Preventing Failure in the Primary Grades

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Author's Note

Although the title of this book refers to children in the primary grades, the tasks that are outlined in the reading and arithmetic sections are designed for children who have not mastered the basic skills, whatever their age or grade level. Segments of the program were used initially in work with tenth-grade disadvantaged children. Others were developed expressly for primary children.

Not every part of the program will be right for a particular child. If he has mastered some of the skills that are presented in a sequence, it is wasteful to work on those skills. If a child has serious problems in reading, language comprehension, or arithmetic, however, he should be tested on tasks from the book that appear to be related to his deficiencies. His performance will enable the teacher to pinpoint what he does not know, so that she can take him to the beginning of particular task sequences and teach him the basic skills he has failed to learn.

The program presented here, by a judicious selection of task sequences and a system of reinforcement appropriate to the older child, can be adapted to the needs of a sixteen-year-old who has gone through school without learning basic skills.

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SIEGFRIED ENGELMANN

Contents

Preventing Failure in the Primary Grades

Introduction, 1997 Edition

by Robert Dixon

In many ways, *Preventing Failure in the Primary Grades* is an outdated book—published in 1969 and never revised. The book contains politically incorrect terminology, such as the designations "culturally deprived" and "Negro." More relevant, some of the curricular recommendations and procedures that the book specifies for the teaching of language, reading, and math are somewhat dated. They are systematic, logical, and perfectly workable for the reader who is willing to take the time to translate them into actual classroom activities. However, since publication of the book, Engelmann and his colleagues have created programs that supersede the curricular recommendations presented in the book. They have written corrective programs for reading, math, and spelling. They have designed reading series that incorporate the various skills students need to decode and to comprehend. They have designed a seven-level math sequence that systematically builds the complex skills that children need to understand what math is and how it works and to master the skills demanded by advanced math. They also have written other books that address the various issues discussed in *Preventing Failure.*

Despite the number of ways the content of *Preventing Failure* has been eclipsed, the book occupies a singular place in the history of education because it is the only book of its era that completely anticipated the various problems of the '80s and '90s. It provided the unique focus that the causes of failure are not global issues, such as the disintegration of the family or the lack of teacher motivation, but rather are issues associated with specific details of the curriculum and the teaching children receive. The book declared that children failed because the teaching failed, and that for them to catch up, they need highly efficient teaching formats that induce a greater amount of learning during each week or each school year. Today, reformers

have still not grasped this basic cause of student failure, nor the implication that if we are to reverse the failure, we must provide teaching that is designed so it will not induce failure.

Yet the reforms of today are pretenders, mere reflections of the reforms of the late 1960s, with the same rhetoric, the same preoccupation with the whole child and other global issues, the same rationalizations and arguments about learning styles, individuality, and creativity. The same basic belief still underlies reforms, which is that children are responsible for their own success or failure in school. If they fail, it is not because the teaching or curriculum failed, but because they were not motivated, or because their parents or neighborhood failed to prepare them adequately for school. The basic message of *Preventing Failure* is the opposite: the only reason children fail is that the teaching fails to start where children are and to fails provide the amount and type of practice children need to succeed.

This optimistic perspective is the essence of a child-centered view, a stance that Engelmann has backed up specifically and convincingly. Even the staunchest of Direct Instruction supporters sometimes become a little uncomfortable by the firm declaration that ALL children can learn. I have watched Zig Engelmann teach a fifteen-year-old girl no one else on earth thought could learn: not her own parents, no one in the school district, not the hundreds of "experts" who had been consulted. After just over an hour, the girl would turn her head toward Zig when he said her name and would walk to him when he asked her to—tasks she had never performed for her own mother. And she was extremely happy, learning something, for the first time in her life.

Another notion that *Preventing Failure* pioneered is suggested by the title—the idea that failure occurs in the primary grades. It is not that children initially learn basic skills well, and then at some later point, fail; rather, they fail in kindergarten and first grade and never learn the skills they need to succeed.

On a more technical level, *Preventing Failure* identified curricular practices that are only now being recognized as having a role in instruction—such as the need for phonological-awareness activities for beginning reading. Not only did *Preventing Failure* describe the phonological components (blending, segmenting, rhyming, alliteration), but its description is more articulately related to specific reading skills than anything the mainline field of reading has yet produced. Other precocious observations in *Preventing Failure* are: Letter sounds are to be taught before children read words that incorporate these sounds. Children do not need to know all their sounds before they start to read words, but may begin after seven or eight high-frequency sounds are introduced. The text that beginning readers read should be composed entirely of words that they are capable of decoding. Nothing is taught in a single session; therefore, the lesson should not

perseverate on one skill or one thing, but should provide progressive work on possibly four or more different skills that are being taught.

