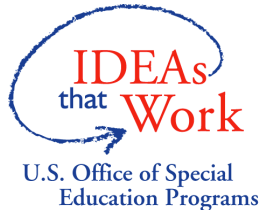




# ***Responsiveness-to-Intervention Symposium***

December 4-5, 2003 • Kansas City, Missouri

The National Research Center on Learning Disabilities, a collaborative project of staff at Vanderbilt University and the University of Kansas, sponsored this two-day symposium focusing on responsiveness-to-intervention (RTI) issues.



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## **Teachers Are Still The Test: Limitations of *Response To Instruction* Strategies For Identifying Children With Learning Disabilities**

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# Teachers Are Still The Test: Limitations of *Response To Instruction* Strategies For Identifying Children With Learning Disabilities

Several authors cite Heller and his colleagues (1982) as the source of a response to treatment strategy for identifying students in need of special education. The Heller Report was a response to equity concerns in the implementation of special education national policy. I criticized the Heller Report's recommendations for a "two-phase comprehensive assessment" as simply urging the educational system to try harder, to invest more effort in students who were difficult to teach and manage. I believed then, and no evidence has persuaded me otherwise, that such an approach disregards the fact that individual differences in responsiveness to instruction are not in any sense *inside* students. Rather they are aptitude-treatment interaction effects (Reynolds, 1988). Responsiveness to instruction is embedded in but not separable from a complex educational context that includes institutional as well as teacher variables.

Because teachers are conscious agents who mediate between available instructional resources and innate individual differences (see Figures 1 & 2), they learn to observe and value responsiveness to their instructional efforts. I call the range of students whom they come to view as adequately responsive – i.e., teachable – as the *tolerance*; those who are perceived to be outside the tolerance are those for whom teachers seek additional resources. The term "tolerance" is used to indicate that teachers form a permissible boundary on their measurement (judgments) in the same sense as a confidence interval. In this case, the teacher actively measures the distribution of responsiveness in her class by processing in-

formation from a series of teaching trials and perceives some range of students as within the tolerance.. "The validity of such a tolerance is socially and historically constructed, not psychometrically derived (Gerber, 1988, p. 311)."

A theory of tolerance focuses attention on the dynamics of classroom instruction and makes both economic and cognitive arguments about differences in responsiveness to instruction as the source of teachers' perceptions of "discrepancy" and, therefore, referral for special education (Gerber, 1984; 1988; 1995; Gerber & Kauffman, 1979; Gerber & Semmel, 1984; 1985). In these analyses, the actual intra-individual differences that we hypothesize as the source of "learning disability" remain hidden. Only their expression in transaction with instruction – as with any behavioral assessment -- can be observed and measured. We formalized these concepts in microeconomic terms that were grounded in the transaction that occurs during instruction – response from student, interpretive adjustment by teacher (Gerber & Semmel, 1985). We attempted to show why and how "referral" or "re-integration" (i.e., inclusion) were conditioned by teachers' conscious, contingent, or forced choices under conditions of resource scarcity and relatively fixed technologies of teaching (see Figures 1 & 2). Moreover, the surrounding organization of the school creates and maintains patterns of resource allocation that facilitate or constrain teachers' ability to be responsive to differences.

