INTERMITTENT GRADING

By OGDEN R. LINDSLEY

How many of today’s teachers are overworked and cannot grade the number of papers they would like each student to write each semester? In this article we at the Behavior Research Laboratory suggest a method that will increase the number of papers each student must write and yet will not increase the teacher’s work or reduce the care each student will take with each paper. We have based our method on some of the recent results of motivation and learning research with the lower animals (2), (4).

Learning—or the acquisition of new responses—is very difficult when it is passive; that is to say, when the individual who is being taught makes few responses. A teacher usually employs laboratory sessions, class discussions, papers, and reports in teaching a class. These devices, however, are of much greater value in giving the student training than in giving him a grade. This classwork produces responses from the students which can be either rewarded, ignored, or punished, depending upon the correctness of the responses.

Most teachers today grade each report turned in by each student in the class. Usually the teacher does not need this vast number of papers and reports in order to determine accurately a student’s absolute level of achievement or his relative standing in the class. Why, then, this large number of papers? Simply to insure the active participation of the student in the class—or, as the psychologist would say, to produce responses from the students. The average teacher is so overworked that he can grade only a few papers per student each semester, and often he can give these few papers only a cursory glance. Thus, in most cases, a student can participate actively in the course for only a few hours each semester. The rest of the time he need only attend lectures, listen, and take notes if he is so inclined. Motivation is often on a low level, and many students are left to procrastinate—much to their own discomfort during the final examination period.

Through a great deal of research the psychologist has learned that a lower organism—such as a dog, or a pigeon—will make more responses when he gets a reward (a reinforcement) for only a small portion of his responses than he will make if each of his responses is reinforced. The psychologists later learned that such intermittent reinforcement also worked with children (1) and adults (9). They, too, would make more responses for the infrequent than for the frequent reward. Piecework and gambling are two common types of intermittent reinforcement that everyone knows about.

If only a small portion of the papers each student must turn in each semester were graded, and the student could not tell in advance which of his papers were to be graded, then the conditions for intermittent reinforcement would be met. A student should work as hard on a paper that was not to be graded as on one that was to be graded. Then the teacher could produce more responses from each student, and he
EDITORS NOTE.

Teachers often complain of the time and energy expended on marking students' papers. Their suggestions to reduce size of classes, to provide for teacher aides, and to lighten the daily teaching load are based on the assumption that an English teacher, for example, must examine, mark, and return to the student each paper the student submits. Teachers, pupils, principals, superintendents, board of education members, and parents have all accredited this assumption. Now, here comes an article that says no: it is neither necessary nor desirable to mark everything a student offers in writing. In fact, it is time to explode the all-too-commonly accepted assumption. What do you think? Do the suggestions of the author make good sense? The article describes a practical application of recently developed methods of reinforcement in animal learning and points out that this basic research has implications for eliminating wasteful delay in human learning.

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would not have increased his own grading load. The student, moreover, would profit through his more active participation during the entire semester. Let us now describe such a grading procedure in detail:

1. Describe the method to the class, and be sure to stress the benefits, both to student and to teacher, of using this method. Explain also the history of the method and the experimental justification for it.

2. Assign the papers the students are to write, and decide what percentage of the final grade these papers will comprise. Be sure the task assigned each week is not more burdensome than its percentage of the final grade would justify. You must weigh carefully this pay-off v. cost ratio—this balance between the burden and the grade. You could, for instance, have the students summarize each week's lecture and assignment. A simple summary of this sort would not consume too much of the student's time, and it should not interfere with his other work—for you do not want your fellow faculty up in arms against the method. Fourteen difficult papers would not be worth 10 per cent of the final grade and the students' motivation would lag when faced with such a large amount of work for so low a pay-off. Remember, it is the number of papers turned in, not the number of papers graded, that you should consider in the pay-off v. cost ratio. Weekly summaries would have another advantage, too, because the student will have them when he must review for his examinations.

3. Write the name of each student on a poker chip or any other object of which identical pieces come in quantity.

4. After the first papers have been turned in, place the poker chips in a shoe box and ask one student to shake the box and another student to draw out a chip. Conduct the drawing in front of the whole class so that the teacher will not be accused of dishonest drawing. A public drawing, furthermore, quickens the interest of the class. Even the habitually late student may start coming on time if the drawing is done at the beginning of the hour. But if the drawing produces so much excitement that it interferes with the class routine, then it should be conducted at the end of the hour. You will increase the interest and motivation of the students if at the time of drawing you disclose the name of the student drawn. The paper of the student whose name is drawn will be graded that week. Do not place the drawn chips back in the box. Do not tell the student whose name was drawn what grade he received, since it would be unfair to give such accurate feedback to those students whose names were drawn first.

