluation provide extensive information about RWCT, pupil critical thinking skills, instructional practices, and teacher and pupil attitudes and behavior. It was not possible, however, within the limited scope of this evaluation to examine how RWCT pupils compare to control-group pupils on traditional academic measures of pupil outcomes. An extensive effort was made to collect national-level pupil achievement data from all 24 RWCT countries, but no such data were available publicly. It was also not



possible to establish a causal relationship between RWCT participation and teacher and pupil outcomes since data for this evaluation were only collected at a single point in time. Quasi-longitudinal analyses were conducted with teachers who joined RWCT in the first, second, third, and fourth years of the project, making it possible to infer causality in some circumstances, but these inferences cannot be considered conclusive.

EVALUATION RESULTS

Teaching Practices

The RWCT approach to teaching minimizes common teacher-pupil interactions, such as lecturing, and re-orientes classroom activities to help pupils take a more active role in their learning, such as promoting pupil-driven discussions and investigations. Teachers adjust their traditional roles as instructors and spend more time acting as mentors and facilitators. Rather than reporting information and asking pupils to memorize and recite facts, teachers learn to help pupils form original opinions, choose rationally between competing ideas, solve problems, and debate ideas responsibly. They also learn to help pupils work cooperatively with others to construct new ideas, appreciate different points of view, and recognize the ways people's background can influence their attitudes and perceptions. But do RWCT workshops provide willing teachers with enough guidance and support to accept this philosophy and actually incorporate critical thinking principles into their own teaching practices? Evaluation results indicate that they do.

RWCT teachers are more likely than their peers in control groups to develop lesson plans that integrate critical thinking principles into teaching practices

Based on a survey question that asked teachers to describe the different phases of their lesson planning, it was deduced that RWCT teachers were likely to incorporate more critical thinking principles into their teaching practices and at a deeper level than teachers in the control group. RWCT teachers scored 1.1 points higher on a five-point "integration scale" than teachers in the control group, a statistically significant difference.³

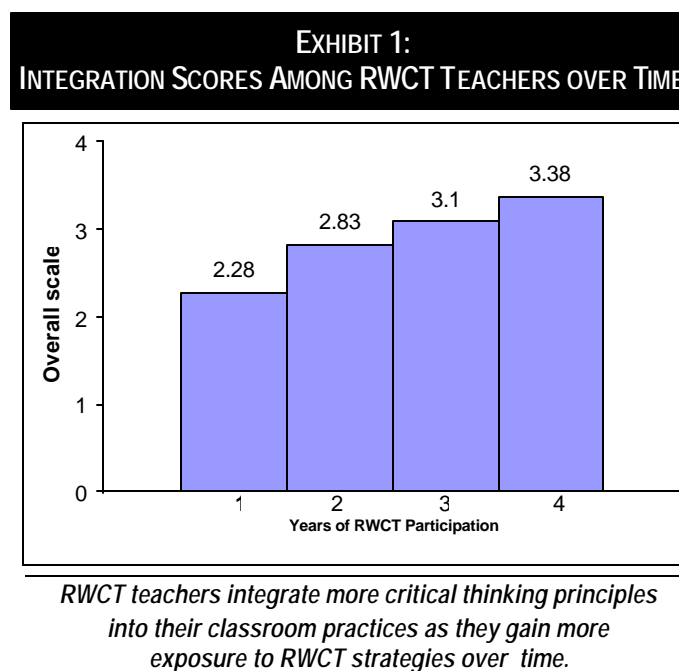
AIR sought to determine the extent to which the difference in integration scores were a consequence of variables such as teacher characteristics or the subjects that teachers were observed teaching. Findings

³ For this evaluation, statistical significance is achieved with a p-value of less than or equal to 0.05.



indicate that they are not. Neither background characteristics nor class subject have measurable effects on the score differentials between RWCT and control-group teachers overall.

Analyses were also conducted to determine whether participation in RWCT increases teachers' integration of critical thinking principles in teaching practices over time. Exhibit 1 illustrates that they do. Correlations between years of RWCT participation and scores on the integration scales at the aggregate level are positive and statistically significant ($\bar{r}=0.32$).