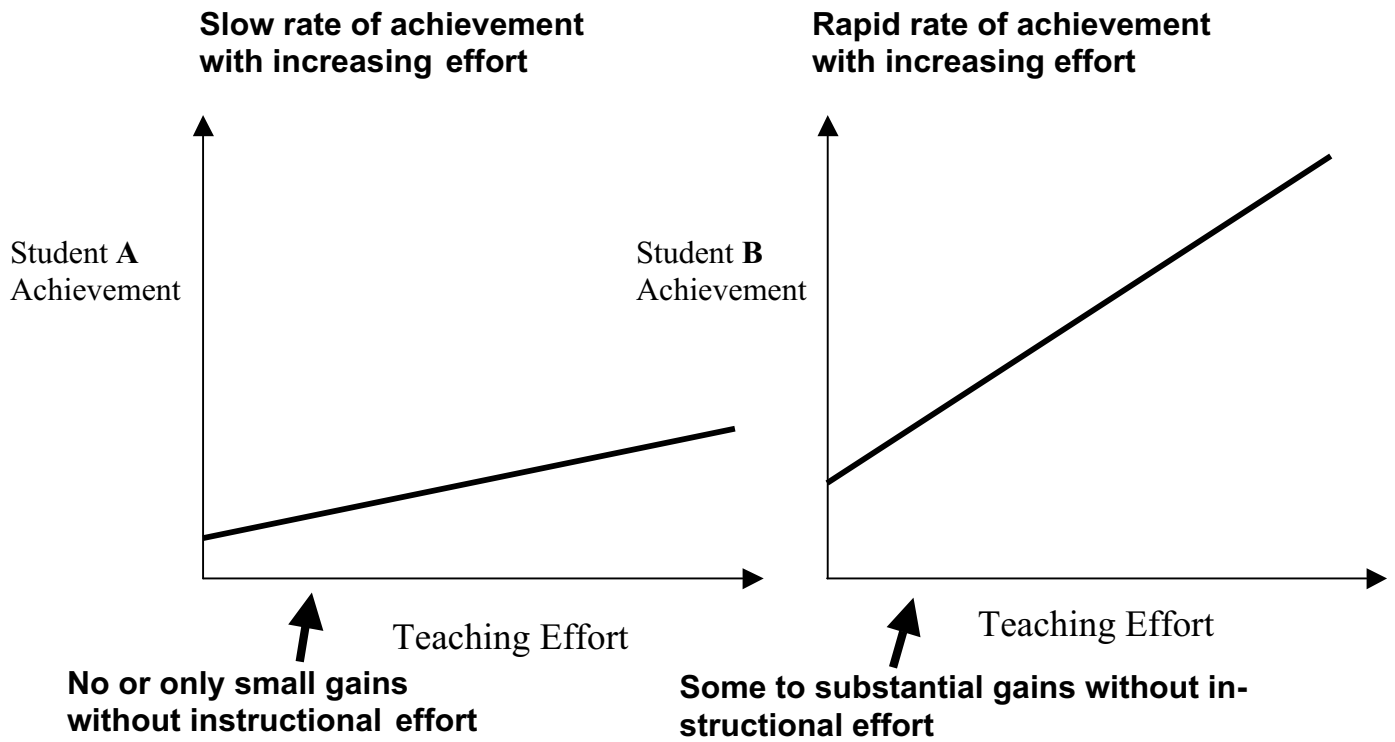
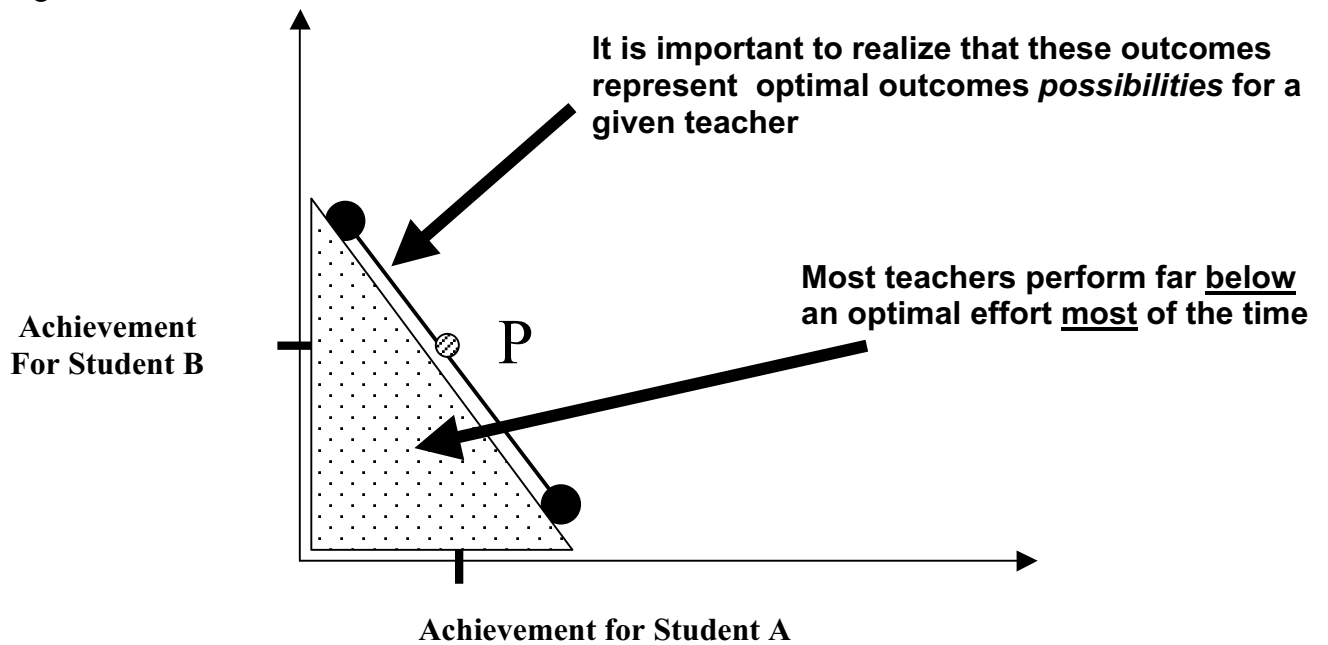


