

## *How I spent my Christmas vacation*

H. S. PENNYPACKER

### INTRODUCTION

Many years have passed since John Dewey observed that the science of psychology found its first and most natural application in the public school classroom, and that from the classroom could come questions and problems of unique and fundamental interest to the psychological scientist. Many things have happened in the interim. Psychology and education have grown up, at least in size, as professions. They have, for a variety of historical and sociological reasons which we shall not attempt to enumerate here, become more or less estranged.

The academic and applied communities within both psychology and education have been equally alienated. Thus, experimental psychologists have diligently inquired into the phenomena of human learning with the aid of the memory drum and the nonsense syllable while almost totally ignoring the daily opportunity to study the same phenomena *in situ* as they taught their undergraduate courses. Meanwhile, those faculty members in Colleges of Education having any interest in empirical research at all have almost universally sought to advertise the "purity" of their research endeavors. They presumably legitimize their claim to full academic citizenship by designing and studying simulated educational environments such as carefully populated laboratory schools or demonstration classrooms. Small wonder that most public school teachers report that their formal training, whether in psychology or education, did little to prepare them for the realities of classroom teaching in the contemporary public school. Moreover, they relate that relatively little value is gained from the numerous in-service short courses, workshops, and seminars that university personnel are fond of conducting.

In the face of this mounting irrelevance of the university enterprise to the problems and challenges of public education, a small

but growing group of serious students of human behavior have rediscovered the importance of Dewey's observation of over half a century ago. These people come from both psychology and education and attach very little importance to this distinction. They enthusiastically share the conviction that there is still much of basic importance to be learned in the public school classroom, and that, through diligent and rigorous application of the principles and tactics of that discipline known as the experimental analysis of behavior, there almost certainly will result consequences for the technology of education that will be of enormous social and humanitarian value. Such consequences have already appeared in other areas of human concern with treatment of the mentally ill being perhaps the most conspicuous example.

My own personal and professional history parallels almost exactly that of psychology and education which I have so summarily described in the foregoing paragraphs. I was trained as an experimental psychologist, and my area of particular competence was learning. Instead of the nonsense syllable, I concentrated on the blinking eyelid of both man and monkey, not wishing to become overspecialized too early in my career.

Like most of my academic contemporaries, I regarded educational research as soft-headed and sloppy and the resulting technology as necessarily trivial. So ingrained were these attitudes, that in spite of the fact that I received considerable formal training in behavior analysis as a graduate student, I had been out of graduate school nearly seven years before it occurred to me to apply these principles and tactics to my own courses in an effort not only to improve my teaching but to acquire data of fundamental relevance to the study of human learning. The results of that insight are now a matter of public

---

Reprinted by permission of the author.

record (Johnston and Pennypacker, 1971) and have indeed been gratifying.

At about the same time, largely as a result of stimulation and encouragement I was receiving from education students in my revamped psychology courses, I began to realize the full implications of the infusion of these principles and techniques into public education in general. An enormous undertaking, to be sure, but, as I have already indicated, I was not alone in this enterprise. A small group of pioneers from both psychology and education had been struck by the same vision and were already acting upon it.

The most notable of these pioneers happened to be a close personal friend since my days as a graduate student through the unlikely coincidence of our having both been professional country musicians much earlier in our respective careers (O. R. Lindsley, personal communication, 1961). I am referring to Dr. Ogden R. Lindsley who, under the descriptive rubric "precision teaching," had systematically translated the principles, philosophy, and tactics of the experimental analysis of behavior into a working technology of education by 1967. It was immediately suitable for use either as a research tool or for direct application by the classroom teacher.

I at once became steeped in all facets of precision teaching and like Lindsley began attempting to export it to what I naively assumed would be an enthusiastic and eager group of consumers—public school teachers. I borrowed upon the goodwill I had created with a few former students and began conducting in-service workshops as well as private night classes for parents and teachers in various homes. Although this activity met with sufficient success and publicity so that I was able to extend my workshop activities throughout Florida and Georgia, it was not until September 1970 that I was presented with an opportunity to conduct continuous in-service training at a public school in my home area. Thus, when Mr. William Cliett, Assistant Principal of Duval Elementary School in Alachua County, agreed to contract for such an in-service program, I knew the moment of truth had finally arrived. For the first time outside of the uni-

versity course, I would be able to attempt to teach precision teaching to teachers. I could use its own methods and procedures and be unhampered by the temporal limitations of a one- or two-day workshop. This would be the ultimate test, if not of the system, at least of my ability to use it in teaching others. So, ably assisted by my devoted wife, Sue—an accomplished precision teacher—I enthusiastically launched our program at Duval Elementary School.

Objectively, our efforts at Duval have been far more successful than any of my previous undertakings. By the end of November more than half of the faculty were in regular voluntary attendance at the weekly sessions, had mastered the fundamentals of charting, and were presenting meaningful and orderly data. Many also were able to show evidence of successful and sometimes dramatic changes in the behavior of individual children. This compared favorably with the 5 or 10 percent of an audience of general teachers who might be urged to this level of accomplishment by a short workshop.

Somehow, though, something was missing. After two and a half months, I knew all too well what it was. I was still a university professor, an outsider who couldn't possibly know what it is *really* like. How could I know the sheer physical strain that results from standing on your feet for six hours every day while between 100 and 150 eleven- and twelve-year-olds pass through your room in groups of 30 every forty minutes or so, each challenging you to provide a better reason for what you want him to do than he already has for doing what he wants to do. I talked of individualizing curriculum based upon analysis of daily charts, but had I ever tried to individualize curriculum for a hundred students every day in two or three different subjects, with or without the aid of charts? If so, when did I find time to do it along with playground duty, bus duty, lunchroom duty, parent conferences, faculty meetings, and PTA get-togethers? And with all this charting, when did I find time even to chart the individual performance of a hundred or so kids in two or three different subjects? The teachers at Duval were either too wise or too polite to ask these questions



directly; they didn't have to. Teachers have been asking me these questions for the past two years; the time had come to find the answer!

