

Group Grade Grubbing versus Cooperative LEARNING

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By Alfie Kohn

Even before the recent surge of interest in cooperative learning (CL), researchers and practitioners were already in stark positions on precisely what the term denotes and how the idea should be implemented. Constructive controversies (or, less charitably, factional disputes) have arisen with respect to almost every aspect of CL theory and practice. Everyone in the field agrees that students benefit when they can help each other to learn instead of having to work against each other or apart from each other; beyond this, unanimity is in short supply.

What should be one of the central areas of discussion, however, has not yet received the attention it deserves. I refer to the prominent role assigned to grades, awards, certificates, and other rewards in many of the CL models now being offered to teachers. While some approaches incorporate these rewards without calling attention to that fact, others assert that rewards are the linchpin of cooperation. Some writers even go so far as to use the phrases "cooperative goals" and "cooperative reward structures" interchangeably.

Most researchers would agree, I think, that effective CL depends on helping students to develop what the social psychologist Morton Deutsch (1949) called "promotive interdependence," in which the goals of group members are positively linked and their interactions are characterized by mutual facilitation. (Counterbalancing this in most models of CL is the assumption of individual accountability so that each student is responsible to an external source for participating in the process and for learning.) But the assumption that interdependence is best achieved – or even, as some would have it, that it can only be achieved – by the use of rewards is a claim that ought to have been critically examined long ago. A significant body of research in social psychology has shown that rewards, often known as "extrinsic motivators" because the inducement is something other than the task itself, are not only surprisingly limited in their effectiveness but actually tend to undermine interest in the task and, over the long run, to reduce the quality of many kinds of performance. It is possible that this literature is simply unfamiliar to most CL partisans and other educators – indeed, the key citations rarely appear in bibliographies – or it may be that their relevance to the classroom has not been fully appreciated.

Personally, I managed to erect an impermeable barrier between these two issues, a sort of cognitive Berlin Wall that remained in place for quite some time. I lectured and wrote about CL, asserting that grades were key to creating student interdependence, paying no attention to the cautionary studies on extrinsic motivators that I had written about in other contexts. My refusal to consider how the latter bears on the former may have reflected a dim understanding of how this barrier would eventually be dismantled by the radical assault of itself.

That no artificial inducement can offer the motivational power of intrinsic interest in a task seems undeniable. Think of someone whom you regard as extraordinarily good at what he or she does for a living; then ask yourself whether this individual is concerned primarily to collect a paycheck. Finding enjoyment in what one does is characteristic of most people who reach for excellence. The same is true of students in the classroom. But the "hidden costs of rewards" (Lepper and Greene 1978) have to do not only with their relative lack of efficacy but with their positively corrosive effect on both attitude and performance. The psychologist Robert J. Sternberg (1990) recently summarized what virtually all motivation researchers now concede: "Nothing tends to undermine creativity quite like extrinsic motivators do. They also undermine intrinsic motivation: when you give extrinsic rewards for certain kinds of behavior, you tend to reduce children's interest in performing those behaviors for their own sake" (p. 144). More succinctly, rewards have been described as the "enemies of exploration" (Condry 1977).

Despite the continuing influence of Skinnerian psychology on education and on lay thinking, this phenomenon is not entirely counterintuitive. The following three-step sequence of events will sound all too familiar to many of us: (1) We engage in some activity simply because it is pleasurable, (2) we get paid for doing it, and (3) we suddenly find ourselves unwilling to do it unless we are paid. We have come to see ourselves as working in order to receive the reward – in this case, a paycheck – with the result that the interest in the activity has evaporated all the way.

This effect has been documented repeatedly, beginning in the early 1970s with the research of Mark Lepper at Stanford University (for an early summary, see Lepper and Greene 1975). Edward Deci at the University of Rochester (Deci and Ryan 1985), and their respective students. Since then, other researchers replicating and clarifying the phenomenon include John Nicholls (1989), Judith M. Harackiewicz, Mandlerlink, and Sansone (1984), Mark Morgan in Ireland (1983, 1984), and Ruth Butler in Israel (Butler and Nisan 1986, Butler 1987, 1988, 1989). Their experiments have shown, inter alia, that preschoolers who are told they will receive an award for drawing with felt-tip markers subsequently show less interest in using them (Greene and Lepper 1974); that college students competing to solve a puzzle are less likely to continue working on such puzzles than are those who had not competed (Deci et al. 1981); that merely watching someone else get rewarded for doing a task is enough to reduce one's own motivation to do it (Morgan 1983); that the expectation of being evaluated distracts one from the task at hand and interferes with involvement and interest in it (Harackiewicz, Mandlerlink, and Sansone 1984); and that not only grades but even forms of praise (as opposed to purely informational feedback) can undermine interest in an activity (Ryan 1982, Butler 1987).