Figure 1. Variable student achievement as a function of instructional effort.



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Figure 2. Joint optimal achievement possibilities showing teacher decision point (P) for two-student instructional grouping

Recently, much of the general approach marshaled by Heller and his associates has reappeared in a series of papers that seek to promote a "resistance to intervention"<sup>1</sup> strategy as a more valid means to identify students with learning disabilities (Fuchs & Fuchs, 1998; Fuchs, Fuchs, & Speece, 2002; Gresham, 2002; Torgesen, 2001; Vaughn & Fuchs, 2003). I will argue in this paper that these newer incarnations of Heller *et al.* advance a more sophisticated measurement argument but are flawed in similar ways. Moreover, I argue that these new proposals send a mixed message about identification of learning disabilities, one that mistakes the measurement of the construct from the construct itself, a logical error reminiscent of the circular reasoning that promoted the idea that intelligence was what IQ tests measure. There is mounting evidence that learning disabilities – problem best conceived as a “spectrum” disorder like autism – have a material (i.e., neurological) basis and can be directly diagnosed (e.g., Paulesu, De’monet, Fazio, McCrory, Chanoine, Brunswick, Cappa, Cossu, Habib, Frith, & Frith, 2001).

Fuchs and his colleagues do suggest that there are "problem-solving" as well as "standard-protocol" models for using response to instruction (RTI)<sup>2</sup> as a means for identifying students (Fuchs, Mock, & Morgan, 2003). However, most authors dismiss these on psy-

chometric grounds<sup>3</sup> and have assumed or explicitly described what amounts to standard-protocol procedures. Their apparent logic is that if classroom instruction is inadequate or somehow variable, then responsiveness, too, may vary, but not as a function of *true* underlying learner differences. Therefore, a formal procedure of highly controlled, increasingly intensive instructional trials is necessary to partition variance attributed to instruction and variance attributable to learner differences. That is, maintaining teacher behavior within some limits is necessary to reduce measurement error. Gresham (2002), for example, states that an RTI approach to eligibility

...identifies students as having a learning disability if their academic performances in *relevant* areas do not change in response to a *validated* intervention implemented with *integrity* (p. , emphasis added).

Somewhat more elegantly, L. Fuchs (2003, p. 175) proposes that “the “intervention” used to test responsiveness is a general education that has demonstrated “*efficacy* for the vast majority of students (emphasis added).” In contrast to this sort of “effective” general education, Fuchs suggests that:

“... ineffective classrooms reveal low growth rates across many students, making detection of unresponsiveness difficult but signaling school personnel to intervene at the classroom level (p. 175).”

<sup>1</sup> Alternative terms include "response-to-treatment," "response-to-instruction," "responsiveness-to-intervention."

<sup>2</sup> Various terms are used. They are treated here as synonymous and referred to as response-to-instruction (RTI) in this paper.

<sup>3</sup> Many authors appear to understand that teachers' judgments are consequential (e.g., Fuchs, 2003; Speece, Case, & Malloy, 2003) but only after a baseline fidelity of treatment can be established.

She goes on to suggest that it is the failure of some students in classrooms in which most students succeed that “reveals some underlying deficit.” She adds

“...relying on the general education program for [intervention response assessment] permits a full normative framework. That is, student responsiveness to effective general education can be estimated for all students so that a normative profile can be generated to describe the full range of performance (p. 176).”