Sue and Mr. Cliett arranged the details. My last class at the University was to be Friday, December 4. I had to be in Washington for an APA committee meeting on Sunday, December 6, and in Tallahassee on December 7 to visit one of our precision college teaching programs. Returning to Gainesville that Monday afternoon would give me one day to get my affairs in order so that on the morning of Wednesday, December 9, I would be able to enter Room 21 at Duval Elementary School and have a go at public school teaching. Since the Christmas recess for the public schools would begin Friday, December 18, I would have an eight-day taste of what happens in the life of a public school teacher for 180 days each year.

On Tuesday, December 8, I spent most of the morning with Mrs. Ellis, the teacher who had graciously agreed to let me be her substitute, as she went through her usual routine. She introduced me to each class and explained only that I would be their teacher until Christmas.

What follows is a daily account of my eight days in Room 21 at Duval Elementary School. Each afternoon I would come home, collapse on my bed, and relive the day's events into the dictaphone. Here is how it went.

#### FIRST DAY: DECEMBER 9, 1970

This was my first day as a public school teacher. Surprisingly, I slept well last night; the bourbon must have had something to do with it. After sitting numbly through our usual Wednesday morning in-service workshop on precision teaching, run capably by Sue from 8 to 9 A.M., I went into the pit to greet my homeroom. They knew I would be coming and were expecting me. Mrs. Ellis asked if she should stay and I told her no. I figured I might as well dive in with both feet.

The kids came in somewhat noisily, took

their seats, and looked at me expectantly. I reminded them who I was and explained to them that all I got to do at the University was teach teachers, and that I always had wanted to see what it would be like to teach real live kids. I explained further that Mr. Cliett had assured me that if I did a good job during the fall with his teachers he would let me teach for a week or two, and so here I was.

This news was imparted while I circulated among the seats dispensing M&M's for sitting quietly, raising hands before talking out, and generally emitting behavior necessary for orderly academic progress. This tactic worked beautifully for five minutes when I discovered that, although I had announced along with each M&M the behavior which had earned it, I had failed to announce the schedule. I discovered that failure to announce the schedule implies to sixth-graders that the schedule is CRF. In the absence of laboratory manipulandum, activated counters, a child readily assumes the role: "Hey, I said the same thing! Don't I get one too?" or "Hey, I've been quiet for two minutes, where's my M&M?" At this point, I realized that a concurrent VR-EXT schedule would be the best I could manage. I announced that not every instance of good behavior would automatically earn an M&M, but every out-of-seat, talk-out, or physical assault would insure no M&M's. This did nicely; I continued to dispense M&M's, contingent on appropriate behavior, to individuals who I thought had not earned one yet and tried my best to refrain from rewarding blatant holding out of hands no matter what the concurrent verbal behavior.

We proceeded through the morning exercises: We sang the "Star-Spangled Banner," but my voice cracked badly on the phrase about rockets' red glare, and there was the not unexpected tittering. Next we pledged allegiance to the flag, and as is the custom, we had a moment of silent meditation during which the decibel level did, indeed, drop by several JND's.

This behind us, I introduced the first curriculum. The lesson plan called for handwriting. Since I subscribe to the principle that one must practice what one preaches,

and since my handwriting is legible to only the chosen few, I decided this particular portion of the lesson plan would be satisfied if some handwriting were emitted by all students. It was my intention to implement a modified token-economy in the eight days I would spend in the classroom. I decided that a reinforcement menu should be prepared, and that the kids should dictate its contents. I therefore passed out Standard Behavior Charts and instructed in the proper filling in of names, ages, classes, etc. Without further elaboration, I instructed the class to turn the chart over and form two columns: "things I like" and "things I like to do." In the next ten minutes, they wrote their individual menus on the backs of their charts. Sometime tonight, I will collate these data, make some fundamental economic decisions, and God willing, produce a menu by nine o'clock tomorrow morning.

I must hasten to add that this homeroom activity involved all but a select few who, for reasons that escape me at this moment, had art at this hour. The full consequences of this administrative decision were not realized until later in the day. At the moment, however, it was clear that accurate attendance taking was in the hands of the Almighty. We did what we could with the list on the blackboard of those who had signed out for art, but many names not on the blackboard were, judging by the class's unanimous statement, indeed in art instead of at my feet receiving precise Socratic instruction in the mysteries of the reinforcement contingency.

The homeroom hour, all in all, went well. At this moment, I am tempted to ascribe this to the M&M's, my university status, or possibly my beard. Tomorrow will tell. At the appointed moment, they lined up and departed for their next scheduled activity which, if my memory serves, was P.E.

I welcomed their departure for it gave me thirty minutes of "planning time" during which Mrs. Ellis and I scored two sets of science papers and chatted about what might be happening during the rest of the day. From here on in, I was to do my thing: Teach science with the aid of the behavior chart.

The first-period science class appeared on

schedule. They, too, had been advised of my appearance, so my introduction to them was similar to that of the homeroom group. I anticipated the M&M problem and announced the concurrent schedule in advance.