The book also argues that curriculum-based instruction is needed so that the teacher receives ongoing documentation that what is taught is learned. Engelmann's treatment of language is also unique, based on the idea that children who fail in school are greatly deficient in language concepts. Thus, the most efficient format for correcting the problem is to teach fundamental language concepts—not as part of "reading comprehension," but as part of a systematic oral language program that teaches the language of instruction, which is quite different from social language because it requires strict attention to the details of the ideas being communicated.

According to *Preventing Failure in the Primary Grades*, good math performance does not spring from manipulation of blocks and counters, but from careful instruction in the concepts and applications of math, starting with the most elementary concepts (counting, equality) and scaffolding subsequent skills onto this basic framework.

Perhaps the most compelling feature of *Preventing Failure* is its articulate descriptions of specific causes of failure: the outcomes of the spiral curriculum, the results from lack of adequate language-concept instruction, the futility of ambiguous and inefficient lectures for teaching young children, the absence of techniques for inducing mastery, and the paucity of adequate instruction in basic skills and concepts. The passion and hints of frustration in Engelmann's descriptions of these problems stem from the basic premise of the book, which is that failure is not a given, but can be solved through sensible instruction. As Zig once told me, "A mind is a terrible thing to waste, but wasting an entire population is thousands of times worse." Engelmann has the same passion and frustration to this day. He knows how to prevent failure; he knows how to reverse it when it occurs; he has provided various tools for helping others to do both; and he has done both personally, time and time again, for over thirty-five years. Perhaps someday, educators will learn that failure is preventable and reversible, and that both the analysis of problems and the course of action were clearly mapped in *Preventing Failure in the Primary Grades*, almost thirty years ago.

Therefore, it is with tremendous pride that ADI is republishing this seminal, education classic. Most us of who read this book many years ago will never forget it. It helped influence the direction of the rest of my career and life. ADI hopes that this new edition will renew the commitment of the original readers and spark flames of passion for a failure-free educational system among those who have yet to read this book.

Introduction, 1969 Edition

If you pick up a handful of sand at an ocean beach and look at the grains, you will probably be impressed by their apparently uniform size. Yet if you sort the grains according to size, you will find that some are bigger than others. Most will be average size, and about 15 percent of the grains will be noticeably smaller than average. As it is with grains of sand, so it is with any population. If you give all children an IQ test, you will find that about 15 percent of them are substantially below the average. Historically, the children in this 15 percent have been regarded in much the same way as the below-average grains of sand in your collection. They have been classified as mentally retarded, slow learners—they have been adorned with labels—and they have been treated accordingly. The assumption has been that it is no more possible to change them than it is to change a small grain of sand into a big grain of sand.

A great deal of research evidence, gathered over the past two decades, has cast serious doubt on the traditional view of the slow learner. Experimental programs have demonstrated that IQ can be changed, and that the achievements of slow-learning children can be substantially increased. Observers have noted that a large proportion of slow learners and school failures come from home environments in which little is taught. However, little has been done to help the slow-learning child catch up instead of merely becoming a happy slow learner.

This book details a catch-up program for the child who is seriously behind in basic arithmetic and reading skills. It does not contain detailed descriptions of culturally disadvantaged and slow-learning children. It is not designed for those who look at these children from the often remote viewpoint of the school administrator, psychological diagnostician, or social reformer. Rather this book is designed for the teacher who watches these children fail year after year and has never learned to live with such failure.

This book promises that teacher nothing but hard work—an effort far in excess of that implied by the size of her paycheck. However, she will probably receive another reward through her hard work. She may save a great many children from special classes, from school failure, and from ignorance. It can be done.

The Need for an Engineering Approach

All children who fail in school have one thing in common. They are all products of prior teaching that has failed. The reason for failure is irrelevant. Perhaps the teaching was below average in intensity; perhaps it was above average in intensity. In either case it has failed. The child has not been taught skills that are essential to success in school. The job facing the educator is therefore similar to that of what we might call a remedial engineer that is, an engineer who is charged with the job of correcting defective products as economically and painlessly as possible. The educator must bring the child up to the level of standard performance for children of his age. He must do so quickly and efficiently. He must take the problem that is given to him and solve it. Although the role of the remedial educator is quite similar to that of the remedial engineer, the educator has somehow failed to use the kind of hard-nosed, product-oriented reasoning that characterizes the engineer. The difference in approach is most apparent when the educator talks about the culturally disadvantaged or educationally disadvantaged child.