In addition to these studies, Teresa Amabile and Bradford Bransford at Harvard University are the most recently published examples of how the use of rewards, particularly at creative tasks. For example, * students promised a reward if they were effective at tutoring younger children took longer to communicate ideas, got frustrated more easily, and ended up with pupils who didn't understand as well a group of children who learned from tutors promised no reward (Garbarino 1975).

* children and undergraduates who expected to receive a prize for making collages or telling stories proved to be less imaginative at both tasks than those who received nothing (Amabile, Hennessey, and Grossman 1986), * when creative writers were asked to spend a few minutes reflecting on extrinsic reasons for writing – making money, impressing teachers, and so forth – their poetry dropped in quality and was also judged to be worse than the poems written by people who weren't thinking about these things (Amabile 1985),

* teenagers offered a reward for remembering details about a newspaper story they had recently read had poorer recall than those who received nothing for their efforts; moreover, they also scored lower on two measures of creativity (Kruglanski, Friedman, and Zetzer 1971).

All of these studies have direct implications for classroom learning, but other research has shown that the destructive effects of rewards extend to other spheres: They are counterproductive for promoting generosity and other prosocial behavior (see a review in Kohn 1990), for eliciting love toward one's romantic partner (Seligman, Fazio, and Zanna 1980), and for motivating employees to use seat belts (Geller et al. 1987). In short, the conclusion offered for one experiment seems an apt summary of an entire body of research: "The more salient the reward the more undermining of performance [is] observed" (Condry 1977, p. 464).

Among the explanations proposed to account for these remarkably consistent findings are these: First, people who think of themselves as working for a reward feel controlled by it, and this lack of self-determination interferes with creativity (Deci and Ryan 1985). Second, rewards encourage "ego involvement" to the exclusion of "task involvement," and the latter is more predictive of achievement (Nicholls 1989). Third, the promise of a reward is "tantamount to declaring that the activity is not worth doing for its own sake" (A. S. Neill, quoted in Morgan 1984); indeed, anything construed as a prerequisite to some other goal will likely be devalued as a result (Lepper et al. 1982).

All of these explanations account for reduced performance on the basis of how the reward is given, not on the basis of how the reward itself is given. But the idea that the mere presence of a reward in a performance situation is itself significant in itself. The reduction in motivation also has undesirable effects on "self-esteem, perceived cognitive competence, and sense of control" (Ryan, Connell, and Deci, 1985, p. 45); it is undesirable apart from its achievement effects. Conversely, extrinsic inducements may also reduce creativity for a reason having nothing to do with intrinsic motivation: they encourage students to work as quickly as possible, take few risks, and focus narrowly on a task. A reward-driven child (or adult) is after the goodie, and this mental set is hardly conducive to the playful encounter with words or numbers or ideas that characterizes true creativity (Kohn 1983).

It should not be surprising, then, that students for whom rewards are salient – even high-achieving students – will choose the easiest possible tasks (Harter 1978, Green and Lepper 1974). Commenting on a program sponsored by the Pizza Hut restaurant chain that dangles free pizza before children to induce them to read ("BOOK IT!"), John Nicholls says the likely long-term consequence is "a lot of fat kids who don't like to read" (personal communication, 1989). Children are likely to pick books that are short and simple, the aim being to plow through them fast rather than to savor and appreciate the pleasures of reading. The same is true with respect to inedible extrinsics as well. Thus, if the question is, Do rewards motivate students? the answer is Absolutely – they motivate students to get rewarded. Unfortunately, this is not the interest in, or excellence at, whatever it is they are doing.

All of this prompts several disconcerting questions for anyone committed to CL. If bribing individuals to learn is so demonstrably ineffective and so disadvantageous, what makes us think that bribing groups to learn is productive and benign? Why, in other words, should CL be exempt from the principle that emerges from this research – viz., The less salient grades and other rewards are for students, the better? Might it not be naive, in light of the corrosive effect of extrinsics, to assume that we can simply remove the rewards "as soon as the intrinsic motivation inherent in cooperative learning groups becomes apparent" (Johnson, Johnson, and Holubec 1986, p. 63)?

Alternatively, we could frame the challenge this way: Many of us were drawn to CL because of the manifest failure of competition as a pedagogical tool. One of the reasons for competition's failure is precisely its status as an extrinsic motivator (Deci and Ryan 1985, Kohn 1986, Nicholls 1989). So could it not be said that the use of grades and other rewards to ensure cooperation takes away with one hand what has been given with the other?