With this class, and with all succeeding science classes, my patter was essentially the same. All of science, whether pure or applied (they had just learned the distinction) depended upon data, but did they know that yesterday while reading about copper and writing down its various uses they were collecting data? If we were going to be scientists, we must know how to represent these data in chart form. Thus, we introduced the behavior charts. Each kid plotted his own performance from the previous day on the appropriate day and number line. (The top three cycles of the behavior chart were used for instructional purposes with number rather than rate emphasized—little steps for little feet. Time will tell whether this tactic precludes effective transfer to rate charting.)

The remaining science classes were pretty much like the first period science class. After the introductory patter, we settled down to the charting problem; within the twenty or thirty minutes available every kid accurately charted his first data point! There is absolutely no question that sixth-graders, regardless of their IQ or what have you, can be taught to chart their own performance on the Standard Behavior Charts. This news, while theoretically gratifying, means that I have to develop new curriculum for tomorrow!

Our thirty-minute lunch period was eventful. I elected to eat with the kids, which had two effects. There was a moment of amazement since most teachers escape to the lounge at that time. This was followed by vigorous contesting for the privilege (?) of sitting by me. I went through the line, bought my lunch, and sat next to the first person, a shy little Caucasian girl, who requested the honor of my presence at her side. I endured the din and chaos of the lunchroom for twenty minutes and answered only those questions and acknowledged only those comments which I thought betrayed some serious intent. At 12:20, I excused myself, took my uneaten banana, and retreated to the



teachers' lounge where I poured a cup of coffee too hot to drink and took a few puffs on a cigar.

Twelve-thirty came all too quickly. Back to the pit and a new crop—this time fifth-graders. Since they had the same curriculum the day before as the sixth-graders, I again taught the chart with reference to their performance on the uses of copper. The fifth-graders were, in general, much more orderly and placid; however, it was necessary to be much more explicit with them while teaching the chart. Nevertheless, they all successfully charted their first day's performance.

My homeroom returned for their science class. By now, they had gone four hours without any M&M's, and they made it known that any charting behavior, or any other behavior that I expected, would be M&M dependent. I reiterated the VR schedule and proceeded, as with the other classes, to teach the chart with reference to their previous day's performance. All in all, at this point in the day, the homeroom class presented the most obvious behavior problems. From 1:45 to 2:45, I had a total of twelve substantive outbursts: physical assaults, shrieks, and "rumbles." The announcement that a deceleration in this behavior would earn ten minutes out-of-doors at the end of the day had a good effect, but I was unable to count because the last forty minutes were supposed to be devoted to Group IV individual reading. This was accomplished while the remainder of the homeroom pursued individual activities: putting up Christmas decorations, working on their "Lost on the Moon" problem (see Figure 1) which I had introduced earlier, reading silently, or raising hell in inconspicuous ways.

Individual reading gave an opportunity to involve the kids in a second phase of charting. They each read for one minute from their assigned readers, and error rate based on long hesitations or mispronunciations was recorded, charted, and explained to them. This involved them to a surprising degree; when it was time to go out the two kids who had not yet read virtually insisted that they be allowed to perform so their reading could be charted. With my heart in my throat I accommodated them while the

others, who had earned the privilege of going outside, were released. I decided that my first duty was to teach and my second duty was to patrol the playground, so everyone in Group IV read aloud and was charted.

By the time I had arrived at the playground, the members of my homeroom had scattered to the four winds. An occasional familiar face was to be seen, but I despaired of ever getting them all back into the room before they were to leave at 3 P.M. Those who were within earshot rejoined me at the homeroom and departed for their homes. I assume the others made it, because I have yet to be telephoned by an anxious parent inquiring as to the whereabouts of his child.

So ended the first day. I withdrew to the teachers' lounge, finished the cup of coffee I had poured at noon, and chatted with a number of teachers who appeared genuinely solicitous about my first day's experiences. I assured them that one day there is the equivalent of a week of teaching at the college level, but that they were to be envied because they had a shorter history of educational mistakes to try to overcome than we did at the college level.

I must now return to the task of preparing tomorrow's curriculum. If I don't, I am assured that my failure tomorrow will reverberate in the years to come.

## SECOND DAY: DECEMBER 10, 1970

For some reason, I woke up at five o'clock this morning and could not get back to sleep. After finally going to bed at midnight, this meant facing the second day with only five hours' sleep.

Things were far easier today than yesterday, perhaps because in retrospect nothing could have been worse. After our initial display of mechanized patriotism, the homeroom group and I completed the NASA "Lost on the Moon" problem-solving project including the discussion of the answers. This is an excellent piece of curriculum for the contemporary sixth-grader. It captures his interest and permits him to share his wealth

## DECISION FORM

by Jay Hall

INSTRUCTION You are in a crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some 200 miles from the rendezvous point. During re-entry and landing, much of the equipment aboard was damaged and, since survival depends on reaching the mother ship, the most critical items available must be chosen for the 200-mile trip.

Below are listed the 15 items left intact and undamaged after landing. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important, and so on through number 15, the least important.

- \_\_\_ Box of matches
- \_\_\_ Food concentrate
- \_\_\_ 50 feet of nylon rope
- \_\_\_ Parachute silk
- \_\_\_ Portable heating unit
- \_\_\_ Two .45 caliber pistols
- \_\_\_ One case dehydrated Pet milk
- \_\_\_ Two 100-pound tanks of oxygen
- \_\_\_ Stellar map (of the moon's constellation)
- \_\_\_ Life raft
- \_\_\_ Magnetic compass
- \_\_\_ 5 gallons of water
- \_\_\_ Signal flares
- \_\_\_ First aid kit containing injection needles
- \_\_\_ Solar-powered FM receiver-transmitter

Figure 1. Lost on the Moon exercise.



of lunar knowledge acquired from the televised moon shots while teaching him some of the implications for practical human survival in the lunar environment.