When construed in this way, RTI constitutes a standardized measurement of individual differences based on a behavior sampling that is more applied but not different in concept from other standardized tests. That is, learning -- i.e., responsiveness -- under specific instructional conditions -- i.e., relevant, validated, and implemented with integrity -- measures the degree of difference that must exist among learners that is specific to ability to learn. RTI, therefore, when implemented according to rigorous and standardized protocol, aspires to be a reliable and valid measurement of learning disability.

There is not only a psychometric, but also an experimentalist logic to this formulation. That is, the conditions of measurement must not only be standardized (i.e., “implemented with integrity”), but also the conditions as a whole must logically exclude any other variables as plausible explanations for variations in learning outcomes. If differences in teachers’ instructional behaviors during and between instructional episodes can be an important source of variance in outcomes for a single student, not to mention for different students, RTI must seek to exclude teacher differences as a competing explanation of “resistance to treatment.” However, the degree to which instruction in RTI is reduced to simpler

forms to maximize reliability and fidelity is the degree to which it departs from ecological validity and risks having only a trivial relationship to education in its broadest sense.

These ideas are not new and pre-date the Heller Report. In 1963, for example, John Carroll (1963) published a seminal theoretical paper on the nature of school learning in which he attempted to account for the embeddedness of individual differences. Carroll formalized the concept of learning as time actually spent in learning divided by time needed for learning. Since Carroll’s paper, it has been amply demonstrated that *time needed to learn* (TNL) a criterion task is a better predictor of longer term learner differences than IQ and other status variables (Gettinger, 1979; 1983; 1984a, b, c) and can differentiate students with learning disabilities (Gettinger, 1991).

### **Carroll’s Theory of School Learning**

Carroll understood that time needed to learn (TNL) depended on a combination of individual difference and teacher or school mediated variables. Similar to modern day RTI proponents, and well before Heller *et al.*, Carroll defined student ‘aptitude’ as time needed to learn under “optimal instructional conditions.” In the parlance of RTI, we may understand “time needed to learn” in terms of “intensity” of instruction, and “optimal instructional conditions” in terms of “treatment validity.” It is important to note that Carroll discriminated between *aptitude*, which could be expressed unambiguously only under optimal instructional conditions, and *ability*, which represented the capacity of student-learners to understand instruction. Current proposals concerning RTI address the former but not the latter. Carroll also viewed “perseverance” as a critical within-learner attribute that determined TNL; that is, the time students were motivated to engage in active learning even if instruction was otherwise optimal.

Carroll's was a model of *school*, not individual, learning. That is, he was concerned with the interaction of individual differences and the actual conditions of teaching and learning in their institutional setting. His concern led him to posit two additional determinants of TNL, *opportunity to learn* (OTL) and *quality of instruction*.

Opportunity to learn is not under student, and often not fully under teacher, control. In Carroll's model, it represents a resource allocation of time that is sufficient for each student, but as I will discuss in the following sections, it also represents a significant resource allocation to teachers not only by the schools in which they work but also by the professional preparation programs in which future teachers are students themselves. Quality of instruction, in Carroll's model, did not refer only to *effective* instruction, but also to how *efficiently* instruction is presented. High quality would mean that no more time is spent in instruction than that which is necessitated by the aptitude of learners.

Herein, of course, is the RTI's fatal flaw. It does not take a theoretical stance with regard to variables that account for how schools and teachers within schools manage differences in responsiveness to instruction (e.g., see Cook, Semmel, & Gerber, 1997; Gerber, 1995; Larrivee, Gerber, & Semmel, 1997). Either as a concept of more effective teaching or, its more ambitious aim, identification of students with learning disabilities, RTI proposals provide only operational procedures that serve to define specific learner differences -- i.e., responsiveness to standardized instruction. Additionally, although some important (Speece, Case, & Malloy, 2003; Torgesen, Alexander, Wagner, Rashotte, Voeller, & Conway, 2001; Vaughn, Linan-Thompson, & Hickman, 2003) research on RTI has been done, we have little idea of the actual extent, or cost, of the systemic changes it implies (e.g., see Denton, Vaughn,

& Fletcher, 2003; King & Torgesen, 2000), including such fundamentals as baseline preparation of classrooms, implementation of curriculum and instruction improvements, construction of assessment procedures for selection of students at risk, provision and quality control of increasingly intensive intervention for students defined as non-responders.

### ***Differences in Teachers' Responsiveness to Instruction***

Teachers differ as individuals despite the quality of their professional preparation. We may hold them accountable for achieving higher standards when they are learning their professional skills, but like their students, they cannot be made identical. They will respond differently to different students and to the same student under different circumstances. Therefore, RTI's measurement aspirations demand either strong constraints on how teaching interventions occur or strong claims that teacher variations do not matter.