To answer these questions definitively, we first need to consider the evidence offered in support of reward-driven CL by such careful researchers as Robert Slavin. His review of the data has persuaded him that "cooperative learning methods that use specific group rewards based on group members' individual learning consistently increase achievement more than control methods" (1983, p. 53). I believe, however, that the force and relevance of this conclusion is sharply limited by several factors.

First, many if not most of the measures in the studies to which Slavin refers are tasks that require only the straightforward application of a known principle (that is, algorithmic or convergent tasks), and these are less vulnerable to the destructive effects of extrinsics than are more open-ended (heuristic or divergent) tasks. Teachers who care about stimulating creativity and curiosity will not take such comfort from the fact that the promise of a certificate may prompt students to memorize more facts. That striving for a reward may enhance performance on a boring task may be less important than the finding that rewards turn interesting tasks into boring ones from a student's perspective.

Second, while Slavin's notion of methodological adequacy turns in part on whether an experiment lasted for several weeks or several days, we also need to attend to the very long term. It is true that the toxicity of rewards typically manifests itself with alarming rapidity: in many of the studies cited above, a single trial – that is, one presentation of an extrinsic reward – was sufficient to undermine performance and interest. But how do children who are repeatedly bribed to learn come to view the process of learning months or years later? Specifically, how do they view a given subject when no one is around to reward them? A temporary performance gain on routine classroom assignments may mask a chronic shift in students' attitudes that will have long-term effects on learning. (I am sympathetic with the latter position.)

Third, we need to ask what exactly is being contrasted with reward-driven CL in the studies that find a performance advantage. My impression is that the control condition typically consists of either (a) a "traditional" classroom, which, as I just noted, is also characterized by reward-based motivation, or (b) some loose, unstructured arrangement ("Why don't you four work together on this ditto sheet") that scarcely qualifies as CL. The first comparison tells us nothing about the effects of rewards per se – only about rewarding individuals versus groups. The second comparison does nothing to discredit the possibility of carefully structured, nonreward-based approaches to CL.

When Slavin says, as he did in this journal (1988), that "the cooperating groups must have a goal goal that is important to them" (p. 31), I heartily agree. The problem is that he goes on in the very next sentence to operationalize the effects of rewards per se – only about rewarding individuals versus groups. The second comparison does nothing to discredit the possibility of carefully structured, nonreward-based approaches to CL.