Next period was P.E. for the homeroom groups. We retired to the outdoor basketball area where I began by getting the girls organized into lay-up lines which some boys elected to participate in as well. As soon as that appeared to be functioning smoothly, I joined the boys who were involved in a fairly good game of half-court basketball. Just as I approached the group a fight between David and Eddie reached the cocked fist and threatening gesture stage. I stepped between them, taking both by the arm, and advised the apparent aggressor that his behavior was quite unsportsmanlike. He replied to the general effect that it was his intention to "show that black motherfucker that for me sport begins and ends with my fist." I told him that that was fine, but he would be doing it on his own time, not on the taxpayer's. There was mutual agreement between the combatants to reopen the issue at some other time. Later, during lunch, I saw them sitting side by side happily chatting, so perhaps an alternative solution was found. I next attempted to referee the resurrected basketball game, but soon found that with no whistle I was more in the way than anything else. Tomorrow, I'll bring a whistle.

Routine for the four science classes was uniform and quite gratifying. We reviewed the charting procedures in unison. Then the kids took turns at the overhead projector charting data points, by day and number, that were supplied by other kids in the room. Following this, they did their first charted assignment again by reading a comic book about copper and writing down all the things that are made from copper. They were told that this performance also would be charted, and that they should try to make their charts go up as much as possible. I am sure that without the incentive of the chart consequence there would have been considerable grumbling about doing the same thing a second time. Fortunately, I won't have that problem again.

Mrs. Ellis rejoined me for the short homeroom period just before lunch. She worked

with the majority of the class on decorations for the room Christmas party next Friday, while I took the three people in the lowest reading group off into a corner for individualized reading instruction. We are charting a rather unusual accuracy pair of lines read and errors based on words mispronounced, omitted, or repeated. Two- or three-minute time samples are taken with the aid of a Lux Minute Minder purchased last night. (We must stock these; they are indispensable.) While I count errors on a wrist counter, the nonreaders are counting lines while following along so that everybody has a sense of participation as each child is reading. We shall continue this on a daily basis with the lowest reading group.

Lunch today was delicious! I had two pieces of chicken, two scoops of mashed potatoes, two rolls, some string beans, nuts, and half an orange. Oh, yes, and milk. Not bad for fifty-five cents. As usual, I forgot my napkin, but I was doubly fortunate in that I ate my chicken before I ate my rolls and was able to wipe my fingers on my rolls before eating them. I was sitting again next to my diminutive Caucasian girlfriend who had taken two napkins and cheerfully gave me one. Thus, I was able to avoid the embarrassment of a hundred pairs of staring eyes watching as I wiped my greasy fingers on my socks, hair, or beard. Eight minutes before the next class, I dashed into the teachers' lounge, ate my orange, took a few puffs on a cigar, washed my face, and strode back into the pit.

Two more science periods after lunch went very well under the procedure described above. The last period of the day was homeroom reading. I decided to test the effect of yesterday's M&M delivery on my status as an announcer of working contingencies. As the chaos developed, I recorded eleven out-of-seats in about ten minutes while people were getting organized into the groups and getting their work passed out. I called their attention to the counting, read the count, and advised them that if it exceeded twenty they would lose ten minutes of the Christmas party. Thereafter, only six more out-of-seats were counted, and these were clearly of the accidental variety such as people getting up

to get a drink of water or going to the bathroom without remembering to ask.

That worked so well, I decided to try it tomorrow all day for a day-end consequence. I announced that if, throughout the entire day, the homeroom kept their out-of-seats below twenty-five, we would spend the last fifteen minutes having a dance. This was chosen because many of the kids had indicated dancing as one of their preferred activities. Later, I discovered that only folk dancing was permitted by the rules. I would be surprised, however, if these children are schooled in anything but folk dancing as that term is now defined by musicologists.

Thus, the reading period went quite well. We sampled and charted the individual reading of one group while the remainder of the class worked on a special reading curriculum, ingeniously provided by Sue, consisting of want ads from yesterday's paper which they were to read while writing down words they did not know. After selecting the one they felt most desirable, they were to reply to the ad by letter. This engaged them enthusiastically. A number who were off doing other things returned with only a few minutes to go and asked if they could take the materials home that night. I assured them they could, finished the last individual reading performance five minutes after the bell, and sank with satisfied exhaustion into the hard wooden chair.

### THIRD DAY: DECEMBER 11, 1970

Today was Friday. Everyone knows what that means in a public school. This, however, was probably the easiest day I will have at Duval because of a scheduling quirk that I will try to describe in a moment. Nonetheless, I felt today would be the real test. The novelty of my presence would have worn off by now, and I would be judged from here on out on the basis of what I did, not on who I was.

As the homeroom assembled at 9 A.M. and the usual portion immediately disappeared for art, I reiterated the announcement of the previous day that twenty-five or less out-of-

seats would earn a special activity of dancing for the girls and basketball for the boys in the last fifteen minutes. The reaction was prompt and perfect. No one so much as twitched as we sang "America," pledged allegiance, and had our moment of silence. My magazine training had been effective!

We departed for P.E. where, with my plastic whistle, I refereed thirty minutes of basketball among the boys while trying to ensure that the girls were engaged in something more vigorous than gossiping about the fact that my fly had been open all yesterday afternoon. After P.E., I was on top of the world because the next forty minutes were "planning time," and I had already done my planning.