The few RTI studies that exist report little about variations in teachers' thoughts and behaviors during administration of planned interventions. That is, although interventions are described in terms of their aims, methods, general procedures, and (less often) how those responsible for administering interventions were prepared, this is relatively abstract information, rather like providing a blueprint of a house we want to build instead of the house itself. While certainly the blueprint guides construction, the actual house can and will depart in numerous consequential ways. Even teachers of small intervention groups make decisions to continue or adjust instruction based on evaluation of quality (e.g., automaticity or fluency) as well as accuracy of students' responses. Such decisions and the choices that follow cannot be fully programmed in advance without ignoring potentially meaningful individual differences among students.

In the published research, how long, and to what performance criteria, were teachers, tutors, or other interveners prepared by researchers? Vaughn, for example, notes 20 hours of preparation for four tutors and weekly meetings thereafter (Vaughn *et al.*, 2003). Torgesen cites 40 hours of baseline preparation for teachers in classrooms from which risk students were to be selected for intensive interventions (Torgesen, 2003). We trust that teachers in these cases were well prepared, but how and at what cost researchers accommodated individual differences among teachers is not inconsequential. What constraints were placed on how teachers were permitted to interact with students, to accommodate unusual or unexpected responses, to manage attention and behavior? In the course of baseline instruction or intervention, did students require any differential treatment by teachers so they could meet implementation fidelity and intervention coverage requirements?

Research on practice is not the same as practice. Research, by its nature, seeks to control unwanted sources of variance. In applied settings, these intrusions on experimental blueprints often cannot be controlled so attempts are made to decrease – or to ignore – their impact. For example, we have strong evidence that strategy training is effective for students with learning disabilities. However, over the several decades of research on strategy training, variations in responses by students during training, or variations in correlated responses by *teachers* to students, were rarely reported, only that trainers had this or that status and students performed to this or that criterion. Did trainers behave exactly the same during each and every episode of training? Were students' responses and ultimate outcomes precisely the same, or were they simply tolerably close to *a priori* criteria? In fact, the same learning characteristics that identify students as learning disabled are pre-

cisely those characteristics to which a good teacher must make measured responses if mastery of a strategy is the goal.

This is *not* a denial of the empirically demonstrated value of strategy training or RTI applications. On the contrary, the point is that teachers in strategy studies almost surely varied in many contingent ways in response to their students, including allocation of additional instructional time, in order to reach desired levels of response. In fact, it would be unnatural – and unbelievable – if they didn't. Teachers in RTI studies, although probably inclined to behave in a similar, if more rigidly time constrained, manner. In both cases, researchers tend not to report teacher differences because, for researchers' different purposes, teachers behaved in ways that were considered *tolerably* different.

Teachers, when unconstrained, are and should be variable in their responsiveness to *students'* variable responsiveness (Reynolds, 1988). All standard-protocol approaches to RTI, like any measurement process, will inevitably tolerate some variations even when teachers' behaviors are highly constrained and, consequently, will produce variable learner outcomes when time is fixed. When we consider the variation that schools introduce on top of teachers' natural variability (King & Torgesen, 2000), it is unlikely that RTI approaches can be scaled to a national level as implemented in existing research (e.g., see Schneider & Ingram, 1990; Weatherly & Lipsky, 1977). Problem-solving approaches (Fuchs, Mock, Morgan, & Young, 2003), while criticized for their departure from the kind of experimental control that can isolate unwanted sources of variance, occur not only as part of formal systems but also as part of each and every normal teaching act, much as in dynamic assessment (Gerber, 2002).

## **The Economics of RTI at Scale**

However attractive RTI may appear as a general scheme for improving classroom instruction and reducing some reading failure, its cost at scale is unknown. We may make some estimates based on available national data and elements represented in the research literature.

### **Requirements**

Almost all proposals or larger scale research establishes the need for some substantial baseline of professional development for all classroom teachers. Across studies, approximately 15% to 30% of K-3 students receiving some level of effective instruction in reading will nevertheless fail to meet various criteria. For these students, most proposals envision some supplemental (i.e. strategic) intervention. For students who are not able to reach criteria under these circumstances, perhaps 2% to 6% of all students will require still more intensive intervention.