Engineer vs. Educator

If the remedial engineer is faced with the problem of correcting the performance of a certain model of automobile that has faulty brakes, he first decides whether there is actually a problem, whether the model in question actually falls below performance standards of the average car. Similarly, the first step in educating a group such as the disadvantaged is to note whether there is a real problem. Educators have done a commendable job on this phase of the engineering problem. Although there are some who object to the terms *culturally deprived* and *disadvantaged* (just as there may be an occasional remedial engineer who objects to the term *faulty brakes* and wants to argue about whether there is such a thing), most investigators probably agree that the disadvantaged child fails to meet the performance standards of the average child in all academic areas, with relatively severe performance deficits in language, reading, logical reasoning, and arithmetic. The tests used to reach this conclusion are the same kind as those used by the remedial engineer—performance tests in relevant situations. The remedial engineer takes a sample of the particular model in question and tests the brakes of each car under various conditions. He then compares the perfor-

mance of the cars tested with the performance of other models and makes. The educational investigator tests samples of culturally disadvantaged children in various academic areas and compares their performance with that of average children.

In approaching the second phase of the problem, let us say that there is a severe problem with the brakes of the cars tested (just as there is a severe problem with the school-age culturally disadvantaged children tested). The engineer must now seek causes. He seeks causes for two reasons: his findings will facilitate the production of future models; and understanding the defect will enable him to correct it with a minimum effort. Unless he analyzes causes, the engineer has no way of knowing how specific the cause of failure is. Without specific knowledge he may be obliged to scrap the entire brake system—the hydraulic lines, the the cylinders, the drums, and so on. A thorough investigation of causes therefore represents an economy in effort.

At this point the line of investigation adopted by educators departs dramatically from that of the engineer. While the engineer looks for clues that lead to the specific causes of failure—testing the variables that come into play—*the educator seeks nonspecific causes,* often ones that cannot be demonstrated to have any immediate bearing on the problem.

Wolf and Wolf provide this summary of the position: "Some of the talk heard at conferences and meetings is a bit glib and overly optimistic. Father images are not supplied by contacts with men teachers; self-conceptions are not re-formed by words of praise, nor is a sense of emotional security restored by a friendly smile. All these are desirable in and of themselves, but the school is not a primary group, and thus far there is little evidence that teachers can, in a school setting, restructure basic personality.[1] Wolf and Wolf conclude that the sensitive teachers avoid slum schools because the feel inadequate. "We need to remember that magnitude of problems they face and not add to these burdens by excessive expectations. Rather, as educators who can act vigorously as citizens, we must redouble our efforts to improve the social and economic conditions under which slum children leve and which so profoundly affect their learning.[2]

This type of causal analysis is relatively safe. If one changes the total environment in which these children grow up, one will probably correct the cause of school failure, along with many other aspects of the culture that had little to do with failure. Let us suppose that the remedial engineer adopted the same line of attack as the educator who expects little from teachers and recommends that the learning problems of disadvantaged children be attacked through economic and social reform. The engineer would then say, after performing his tests, "You don't expect us to be able to correct this defect, do you? After all, consider the adverse conditions under which this model was manufactured. The machines that install the window wipers are

forty years old. The designers are unimaginative. The workers are indifferent. You cannot expect much in the way of performance from this model. The only way to correct the situation is to *work on the factory*. Change its entire structure. *Then* we won't have to worry about such problems as these." This engineer may be correct and his suggestions may have some long-term merit, but they are not very closely related to the problem at hand. Instead of explaining the failure in specific terms, he took the easy way out. He set up his argument so that he could relate *any fault in the factory* to the present brake failure. Everything became a cause. And as a result he has no remedy for the failure except to change the structure of the factory.

One can always find general causes. The trick is to find the causes that are relevant to the present problem. The remedial engineer who suggests changing the entire brake production facility to remedy the brake problem could go to seven plants and perhaps find a number of things that are not good in each. And it is quite possible that all seven plants are turning out cars that measure up to expected performance standards, in which case the engineer has causes for problems that don't exist. Similarly, if we provided educational cause finders with a complete protocol of a child, *any child*, they could explain why the child should fail in school. They could find many things that aren't good in the child's background or present conditions. However, not all these children will be failures, which means that the cause finders will have causes for failures where there are no failures. Such explanations, like others that are derived after the fact, are not very persuasive.