Now a word about the scheduling quirk. As near as I can tell, during the last quarter of every other moon, there is one day when all but ten of the members of each sixth-grade science class have art and the fifth-grade science class does not show at all. I checked with Mrs. Ellis against the outside possibility that this was a regular feature of Friday, and she assured me that it was not. It would not happen again until some time in January or February.

Now, under these circumstances, there absolutely would be no point in introducing any serious curriculum intended for the entire science class. It would only have to be repeated on Monday for all but the ten whom fate had cheated. So, falling back on my dear wife's bag of tricks, I had decided to read aloud a few of the little who-done-its in *Encyclopedia Brown*. I divided the small group into two teams and rewarded those who successfully used the data in the story to deduce a conclusion from which they could induce a theory which would solve the mystery. This worked pretty well, although by the second class, I was beginning to get hoarse from so much dramatic reading. I really blew it with the first class by M&Ming the team which solved the first mystery. The losers were outraged, and only the most theatrical oral reading of my career on the second problem averted disaster. With the second problem, I virtually shaped the correct response from the previous losers so that everybody had had one M&M. The third



problem was to be solved, not for the booty of an M&M, but for the glory of the old team! The solution was forthcoming from the team which had solved the first problem, but we all knew our hearts were not in it. Educational policy notwithstanding, these kids will work their tails off for something that doesn't melt in their hand.

This observation was confirmed with the second-period science class for whom no M&M's were offered. They had a great deal more trouble attending to the relevant facts and required a good deal more prompting before the correct response was jointly emitted. (There is a good experiment here: prompts necessary to solution as a function of solution consequence. But today was not my day to do research, however applied. I'll pass this along to a student.)

The most gratifying experience of my first three days occurred in the homeroom period just before lunch. Elaine, a little black girl who calls herself Cassandra, was in the lowest reading group with whom I have daily individual contact. She almost doubled her yesterday's rate of lines read and decreased her error rate to approximately one-fifth of the previous day. This growth, though ascribable to a million factors based as it was on only two days' data, brought what I am sure was the first smile of satisfaction in accomplishment that this girl has ever experienced in public school. Her chart told her something that no teacher, black or white, probably ever guessed—she could achieve!

There is little to be said about lunch except that today's fishcakes were no match for yesterday's chicken. One could directly validate this observation by merely counting the number of bits of each commodity that were thrown on the two successive days. The fish would win in a walk. I sat with the boys today and contributed feebly to a thoroughly expert discussion on the relative merits of the various dragsters in the Southeast. If anybody wants reading or math curriculum that would reach David, he would need only buy a program from any drag race.

After lunch I finished the individual reading work with Group I while Mrs. Ellis supervised construction of Christmas decorations. Everyone's chart improved today

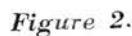
though none with quite the drama of Elaine's.

Since my fifth-graders were unavailable because of the scheduling mentioned above, my next teaching experience was my homeroom science class. Only a handful were present, and they urged that the period be devoted to free play. Thus, *Encyclopedia Brown* had an uphill fight and probably earned a draw. David kept score for the first round, but his lack of impartiality made it necessary to change this arrangement for the second problem. We successfully solved three problems, again with numerous prompts, but without the aid of M&M's. Since this was homeroom, out-of-seats were counted and were virtually no problem.

The last period of the day was the conglomerate of Group II reading, free activity, or productive activity for those who had not yet done yesterday's want ad problem. The out-of-seats count rose to fourteen during these twenty minutes. The total was well below the magic twenty-five since David and Angela's three-rounder behind the teacher's desk only counted as two out-of-seats. They had indeed earned their special activity (see Figure 2). My devoted wife appeared on schedule and managed the dancing portion while I refereed another basketball game. The dancing must have been a powerful consequence. Nearly every kid within earshot tried to break down the door and participate. I think we will drop the required count to fifteen on Monday.

#### FOURTH DAY: DECEMBER 14, 1970

Today was rough! Many of the boys spent the weekend watching pro football. I knew this because the first fight I broke up in homeroom had as the major issue of contention the final score of the San Francisco game. They were well rested when they came to school this chilly Monday morning. Also, today was the first day we had the entire homeroom group for the opening period. The art activity which made attendance taking impossible last week turned out to occur only once every so often, so we had the



The fun began when we introduced the

By 2:20 in the afternoon, I had finally had it. My homeroom science period had just ended, and we were about to fade into reading, etc. With my voice cracking, I yelled for order and delivered a short speech which went approximately as follows: "You will remember that I told you last week that I thought it would be fun, for a change, to come and teach real live kids. It was fun



until about ten minutes ago. But the noise and racket in here has made it stop being fun. Now you all know that I don't have to do this. Therefore, whether or not I come back tomorrow is entirely up to you. You decide! If you can act like ladies and gentlemen for the next forty minutes, I will see you again in the morning. If you can't, I will walk out that door at three o'clock today and hope I never see you again. Now it is up to you. You can have either. Which do you want?"

I had thought about this move as carefully as one can under the circumstances before making it. I felt I could predict their decision, but certainly not with the confidence that I can predict the behavior of a pigeon or college student. Either way, I would get information, and the kids would ultimately benefit.

As it turned out, my prediction was accurate. A hush fell over the room that was positively funereal. A sob or two was heard together with a barely audible "Oh shit, David. Now look what you've done!" I called my reading group together while the remainder of the class quietly worked on their stories or the Christmas decorations. At 2:45, because the out-of-seat count miraculously had risen only to eighteen, we went outside for fifteen minutes of basketball.

As every teacher knows, the limits have to be tested. They were tested today. I, at least, learned a great deal!