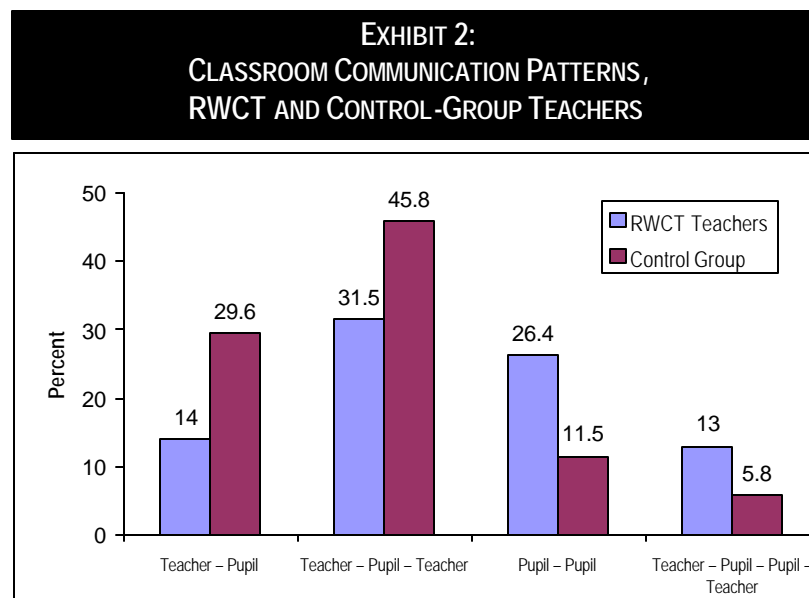
Analysis of integration scores is only one of three ways that this evaluation examined how teachers incorporate RWCT strategies into their teaching practices. Classroom observations and forced-choice survey questions were two others. In classroom observations, for example, data collectors recorded the relative percentage of time that teachers and pupils engaged in various communication patterns. These patterns included the following:

- *Teacher to pupil interaction:* One-way flow of information from teachers to pupils (e.g., lectures or demonstrations);
- *Teacher to pupil to teacher interaction:* Two-way interaction in which a teacher may ask a question, call on a pupil, and then respond to the pupil's answer;



- *Pupil to pupil interaction:* Two-way interaction in which pupils communicate with each other; and
- *Teacher to pupil to pupil to teacher interaction:* Two-way interaction in which a teacher introduces a topic or a question and then pupils work on the issue together before the teacher speaks again to the entire class.

Exhibit 2 displays patterns in classroom communications for RWCT and control-group teachers. It demonstrates that RWCT teachers spent substantially more time than teachers in the control group promoting classroom communication patterns that facilitate classroom discussion and pupil interaction and less time lecturing and asking questions to individual pupils. This is further evidence that RWCT teachers are maintaining the fidelity of the RWCT model in their instructional practices.



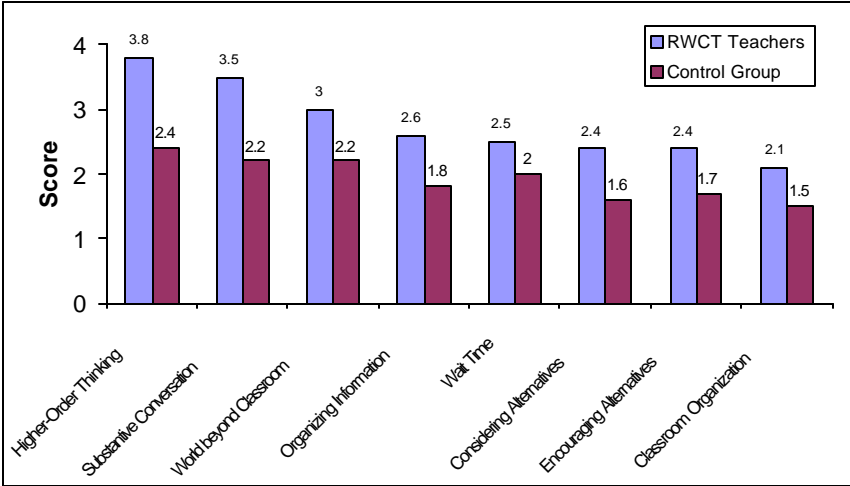
RWCT teachers spend substantially more time than teachers in the control group promoting classroom discussion and pupil interaction and less time lecturing and asking questions to individual pupils.



Classroom observation protocols were also designed to measure various classroom processes. The first is a set of “authentic pedagogy” scales created and validated by Fred Newmann, Walter Secada, and Gary Wehlage at the University of Wisconsin’s Center on Organization and Restructuring of Schools⁴; the second set is based on RWCT teacher scoring rubrics that were created by Alan Crawford and Sam Mathews. Exhibit 3 shows that RWCT teachers score higher on all of these scales than non-RWCT teachers by statistically significant differences.

In classroom observations, classes with RWCT teachers scored significantly higher on authentic pedagogy and other scales than classes without RWCT teachers

**EXHIBIT 3:
SCORES ON CLASSROOM OBSERVATION SCALES, RWCT AND CONTROL-GROUP TEACHERS**



RWCT teachers were observed to promote more higher-order thinking skills, substantive conversation, and interest in the world outside the classroom than teachers in control groups; RWCT teachers were also more likely than their peers to organize classroom information to promote discussion and critical thinking, encourage pupils to consider multiple answers to problems, and wait for pupils answer questions.