A major problem associated with gross cause finding is that there is little hope of identifying specific causes if one makes gross changes. Let's say, to pursue our engineering example, that the cause of brake failure has to do with the manner in which a small pin has been installed. If management follows the suggestion of changing the entire brake production facility, the fault will be corrected. The engineer's conclusions about what had been wrong will be substantiated. He will be able to say, "See, I was right," and in a sense he *will* be right. But his remedy is indeed costly, compared to changing procedures for installing the pin. The engineer should specify the minimum action necessary to correct the problem; he should identify the pin as the cause of failure. Once he has done this, he can add suggestions dealing with preventive measures and indirect causes. *But he must first specify the most economical solution to the problem* so that management can act intelligently.

Educators often violate the principle of the minimum remedy and do so from their armchairs, not from the testing grounds. For example, Helene Lloyd, in discussing what can be done to improve the reading performance of disadvantaged children, suggests that there are "at least eight avenues of attack":

1. New types of test will be developed.
2. All-out efforts will be made to encourage earlier language development and to build the necessary language concepts.
3. The development of urban-oriented materials will be accelerated.
4. The preservice and inservice education of teachers will be improved.
5. There will be an increase in the quality and the quantity of the special personnel provided for upgrading reading in schools in areas in which there are large numbers of disadvantaged citizens.
6. The reading program will be stabilized by the use of adequate records describing children's progress in developing reading skills.
7. There will be a special focus on more and improved research studies in beginning reading.
8. Ways will be found td stretch the school day and school year to provide the required reading instruction time for disadvantaged children.[3]

These remedies may work, but there is no reason offhand to suppose that they will. They are based on a purely rational hope that through more research the specific causes will be uncovered and that by changing all the "appearances" associated with reading, reading achievement will be improved. It is somewhat paradoxical that the call for research should be included in the list of solutions to the problem. It is as if the engineer said, "We must change the entire brake production facility and, by the way, we should hire somebody to research this problem and discover why the brakes failed and what can be done to correct them."

The model builders represent another strange breed of educator. Their efforts are premised on the idea that the causes of failure can be best explained not in more specific terms, but in more general terms. A remedial engineer who followed the model-building solution might identify the failure of the pin as the cause of brake failure, but he would not stop there. He would work out a method of classifying pin failures. His suggestion might go something like this: "Pin failure is a type of failure which we could call steel-member failure. The way to avoid pin failure is to select steel members randomly (fenders, bumpers, and so forth) and replace them."

Not only is the procedure expensive, but there is no assurance that the faulty steel member will be replaced through the procedure. Although nobody would accept such a solution from an engineer, many teachers find themselves accepting perfectly analogous explanations from educators. Frostig and ITPA remedial programs are based on a perfectly analogous

approach. If the child fails in a particular task, his failure is classified in a broader category. The proposed remedy for the category of failure is to teach the child tasks selected from the category. If a child cannot read, his failure may be classified as "perceptual," or "sequencing." Then he is given exercises in "perception," or "sequencing." That the remedies will correct the specific skill deficit is about as probable as the success of the sampling remedy offered by the engineer. And the educational remedy is just as expensive. Although some of the tasks may solve some of the child's specific problems, most will probably be no more effective than trying to fix a brake pin by replacing a bumper.

The "definitional" approach, which is perhaps the most interesting of all attacks, involves first acknowledging that there is a problem and then, when the remedy is offered, trying to redefine the problem in such a way that it either evaporates or doesn't seem as serious. The engineer using this approach might say, "I know this car has poor brakes, but look at the things that are good about it; look at its strong points. It has nice ashtrays, and it gives a nice, smooth ride—even when you're trying to stop." Or the engineer might try this tack: "Does this car *actually* have bad brakes? It appears to, but closer analysis show that this is a false impression. The brakes are perfectly adequate, just slightly different from those on the other cars. The difference is this: our model requires greater *distance* to stop at highway speeds. This makes our car *appear* as if it has faulty brakes."