#### FIFTH DAY: DECEMBER 15, 1970

Today was as different from yesterday as day from night. By and large, the outrageous behavior of all the classes yesterday which we ascribed to the weekend rest was missing today. Not that we did not have our little problems. We did.

The first of these occurred during morning P.E. for the homeroom which occurs right after the opening exercises. A group of black girls appropriated what turned out to be the white girls' basketball. Prior to this, I had observed no overt racial difficulty. I called the black girls together, explained that color made no difference, etc., and tried to form them into two lines for lay-ups. No good!

The black girls refused to play with the white girls, hurled a number of racial insults which were returned in kind, and strode off as a unit to loiter around the jungle gym. I decided I would accomplish nothing by paying attention to this sullen withdrawal on the part of the black group. I turned the basketball over to the remaining girls, one or two of whom were black, and finished refereeing the boys' game. I kept an eye out for further trouble, but there was none on the playground.

Later, I heard that fallout from this incident erupted in the music class to which our group went after P.E. This occasioned one of our most energetic black girls being banished from music class and sent to the disciplinary bench where I passed her on my way to the lounge for my "planning time." I stopped and had a little supportive chat with her as she experienced the consequences of whatever misbehavior she had emitted in music. Later in the day, she became the first of my homeroom class to give me a Christmas card.

The science classes were a sheer delight today! I had planned to read the "Guide Book" to the solar system and then pass out the first question sheet so that tomorrow we could chart our first performance on this unit. I didn't get further than reading and explaining the Guide Book with any of the classes. Their enthusiasm and eagerness to contribute information, however faulty, made it clear that the time was well spent in stimulating them with this material. The enthusiasm of a sixth-grade class when confronted by topical, though relatively abstract, curriculum is a wondrous thing. I have seen it all too rarely at the college level.

By the time I did my act four times, I was hoarse and exhausted but relaxed and satisfied. My act consisted not only of dramatic reading but of attempting to illustrate every point I could using the overhead projector as the sun, the globe as the earth, and a kick ball as any of the other planets. The explanation of revolution and rotation become quite animated particularly in the case of the planet Mercury where the periodicity of these two motions is the same, causing one side of the planet to forever face the sun.

In every science class, even the homeroom after lunch, excitement was high but well controlled. I feel an odd sense of fulfillment.

Elsewhere through the day, I managed to pick up charted reading behavior on a few of the kids who I had not yet heard read aloud. In addition, my lowest reading group again performed individually. Randy made the greatest progress and led out a whoop of delight when we charted his data. Elaine went on to a new story and both her rates changed in the expected direction. This was explained to her, but I think unsuccessfully. In the most serious tone I have heard her use in the five days I have been at Duval, she promised she would try harder tomorrow. I left school today forty minutes after the last child had departed. As I was unlocking my car Elaine ran across the street, just to say "hey!"

Today marked the occurrence of perhaps the most profound validation of a fundamental principle of precision teaching: The child is always right. Just before we went out to P.E. this morning, I called David aside and showed him a copy of the *Road and Track Test Annual* for 1970. I told him that if he could go through the entire day without shouting, pushing, or fighting, he could have that as his reading curriculum for our late afternoon reading session. Further, I told him that if he could maintain this behavior until the end of the week, the magazine was his to keep!

David was a different young man today. Even during basketball, when Raymond fell on him, he displayed hardly a trace of his usual combativeness. He easily earned the right to read *Road and Track* during the last half hour. While doing that, he produced his first requested written work, a list of words he did not know.

Tomorrow, I must without fail chart a sample of his reading from this material. I have an idea it will be very different from the data he has given us under the stimulation of his assigned curriculum.

#### SIXTH DAY: DECEMBER 16, 1970

When the alarm rang at 7 o'clock this morning I knew this would be less than an out-

standing day. I had been awake, smoking cigars, since 4 o'clock. I simply was unable to sleep in spite of the fact that I knew how rotten I would feel. My guess is that the sugar in the rum sours I drank last night was the culprit. I can't eat rich desserts without suffering the same problem.

Today being Wednesday, we had our regular precision teaching workshop which again was handled very capably by Sue. She awarded prizes for the first three finishers in the total number of charts competition that had been going on since September. First prize went to Barbara Minter whose 140 math charts were indeed impressive.

Since I am viewed by most as a faculty member at Duval, I took my turn and showed only the charts of the homeroom's performance on the unit on copper. With these data I was able to suggest the possibilities for curriculum analysis that were clearly evident. The most growth on this particular curriculum was shown by the kids who had started badly whereas the "bright" kids with good work habits were victims of ceiling effect.

Mrs. Ellis handled the first homeroom period in order to help plan the Christmas party, an activity in which I readily confessed absolutely no skill and only slightly more interest. I observed her intently as she managed their behavior through the necessarily noisy procedure, and I must say the control she exerts with her soft voice and gentle manner is truly magnificent.

After our planning period, Mrs. Ellis came in and watched while the science group gave a demonstration of their charting progress. We again used the procedure of having kids take turns standing at the overhead, plotting problems given by kids out in the audience. I was pleased with their performance!

The science classes today went very well. I have learned that allowing too much help with the passing out and taking up of materials contributes to the pandemonium and ultimately slows the whole process down. We performed on the question sheets based on the guide book to the solar system using the guide book and map for information. I have not yet evaluated their performance, but my impression is that very few were errorless in



the allotted twenty minutes. Most will have gotten about half of them right, and the remainder, owing largely to their reading handicaps, will have gotten very few right. I am most distressed that I will be unable to chart a second performance on this curriculum for any but a handful of students because of tomorrow's Christmas programs and Friday's parties. First things first, I guess!