⁴ Fred Newmann, Walter Secada, and Gary Wehlage, *A Guide to Authentic Instruction and Assessment: Vision, Standards, and Scoring*. Madison, WI: University of Wisconsin Center on Organization and Restructuring of Schools, 1995.



RWCT Teachers' Views about RWCT

According to the conceptual model of professional development that has guided this evaluation, differences in instructional practices between RWCT and control-group teachers are due at least in part to teachers' attitudes about their participation in RWCT and their perceptions about the effects of RWCT teaching strategies on teacher-pupil relations. Data from the teacher survey indicate that RWCT teachers indeed have strong, positive views about their participation in RWCT and its effects on classroom dynamics. RWCT teachers have enjoyed their participation in RWCT, believe that RWCT has helped their teaching and pupil learning, would recommend RWCT to colleagues, and think that RWCT should be taught broadly to teachers in their country (see Table 1). They do not believe that RWCT detracts from other teaching responsibilities or that pupils who are exposed to RWCT learn less than their peers. RWCT teachers believe that RWCT has increased pupil involvement and cooperation in class, access to and retention of information, and enthusiasm for learning new information (see Table 2). They also believe that RWCT has helped teachers improve their working relationships with pupils.

RWCT teachers have strong, positive feelings about their participation in the project and its effects on classroom dynamics

**TABLE 1:
VIEWS AMONG RWCT TEACHERS ABOUT RWCT**

	Agreement	N
Enjoyed workshops	3.86	146
Has helped my teaching	3.75	145
Has helped pupil learning	3.56	141
Would recommend to colleagues	3.81	145
Should be taught broadly	3.78	142
Detracts from other teaching responsibilities	1.46	142
Decreases content learned in class	1.73	143

1 = Disagree Strongly; 2 = Disagree Somewhat;
3 = Agree Somewhat; 4 = Agree Strongly.



**TABLE 2:
OPINIONS AMONG RWCT TEACHERS ABOUT CHANGES
IN PUPIL BEHAVIOR SINCE TEACHERS BEGAN PARTICIPATING IN RWCT**

	Effect	N
Pupil involvement	4.54	138
Pupil cooperation	4.48	140
Access to/Retention of information	4.29	140
Enthusiasm for new information	4.36	139
Relationship with me, the teacher	4.26	140

1 = Became Much Worse; 2 = Became Somewhat Worse;
3 = No Major Differences; 4 = Became Somewhat Better;
5 = Became Much Better

Open-ended responses on the teacher survey also asked RWCT teachers to reflect on and write about specific differences in their teaching behavior as a result of their participation in RWCT. It first asked teachers to list three descriptors about themselves as teachers before they joined

RWCT teachers believe that participation in the project has also had a substantial effect on how they perceive themselves and act as teachers

RWCT and the three descriptors about themselves after joining RWCT. Open-ended responses were then coded into broad descriptive categories and analyzed trends. On teacher-generated responses, 44.52 percent of RWCT teachers wrote that prior to joining RWCT they used traditional teaching methods (e.g., lecturing, recitation, and drill-type questions to individual pupils), 31.51 percent wrote that they were rigid in their instruction, 15.07 percent wrote that they were bored, and 13.70 percent wrote that they were not confident in their teaching. These were the most frequent responses. Since joining the project, teachers report that RWCT has helped them learn how to use non-traditional teaching methods (e.g., more pupil interaction, small-group work, investigative problem-solving activities), work with pupils' based on pupils' individual needs, become flexible in instruction, be receptive to multiple answers to problems, respect pupil opinions, enjoy teaching, and be excited and confident about their work (see Table 3).



**TABLE 3:
MOST FREQUENT RWCT TEACHERS' DESCRIPTIONS
ABOUT THEMSELVES AS TEACHERS AFTER THEY BEGAN
TO PARTICIPATE IN RWCT**

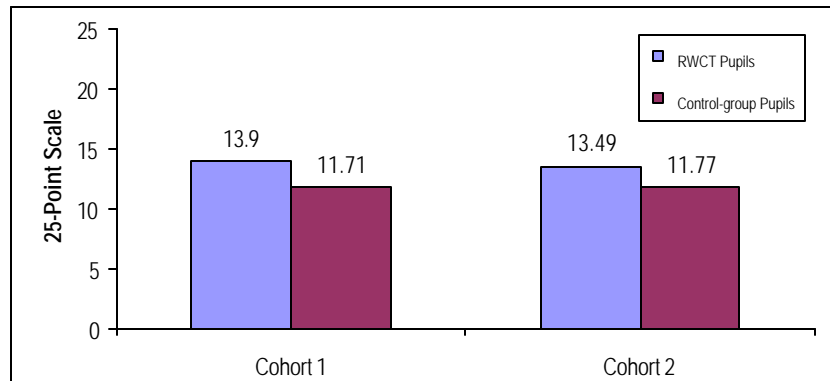
	Percent of RWCT Teachers who Responded to the Open-End Question
Use non-traditional teaching methods	28.08
Work with all pupils—pupil centered	22.60
Am flexible	21.23
Am open to all answers	19.86
Focus on pupil needs	19.18
Respect pupil opinions	18.49
Enjoy teaching	18.49
Am excited	15.07
Am confident	13.01