The educational engineers that use the redefining approach try to convince us that the problem is not as severe as it really is. Some investigators solve the problem of cultural deprivation by noting that it is not as severe today as it was twenty years ago. Educational redefiners say that the disadvantaged appears to be disadvantaged only because we use middle-class norms by which to evaluate his achievement or IQ. Yet they cannot seem to produce any other norms to demonstrate that the problem is, illusory. Riessman is a strong proponent of the redefining approach. He stresses the strengths of the poor, noting that they have "hidden verbal ability" and have a "physical" style of learning, which "has many positive features hitherto overlooked." Regarding slowness Riessman states, "A child may be slow because he learns in what I have called a one-track way. That is, he persists in one line of thought and is not flexible or broad. He does not easily adopt other frames of reference, such as the teacher's, and consequently he may appear slow and dull."[4] Not many engineers would assert that the car appears to have poor brakes because it requires more distance to stop at a given speed, but in education such statements are often met with cheers.

Another variation of the redefinition approach has to do with adjusting the goals of the curriculum to the "needs of the child." The remedial engineer who used this approach would perhaps say, "Look, these brakes are bad, but

only if you're driving fast. We've discovered that if you change driving habits to suit the personal style of this model, you won't have any trouble This means that you should never exceed fifteen miles an hour." Although some educators use euphemisms when talking about how the problem of poor performance should be handled, their implication is clear: There is no way to salvage educationally deprived children. We must gear the curriculum to their needs—water it down, reduce the abstract to the concrete, the distant to the immediate, the cognitive to the kinesthetic, and the difficult to the easy. We must take it slowly, recognizing the child's "slow learning" style. We must set our sights lower and satisfy ourselves with performance far below that of the middle-class child.

The approaches characterized above represent no small segment of the approaches to the disadvantaged; they virtually exhaust our "best thinking." And our best thinking has niether the diagnostic focus, the knowledge of how to find causes, not the inference-drawing capability required to provide the teacher with more than general inspiration (or perhaps genral despair). Books of readings on the disadvantaged and his education stress the broad economic and social causes, the lack of early stimulation, the attitudes of failure that result from slum living. From these causes come sweeping, nonspecific conclusions about how to educate the disavantaged. They don't tell us why JC can't read. They cannot express his failure in terms of the causes over which the teacher in a remedial program has control—the subskills he has failed to learn. They do not tell the teacher how to program the teaching of these subskills.

The approach outlined on the following pages attempts to identify *specific causes* that result in the disadvantaged child s failure in reading, arithmetic, and language skills, and it attempts to provide the *minimum solution*, the very least that must be done to correct the deficits. There is a great deal more that can be done, but the essential part of the remedy is the minimum solution. To have a great deal more without having the minimum solution is to have nothing. To have the minimum solution and nothing more is adequate if not fully satisfying.

Limiting the Teacher's Role

Nothing can be achieved by relating the specific causes of a child's failure to his home background or "learning style" (especially since nobody seems to be very clear about *what* "learning style" means). The first and most important step in cause finding is to discover what the child has failed to learn. Which fundamental procedures associated with reading has he failed to learn? Which arithmetic operations has he failed to learn? Which behavioral rules has he failed to learn? This step is the counterpart of discovering the faulty pin in the engineering analogy. Once the specific

defect has been discovered, the engineer can ask the question "Why?" and trace the defect to its origin in the manufacturing process. But first he has to discover the pin. Similarly, the educator and teacher must discover the "pin" before they start trying to discover causes in the background of the child.

In dealing with the immediate problem of fixing automobiles that have faulty pins, the engineer does not have to ask questions of origin; he simply identifies the specific defect and offers the most economical solution available to him. Nor are questions of background causes basically relevant to the job of the classroom teacher. These are questions that are relevant to agencies and organizations in the community that have the responsibility for improving living conditions, solving problems of job opportunity, or building community morale. But the teacher must recognize that she is providing a service that will not be provided by anyone else in the community. Her primary job is to teach the children in her classroom specific skills. As an interested citizen she may want to become involved in issues that go beyond the relatively narrow scope of her profession. As a teacher, however her primary responsibility is to teach—to identify the specific defect and offer the most economical solution.

This point is often not appreciated by educators and teachers. They seem to think that one cannot have an intelligent grasp of a problem without understanding its broad, causal background. As a matter of fact, such a broad view usually inhibits attempts to solve learning problems. Knowing a child's history in detail will not give the teacher any advantage in dealing with him. If he has specific problems, they will show up in the classroom. If they are health problems, the teacher should call them to the attention of the school nurse or principal. If they are learning problems or behavior problems, she should handle them. If his problems—whatever they may be—do *not* show up in the classroom, they are not the kind of problems to which the teacher should address herself. She must limit herself to those problems for which she can provide a remedy. She must limit her attention to specific skills the child has and doesn't have, because she can work only on the child's performance, not on his history or home.