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References

- Amabile, T.M. (1985). "Motivation and Creativity: Effects of Motivational Orientation on Creative Writers." *Journal of Personality and Social Psychology* 48: 393-399.
- Amabile, T.M. and J. Gitomer. (1984). "Children's Artistic Creativity: Effects of Choice in Task Materials." *Personality and Social Psychology Bulletin* 10: 209-215.
- Amabile, T.M., B.A. Hennessey, and B.S. Grossman. (1986). "Social Influences on Creativity: The Effects of Contracted-for Reward." *Journal of Personality and Social Psychology* 50: 14-23.
- Barrett, M., and A.K. Boggiano. (1988). "Fostering Extrinsic Rewards." *Journal of Personality and Social Psychology* 55: 293-299.
- Butler, R. (1987). "Task-Involving and Ego-Involving Properties of Evaluation: Effects of Different Feedback Conditions on Motivational Perceptions, Interest, and Performance." *Journal of Educational Psychology* 79: 474-482.
- Butler, R. (1988). "Enhancing and Undermining Intrinsic Motivation: The Effects of Task-Involving and Ego-Involving Evaluation on Interest and Performance." *British Journal of Educational Psychology* 58: 1-14.
- Butler, R. (1989). "Interest in the Task and Interest in Peers' Work in Competitive and Noncompetitive Conditions: A Developmental Study." *Child Development* 60: 562-570.
- Butler, R., and M. Nisan. (1986). "Effects of No Feedback, Task-Related Comments, and Grades on Intrinsic Motivation and Performance." *Journal of Educational Psychology* 78: 210-216.
- Cohen, E. G. (1986). *Designing Groupwork: Strategies for the Heterogeneous Classroom*. New York: Teacher College Press.
- Condry, J. (1977). "Enemies of Exploration: Self-Initiated Versus Other-Initiated Learning." *Journal of Personality and Social Psychology* 35: 459-477.
- Deci, E.L., G. Betley, J. Kahle, L. Abrams, and J. Porac. (1983). "When Trying to Win: Competition and Intrinsic Motivation." *Personality and Social Psychology Bulletin* 7: 79-83.
- Deci, E.L., and R.M. Ryan. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum Press.
- Deutsch, M. (1949). "A Theory of Cooperation and Competition." *Human Relations* 2: 129-152.
- Garbarino, J. (1975). "The Impact of Anticipated Reward Upon Cross-Age Tutoring." *Journal of Personality and Social Psychology* 32: 421-28.
- Geller, E.S., J.R. Rudd, M.J. Kalsher, F.M. Streff, and G.R. Lehman. (1987). "Employer-Based Programs to Motivate Safety Belt Use: A Review of Short-Term and Long-Term Effects." *Journal of Safety Research* 18: 117.
- Greene, D., and M. R. Lepper. (1974). "Effects of Extrinsic Rewards on Children's Subsequent Intrinsic Interest." *Child Development* 45: 1141-1145.
- Harackiewicz, J.M., G. Mandlerlink, and C. Sansone. (1984). "Rewarding Flunk! Wizardry: Effects of Evaluation and Cue Value on Intrinsic Interest." *Journal of Personality and Social Psychology* 47: 287-300.
- Harter, S. (1978). "Pleasure Derived from Challenge and the Effects of Receiving Grades on Children's Difficulty Level Choices." *Child Development* 49: 768-799.
- Johnson, D.W., R.T. Johnson, and E.J. Holubec. (1986). *Circles of Learning: Cooperation in the Classroom*. Revised edition. Edina, Minn.: Interaction Book Co.
- Kohn, A. (1986). *No Contest: The Case Against Competition*. Boston: Houghton Mifflin.
- Kohn, A. (1990). *The Brighter Side of Human Nature: Altruism and Empathy in Everyday Life*. New York: Basic Books.
- Kruglanski, A.W., I. Friedman, and G. Zeevi. (1971). "The Effects of Extrinsic Incentive on Some Qualitative Aspects of Task Performance." *Journal of Personality* 39: 606-617.
- Lepper, M.R., and D. Greene. (April 1975) "When Two Rewards Are Worse than One: Effects of Extrinsic Rewards on Intrinsic Motivation." *Phi Delta Kappan*: 565-566.
- Lepper, M., and D. Greene, eds. (1978). *The Hidden Costs of Reward*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Lepper, M.R., G. Sagotsky, J.L. Dafeo, and D. Greene. (1982). "Consequences of Superfluous Social Constraints: Effects on Young Children's Social Inferences and Subsequent Intrinsic Interest." *Journal of Personality and Social Psychology* 42: 53.
- Morgan, M. (1983). "Decrements in Intrinsic Motivation among Rewarded and Observer Subjects." *Child Development* 54: 636-644.
- Morgan, M. (1984). "Reward-Induced Decrements and Increments in Intrinsic Motivation." *Review of Educational Research* 54: 5-30.
- Nicholls, J.G. (1989). *The Competitive Ethos and Democratic Education*. Cambridge, Mass.: Harvard University Press.
- Ryan, R.M., J.P. Connell, and E.L. Deci. (1982). "Control and Information in the Intrapersonal Sphere: An Extension of Cognitive Evaluation Theory." *Journal of Personality and Social Psychology* 43: 450-461.
- Ryan, R.M., J.P. Connell, and E.L. Deci. (1985). "A Motivational Analysis of Self-Determination and Self-Regulation in Education." In *Research on Motivation in Education*, vol. 2. The Classroom Milieu, edited by C. Ames and R. Ames. Orlando, Fla.: Academic Press.
- Sapon-Shevin, M., and N. Schneidewind. (December 1989/January 1990). "Selling Cooperative Learning Without Selling It Short." *Educational Leadership*: 63-65.
- Schneidewind, N., and E. Davidson. (1987). *Cooperative Learning, Cooperative Lives: A Sourcebook of Learning Activities for Building a Peaceful World*. Dubuque, Ia.: William C. Brown Co.
- Seligman, C., R.H. Fazio, and M.P. Zanna. (1980). "Effects of Salience of Extrinsic Rewards on Liking and Loving." *Journal of Personality and Social Psychology* 38: 453-460.
- Sharan, Y., and S. Sharan. (December 1989/January 1990). "Group Investigation Expands Cooperative Learning." *Educational Leadership*: 17-21.
- Slavin, R.E. (1983). *Cooperative Learning*. New York: Longman.
- Slavin, R.E. (October 1988). "Cooperative Learning and Student Achievement." *Educational Leadership*: 31-33.
- Solomon, D., M. Watson, E. Schaps, V. Battistich, and J. Solomon. (1990). "Cooperative Learning as Part of a Comprehensive Classroom Program Designed to Promote Prosocial Development." In *Cooperative Learning: Theory and Research*, edited by Sternberg, R.J. (1990). "Prototypes of Competence and Incompetence." In *Competence Considered*, edited by R.J. Sternberg and J. Kolligian, Jr. New Haven: Yale University Press.