Pupil Critical Thinking Skills

The conceptual model assumes that changes in behavior and attitudes due to a teacher's participation in a professional development project such as RWCT will ultimately affect pupil behavior, attitudes and learning. Thus, the next question for the evaluation was whether RWCT teaching practices can be associated with an increased ability among pupils to form original opinions, chose rationally among competing ideas, solve problems, and debate ideas responsibly. These are the ultimate "critical thinking" outcomes sought by the project. Exhibit 4 indicates that RWCT pupils overall scored higher on critical thinking assessments than pupils in the control group by statistically significant differences. On 25-point critical thinking scales, RWCT pupils in Cohort 1 scored an average 2.2 points higher than control-group pupils, and RWCT pupils in Cohort 2 scored an average of 1.7 points higher. Both of these differences are statistically significant.



EXHIBIT 4: DIFFERENCES IN CRITICAL THINKING



RWCT pupils score significantly higher on critical thinking assessments than pupils in control groups.

Analyses also determined that pupil background characteristics and the specific subject taught in each class have little bearing on the reasons that RWCT pupils outperform pupils in control groups on critical thinking assessments. Teacher characteristics, particularly the number of years a person has been a teacher, explain a small amount of the score differential for pupils in Cohort 2, but this explanation is also modest compared to others (see Table 4).

Classroom communication patterns (for Cohort 2) and teachers' integration of critical thinking principles into teaching practices (for both cohorts) are the variables that explain more of the positive and statistically significant differences in pupil critical thinking scores between RWCT and control-group pupils.⁵ And within the cluster of classroom communication

RWCT teaching strategies, which include integration of critical thinking principles into teaching practices and facilitating pupil-to-pupil interaction, explain much of the difference in overall critical thinking scores between RWCT and control-group pupils

patterns examined in this study, the facilitation of pupil-to-pupil interaction has the most substantial effect on critical thinking differences. Given that RWCT teachers integrate more critical thinking principles into teaching practices than teachers in the control group and also spend more class time facilitating pupil-to-pupil interaction, the statistics in Table 4 provide strong evidence that teachers' use of RWCT strategies has a positive effect on

⁵ Percent of differences explained can sum to more than 100 percent because analyses do not take into consideration the inter-correlations among combinations of variables.



**Table 4:
THE EXTENT TO WHICH OTHER VARIABLES EXPLAIN THE DIFFERENCES IN
CRITICAL THINKING SCORES BETWEEN RWCT AND CONTROL-GROUP PUPILS**

Variable Categories	Cohort 1 Percent of Difference Explained	Cohort 2 Percent of Difference Explained
Pupil Background Characteristics (i.e., gender, age, language minority status, reading materials at home, electronic devices at home, luxury items at home, urbanicity)	0.07	0.03
Teacher Characteristics (i.e., age, years working with the same class, hours per week with the same class, years as a teacher, years at the same school)	0.00	0.19
Class Subject (i.e., general, humanities, social science, physical science, fine arts)	0.00	0.02
Classroom Communication Patterns (i.e., teacher to pupil, teacher to pupil to teacher, pupil to pupil, teacher to pupil to pupil to teacher)	0.00	0.51
Integration of Critical Thinking Principles into Teaching Practices	0.43	0.52

CONCLUSION

The conceptual model that guided the 2000-2001 RWCT evaluation assumes that an effective professional development intervention increases teachers' skills and changes teacher behavior and attitudes in the classroom, thereby changing pupil behavior and attitudes and improving learning outcomes. Analyses of teachers and pupils in four countries that have introduced RWCT workshops indicate that RWCT has achieved these goals:

1. RWCT teachers integrate more critical thinking principles into their teaching practices and at a deeper level and exhibit higher levels of authentic pedagogy than other teachers—skills that increase as teachers gain more familiarity with RWCT over time.
2. RWCT teaching behaviors are then associated with higher pupil scores on critical thinking assessments, scores that seem to be attributable to the facilitation of pupil-to-pupil interaction for pupils in Cohort 2 and the integration of critical thinking principles into teaching practices for pupils in Cohort 1 and Cohort 2.
3. RWCT teachers have strong, positive feelings about the RWCT project and believe that it has changed the ways in which they interact with their pupils.

This evaluation therefore concludes that RWCT overall has achieved substantial success as related to all three research questions that OSI asked AIR to examine.