Yesterday, Mrs. Ellis had expressed some disappointment in the low rate of story production of three stories in two days from the homeroom group. I asked her if she would be interested in seeing the effects of a tangible consequence on story production, and she said indeed she would. This morning I announced that any story produced during the day would earn two M&M's. By day's end, we had twenty with more promised in the morning.

Just before lunch, Tommy, who had not caused a single problem, absolutely flattened a black girl from another room. She rose at the count of one and dealt Tommy a staggering blow. I caught him as he was going for her throat, grabbed her by the arm and hurled her out the door, and marched Tommy to his seat where I held his arm until I could feel his pulse begin to recede. I pointed out to him that he would get more M&M's sooner by writing stories than by smashing girls, and he rather begrudgingly began to work.

Individual reading today, as usual, produced my greatest satisfactions. As she had promised yesterday, Elaine did indeed accelerate her lines read and decelerate her errors on her new curriculum. Her reaction to this fact was as touching as it has been on previous occasions. I watched her a little more closely throughout the day and observed essentially no other academic performance. She is being considered for special education. Her reading chart shows unequivocally that for Elaine achievement is not a matter of ability but of patient and careful shaping of work and study habits which hitherto evidently have been completely ignored. This is the function of public education, not special education!

David, our pugilist of some days ago, again maintained his combative behavior at zero

rate and read for me from *Road and Track Test Annual* in preference to going outside for basketball during the earned special activity. The data show that his lines per minute in *Road and Track* are nearly equal to his regular reader, and that his error rate is slightly higher. Tomorrow, however, I hope to take a second measure from *Road and Track*; his two reading performances last week were characterized by an acceleration in errors. Somehow, I think this week will be different.

#### SEVENTH DAY: DECEMBER 17, 1970

I had a very good night's sleep last night and the effect on today was magnificent. I knew, of course, that these last two days would not be massively productive. Yet I still felt that, in spite of the schedule disruptions, I had to leave all the kids proficient in charting rates. More on that later.

During our homeroom period this morning, I picked up the last few stragglers on the reading charts while the remainder of the class worked with Mrs. Ellis decorating the table for the Christmas party or sat at their desks hammering out stories and poems for M&M's. I have carefully preceded each M&M delivery with a good deal of praise. This morning, a couple of kids turned in their papers, received their praise, and walked away before I could get the M&M's out.

At the end of the scheduled homeroom period, we had no idea how long it would be until our sixth-graders were to assemble in the cafeteria for the Christmas program. Our best guess was that it would be some time around 10:15, so we elected to give them a portion of their scheduled P.E. No sooner had we gotten organized on the playground than word was sent that we were late for the sixth-grade portion of the program. We herded them into a semi-organized mass and funneled ourselves into the cafeteria.

I must say that the music teacher had accomplished a miracle of mass behavior management. Not only did each class emit their vocal renditions in a very close approximation to unison, but the behavior of the audi-

ence was not unlike an audience at a performance of the West Point Glee Club. Such management evidently was not achieved without some reliance on techniques of aversive control. On the way out to P.E. before the program, Freanta ran by me and said, "Let's all go get dirty so we don't have to go to the program." The reader will recall Freanta—she had been banished to the bench from rehearsal two days before.

The program did not run quite as long as expected so I had the regular second-period science group on schedule. As expected, they taught me how to teach sixth-graders to chart rates. The transition from number lines to rate lines posed no problem. Indeed, the only problem I encountered with any of the classes arose from the need to interpolate numbers to the right of the decimal. Somehow, to a sixth-grader who does not know about decimals or who is a little shaky on division in general, there is little similarity between the charting of .25 and 25. I corrected this in subsequent classes by explicitly instructing for it.

The fifth-graders, as usual our most orderly and attentive group, caught on with absolutely no difficulty, perhaps because I anticipated their problem and broke the instruction into smaller steps. Later Mrs. Ellis was helping with the homeroom, and she and a number of students made an important discovery: In charting rate, the first thing we must do is locate the cycle that the first number goes in. The problem of charting a rate like 1.23 had become extremely tedious until this observation was offered and validated.

Our individualized reading today went largely as expected. In particular, David's performance in *Road and Track*, although the data are admittedly scant as yet, indicates that that this journal is capable of promoting more growth in his reading skills than *Actors to Astronauts*.

Tomorrow is my last day, and I anticipate it with an odd mixture of relief and sadness. We are going to the annual Duval Faculty Christmas Party tonight, so that by 8 o'clock tomorrow morning these anticipatory emotions may be reduced to simple dread. Tomorrow afternoon will see the staging of the

Christmas party, so no science will be taught. Consequently, in order to get data points on the solar system unit from our homeroom, we will surprise them in the morning by eliciting a second performance on their worksheets as a substitute for a handwriting curriculum and then letting them have P.E. just before the party. The expected results of this unorthodox scheduling will be the opportunity to relate acceleration on the science curriculum to reading performance which, I suspect, will show a tremendous functional relationship to science achievement. By tomorrow night, this suspicion will be either confirmed or denied. Precision teaching will have yielded an answer from the ultimate source: the kids.

#### EIGHTH DAY: DECEMBER 18, 1970

Last night's faculty party at the Hutchinsons' was terrific. Almost the entire Duval faculty was there with spouses, and the atmosphere of swinging congeniality that we have detected in the school was suitably amplified. We contributed about three gallons of last Saturday night's artillery punch which, to coin a phrase, was a smashing success. The covered dish dinner included some delectables that would have been the envy of master chefs everywhere: Yates' Exotic Peas come readily to mind as does Minter's Chicken Dish, Hutchinson's Cheese Puffs, and Mary Lou's Chicken.