5. The teacher can, after each assignment, give the class an oral summary of the
week's work in order to give the students some idea of the accuracy of the summaries they have turned in. This feedback is necessary to improve the quality of each student's work, since the method, without such aids, would only increase the quantity of the work. If the students make copies (carbon copies if they use typewriters) of the work they turn in, the effect of this feedback should be increased.

6. Next week perform the same drawing and grading (repeating steps 4 and 5). Be sure to give a student a zero or a failing grade if he turned in no paper for the week his name was drawn. In this way, proceed until the end of the semester, and keep all papers—both those that were graded and those that were not graded. On the next to the last week, write the numbers of the weeks on the poker chips and have each student whose name has not yet been drawn draw two chips. The students whose names were drawn during the semester will draw chip by chip until each has drawn a number representing a week during which his paper had not been graded. Those papers that were turned in, on the weeks described by the numbers drawn, should then be graded. Thus each student will have had two of his fourteen papers graded.

The name drawing throughout the semester should help keep interest high throughout the semester. The number drawing at the end of the semester should help sustain the motivation of those students whose names were drawn early in the semester. The number drawing takes care, also, of those students whose names were not drawn during the semester, as well as of those who were absent due to illness.

7. If a student misses a week or more because of illness, then you should withdraw his name—if it has not already been drawn—from the box, and his two papers should be selected through the number drawing at the end of the semester (step 6). In this way, you insure that no paper is turned in without a chance of being graded.

8. After the final drawing and grading, you may turn back the summaries to the students, who may then use them in studying for their final examinations. The teacher should have obtained fourteen papers from each student, and he will have had to grade only two papers per student, chosen at random from all the papers that were turned in. The students will have participated more actively in the class and will have been discouraged from procrastinating, with little loss in quality of their work and with little additional labor for the overworked teacher. That extra time he has gained the teacher can spend on the organization of his material, and in this way he should benefit his students far more than through routine grading.

Let us face, though, some of the possible criticisms this method may incite. Here are six of them.

It is "unfair" to ask a student to turn in a paper that the teacher is not even going to look at. This criticism is really based on the notion that the only function of a paper is in the grading of a student and the correcting of his errors. If you can make it clear that a student profits from the preparation and writing of a paper and that from thus working throughout the semester he procrastinates less, then this criticism is going to be voiced more weakly. If you have made the grading method clear to the students in advance, then they cannot call it "unfair."

Asking students to produce a large quantity of material will "ruin" the quality of each paper. This criticism implies that the students are already slaving away and cannot be inspired to work any harder or any more efficiently. But, even if this were true, you still ought sometimes to try new training procedures and see if you cannot increase the limit.

Failing to grade each paper will result in a decrease in the quality of the student's work. If the pay-off v. cost ratio is appro-
appropriate (see step 2), the work should not decrease in quality since the student will not know which of his papers are to be graded, although he will know that a significant percentage of his final grade will be composed of these graded papers. There is, of course, some value simply in increasing production, independent of quality.

The method teaches "gambling" to the students. This is a hard nut to crack with certain people, but you can make it clear that the method is no more gambling than the trinket in the cracker-jack box, than an occasional bonus or raise, than the occasional peek of a mother into the bedroom to see whether her child is sleeping, or than the spot checking of student teachers. If "gambling" is so generally defined that it includes intermittent reinforcement and sampling procedures, it should not be considered universally evil, but a useful device in many situations.

Since the method would enable teachers to handle larger grading assignments, it might get used as a device in even further reducing the already inadequate number of teachers per student. The method has no checks in it that might prevent any such perverted use of it. We can, however, hope fervently that, if it does relieve some teacher of unnecessary grading, the administrative officers will permit, if not encourage, him to utilize this "extra" time in organizing his lectures, planning newer approaches to his material, and advancing his own capabilities. In the long run, the class would profit more from this judicious use of the teacher's time. Most teachers—and we cannot say this too often—are capable of more useful functions than the routine grading of stacks of papers.

Other faculty members may object if the method is too successful. If the class interest and motivation become too high, then other teachers not using the method may attack it. (Student X spends all his time on Mr. A's course and doesn't have any time for Mr. B's; the worldy students are setting up betting pools as to whose name will be drawn, and so on.) Competition between teachers for students has always been keen and should continue so until the health of the students is endangered. We do not feel you will reach this point without the use of other teaching aids. Unfair competition would be eliminated if all the teachers used the method.

But the majority of these criticisms are not founded in fact, and are simply reactions to the newness of the proposal. We should understand this, because patience and calm explanation should win over even those individuals who initially criticized the method.

Summary

Today, the limit on a student's production is usually set by the teacher's time and ability to keep up with the grading of the large classes he must handle. Intermittent grading removes the unnecessary one-to-one ratio between the number of papers graded and the number turned in, and it shifts the production limit from the harassed teacher to the student, who should be responding to the best of his ability. It does this without forcing an increase in the number of teachers per student and without adding to the overwork of the able teachers we now have.

REFERENCES


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