### **Cost Estimation**

Using various sources of national data (e.g., NCES, NEA), there are about 255,709 teachers in K-3 practice. Average teacher salary is about \$45,930, or \$32 per hour for an 8 hour work day. Amount of time need for baseline professional development varies. Torgesen trained classroom teachers for forty hours (Torgesen, 2003) and this seems like a reasonable, but probably low, estimate of actual requirements. In constructing this model, I estimate only for students in kindergarten through third grade, an estimated 30,001,243 students, and 18% (5,400,224) selected for a first pass supplemental instruction for 30 minutes each week for 10 weeks (10 days) and 4% (1,200,050) for more intensive instruction for 60 additional minutes each week for a second 10 weeks (50 days). Although many research studies used individual tutoring or 1:3 teacher-student intervention ratios, I will assume both a 1:3 and 1:5 ratio. Some

simplifying assumptions also permit estimates of costs of professional development using teachers' average pay rate and reasonable costs for administration, monitoring, evaluation, and materials.

Under the assumptions described above, national implementation of RTI will cost \$2,033,228,291 and \$2,288,405,530 at 1:5 and 1:3 ratios, respectively. To understand the size of these costs, they may be compared to the federal appropriation of \$1,78 billion in 2003 for all of Part IIA for all professional development under the No Child Left Behind Act.

### **Who, Then, Is Learning Disabled?**

In recruiting RTI to search not only for *unresponsive* students but also for those with learning disabilities, we risk trading one main effects analysis (i.e., standardized tests) for another (i.e., standardized protocols of instruction). That is, by assuming that, under *appropriate measurement conditions*, overt failures to learn critical reading skills are unmediated expressions of *learning disabilities* and, therefore, define learning disabilities, authors abandon what we've learned about the development and cognitive changes in those with learning disabilities (Gerber, 2000) even if reading alone is the target of assessment and intervention (Leach, Scarborough, & Rescorla, 2003).

Nevertheless, several authors have now suggested that we pursue an RTI conceptualization and simply re-define learning disability (Fuchs, 2003; Vaughn & Fuchs, 2003). But such a strategy is flawed on two counts. First, there are serious theoretical as well as practical reasons to question whether it is possible, at meaningful scale, to instantiate the requisite measurement conditions in real classrooms and schools. Theoretically, RTI rests on shaky ground when it juxtaposes an idealized, highly controlled kind of instruction to teaching as it actually occurs in applied settings. Practically speaking, the kind

of idealized, experimentally rigorous instruction on which RTI depends cannot be implemented at any meaningful scale.

Second, there is rapidly accumulating evidence that at least some learning disabilities -- the same associated with phonological processing deficiencies in behavioral testing -- are associated with a clear (Paulesu, *et al.*, 2001) and *modifiable* (Aylward, Richards, Berninger, Nagy, Field, Grimme, Richards, Thomson, & Cramer, 2003; Temple, Deutsch, Poldrack, Miller, Tallal, Merzenich, & Gabrieli, (2003). neurological substrate. Therefore,

if a demonstrable material and etiological basis exists for explaining the important behavioral manifestations of learning disability, there is strong reason to suppose that, in principal, students displaying this condition can be reliably identified independent of instructional trials. Certainly help kids that need help. If RTI leads to this, then who can argue its value. But this approach will not put us closer to understanding *learning disabilities*.

Table 1. Estimated costs for RTI at national scale.

<b>ESTIMATED RTI COSTS</b>	<b>VARIABLE TEACHER COSTS</b>	
Baseline classrooms (+ teacher trainer/district)	\$	326,737,240
1st Round Strategic Intervention (Teaching groups x Teacher Cost x Hours)	\$	344,489,273
2nd Round Intensive Intervention (1:5) (Teaching groups x Teacher Cost x Hours)	\$	382,765,859
2nd Round Intensive Intervention (1:3) (Teaching groups x Teacher Cost x Hours)	\$	637,943,098
<b>TOTAL 1st YEAR RTI (1:5)</b>	<b>\$</b>	<b>1,053,992,371</b>
<b>With overhead</b>	<b>\$</b>	<b>2,033,228,291</b>
<b>TOTAL 1st YEAR RTI (1:3)</b>	<b>\$</b>	<b>1,309,169,610</b>
<b>With overhead</b>	<b>\$</b>	<b>2,288,405,530</b>

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