But enough of last night. Today was to be my last day, at least for a while, as a public school teacher. I must confess there was, and will be for some time to come, a small lump in my throat. I experienced many emotions as the day passed, but dread was certainly not one of them.

As expected, the kids grumbled at our procedure for switching the periods with the homeroom, but they fell to the task of their second performance on the solar system worksheet with a good deal more enthusiasm than we anticipated. Nearly half completed in less than the allotted twenty minutes. The analysis to be done this weekend will reveal whether this haste reflects increased mastery or the pressure of the impending Christmas party.



First and second science periods were pretty chaotic. Since we had not met the first-period group yesterday, they had to begin at the beginning with rate charting. With the exception of a handful for whom the request for any productive work on this day was the paramount insult, most people seemed to catch on and successfully chart their first data point from the solar system performance sheet. Again, the biggest problem was with interpolation. I suspect that if I were to do it again, or if I had longer, I would segment the process out and at first require only approximate charting on the existing rate lines and save interpolation for a later date. This is why I went to Duval in the first place—to learn from the kids how to teach the chart. This has been accomplished, although I do not believe I was totally successful with the first-period science group.

The second-period science group, having been introduced to rate charting yesterday, had a somewhat different curriculum today. I passed out fresh charts, told them to write their names on them, and put the word “practice” in the movement space. We then set up a procedure whereby the kids took turns calling out problems of day and rate which I would solve at the overhead with a towel taped over the magnifying glass. When each one indicated he had plotted his point, I would flip the towel back so he could check it. This procedure worked much better than having the kids take turns at the overhead and created far less movement and commotion. With this method everybody participated and everybody got immediate feedback. Why it takes us so long to make these discoveries I’ll never know!

After about twenty minutes of this, there were evident signs of restlessness: A group of girls slunk out of their seats and began playing jacks behind the sink. I feigned disapproval, collected the balls, and did only two more problems making sure the offending girls charted accurately. For the balance of the hour, we worked on the NASA moon problem which fared no better than the charting. By the end of the hour, things had pretty well deteriorated although the serious students were absorbed by the task and would like to have been allowed the neces-

sary peace and quiet to complete it. Such was not to be on the day of the Christmas party.

Just before lunch, the homeroom came in and began emptying out the desks so that the custodial staff could take fire hoses to the place over the Christmas break without ruining the books. During this melee, David and I retired to the corner for a last reading from *Road and Track*. Both rates were down, but no one could read orally with much precision on the fringes of a howling mob.

The cleanup activity was completed after lunch. Then the cute little fifth-graders came in. I count it as evidence of divine mercy that the schedule had given me the fifth-graders rather than sixth-graders for this period. By now, with the parties only about an hour away, the slightest show of determination at teaching would have been met by most sixth-graders with threats of violence to my person. So we did the moon problem, and they thoroughly enjoyed it and each other though not necessarily in that order. Nevertheless, most of them finished it, a few had time to justify their choices, and we even got nearly through the NASA key before the bell rang.

The homeroom reappeared, and we quickly organized them for P.E., hoping to run off a little steam before the party. With no control group, we will never know if this tactic was successful. From the amount of steam that was exhausted at the party, if it was successful, no human could have survived the control group anyway.

Actually, things went pretty well. There was a slight miscalculation in the distribution of presents, and we came up one or two short. We had inadvertently left the door unlocked and unattended for a few minutes earlier in the day, and the presents under the tree were temptingly close to the door. As Mrs. Ellis was bravely coping with the inequity thus created, all but the presentless were gleefully throwing wrapping paper around the room and trading gifts. Behind the shield of my briefcase cover, I hastily wrapped a 3M pen, labeled it “girl,” and slipped it to my confederate. I will never know whether this satisfied the entire shortage or not, because at that moment the

group bolted for the food. I went out to the car and with Eddy and Raymond's help brought in my guitar and amplifier. The musical selections were a curious mixture of Christmas carols and heavy soul. There was a variety of tastes to satisfy in our homeroom.

The festivities were abruptly concluded when the bell rang at 2:55. There was a general winding down, a few kids stayed to help swamp out, and then it was suddenly quiet. For some reason, it took me forty minutes to gather my belongings and leave.

#### EPILOGUE

Several weeks have passed. I am again meeting my university classes, fumbling with minor problems of academic administration, traveling a good deal to give lectures and workshops on precision teaching, and, most importantly, continuing our Wednesday morning training sessions at Duval. But I am not the same person I was when I entered Room 21 on December 8, 1970, and I doubt that I ever shall be again. I have now been where the action is, where the problems are very real and very human, and where the rewards for progress in their solution are very rich. In short, I have had a taste of what it

means to be a teacher rather than a professor.

The major accomplishment of these eight days has been to verify the value of directly recorded behavioral data to educational decision making and evaluation. Permitting the kids to keep individual daily charts makes such evaluation as routine as the practice of a physician who makes daily checks on the medical charts of a whole ward of patients. The picture may not always be pretty, but it is accurate. The analogy holds all too well for educational decision making. The ultimate validation of a medical decision is defined in terms of recordable changes in the patient's physiology; while the ultimate validation of an educational decision is, or should be, defined in terms of recordable changes in the student's behavior. Failure to base such decisions, either medical or educational, upon the most precise and objective data available will not alter the consequences of a bad decision. Unlike the situation in medicine, however, a single bad educational decision is rarely fatal. Moreover, because human behavior is far more amenable to alteration than is human physiology, there is always hope for complete recovery. I saw this hope in Elaine's face when we charted her progress in reading, and I shall never forget it.