CHAPTER 6

WHEN TEAMS DO NOT FUNCTION THE WAY THEY OUGHT TO

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Abstract

It can be assumed that academic learning is an active, generative and effortful process, that is—a mindful activity. Cooperative student teams are expected to increase participants' mindful engagement in learning and thus to improve its outcomes. Although this is sometimes the case, there are social-psychological effects that debilitate team performance. Two illustrations from recent studies are provided. It is argued that the study of team work cannot be limited to intrapersonal cognitions and to simple interactional processes. Teams are social systems in which cognitive, motivational and behavioral processes become increasingly interdependent and these processes need to be studied. Such interdependencies give rise to negative effects some of which are discussed in this article: the “free rider”, the “sucker”, the “status differential”, and the “ganging up” effects. The article concludes with a few speculations about possible mechanisms to overcome such effects when complex and exploratory tasks are given to student teams.

Introduction

A basic tenet of good academic learning is that it is an active, generative process that requires mental effort as it involves the employment of nonautomatic volitional and metacognitively guided processes. Such a state of mind has been labeled mindfulness (Salomon & Globerson, 1987) or constructive learning (Bereiter & Tinker, 1988). Mindfulness is to be contrasted with mindlessness, a state in which one passively lets already well rehearsed schemata unfold under the control of the materials (Langer, 1989). The specific nonautomatic processes employed by a mindful learner at a given point in time greatly depend on the requirements of the task to be completed, the nature of the materials involved and on individual preferences and tendencies. Thus, mindful reading may require different nonautomatic processes than, say, solving for $X$ or from mindfully solving a problem in physics.

One of the expected, and sometimes observed characteristics of team collaborative learning is that it arouses in the participants greater overall mindfulness (e.g., Lambiotte,
Dansereau, O’Donnell, Young, Skaggs, & Hall, 1988), as well as inducing the activation of task-relevant nonautomatic processes: more elaboration, more rehearsal, more planning, internalization of peer-provided metacognitions, more summarizing, and the like. Generally speaking, team work affords the externalization of thought processes, the comparison of alternative perspectives, social facilitation and socially monitored attentiveness to the task. Better learning and transfer, higher self-esteem and more positive attitudes can thus be expected and are sometimes found (e.g., Johnson, Johnson, & Scott, 1978; O’Donnell, Dansereau, Rocklin, Lambiotte, Hythecker, & Larson, 1985).

However, this is not always the case (e.g., Webb, Ender & Lewis, 1986). Rather than pool their mental efforts, teams or particular team-members, often show reduced expenditure of mental effort, loafing behavior, even effort-avoidance, in ways that debilitate learning. Teams just do not always function as well as they could or as well as one would have expected them to. The purpose of this paper is to briefly discuss such behaviors and to point out a few debilitating effects that develop when real student teams engage in learning tasks.

Two Illustrations

With a few exceptions (e.g., Dembo & McAuliffe, 1987), the research literature in education is not very rich with examples of teams that perform below their optimal level, nor of cases where particular team members appear to slack their mental effort expenditure. But such behaviors have become evident to me in two related studies in which students worked either individually or in pairs with computer tools designed to improve either reading comprehension (the Reading Aid) or essay writing (the Writing Aid). I will describe these two studies more by way of an illustration and source of hypotheses than as evidence for the phenomena I wish to discuss.

The Reading Aid

The Reading Aid was a prototypical program that accomplished two functions. First, it presented selected strategies relevant to the reading process — reading titles, making predictions, generating images, detecting key sentences, and constructing brief summaries. Second, the tool provided explicit metacognitive guidance during the process of reading, resembling the ones known to accompany the reading process of proficient readers (e.g., Baker & Brown, 1984). For example, while a story was displayed on the computer screen, questions appeared in a “window”, one at a time, asking such questions as “What kind of image have I created from the text?”, “What thoughts occur to me on the basis of the title?”, “What have I understood from the text so far?”, or “Do I really understand the text?”

Salomon, Globerson, Guterman and Ben-Zaken (see Salomon, 1988, for a summary description) designed an experiment in which interaction with the Reading Aid was compared with two control versions — one without any metacognitive guidance and one in which the metacognitive questions were replaced by content, test-like questions at the end of each text. Half of the 148 seventh graders in the study were randomly divided
among the three versions and worked alone for three reading sessions. The other half were similarly divided among the three versions but worked in pairs. All team members knew each other and were assigned to teams on the basis of their reading ability such that no team had only good or only poor readers in it. All students were strongly urged to respond to the metacognitive or content questions either to themselves or to take turns and to answer the questions aloud to the other member of their team. Team processes were recorded on a random basis and later analyzed for quality of interaction. Team members were also given questionnaires to measure their evaluation of how well their teams worked and how much mental effort each member expended in the process.

Interaction with the *Reading Aid* had profound effects on the internalization of the metacognitive questions, on subsequent reading comprehension and even on a delayed posttest of essay writing, when the students worked individually. However, interaction with the tool by pairs of students had weaker effects (interaction with the two control conditions did not improve reading comprehension in either the individual or pair conditions). Students in the pair conditions recalled fewer of the explicitly displayed metacognitions, showed less improvement in reading comprehension, and less improvement in essay quality, relative to the individual learners interacting with the tool. Moreover, a clear interaction between initial ability and posttest performance emerged: whereas individual exposure to the *Reading Aid* benefitted mainly the initially poorer readers, work in teams benefitted mainly the already proficient ones.

*The Writing Aid*

The *Writing Aid* was based on principles similar to the ones guiding the design of the *Reading Aid*. The *Writing Aid* served as a word processor but provided also metacognitive-like explicit guidance during the phases of planning, writing and revising an essay (Flower & Hayes, 1981). Students were first given a series of questions pertaining to the goal of the essay they were about to write (to persuade? to describe?), the kind of audience they addressed the essay to (familiar with the topic?), the main points they would want to make, the key words they might want to use, and the like. Once into the actual process of writing, metacognitive questions which are contingent on the planning and on the actual writing appeared one at a time on the screen. These questions were based, in part, on recent research on writing (Bereiter & Scardamalia, 1987). Examples of such questions are “Have I stated a problem or given sufficient background?”, “Wouldn’t I need here an example (evidence, counterpoint, or further elaboration)?”, “Does this paragraph follow from the preceding one?”, or “Do I lead to the argument I wanted to present?”, and the like. The student could “erase” such questions by the stroke of a key. Similar questions appeared during the revision of the essay.

Salomon, Globerson, Givon, Zellemayer and Segev designed an experiment to compare the interaction with the *Writing Aid* with two control versions: one in which no guidance was provided (the basic word processor) and one in which the metacognitive questions during writing appeared only upon the student’s request by the stroke of a particular key. Half of the 120 high school students who participated in the study worked alone, randomly divided among the three versions, and half — in teams of two. The students were strongly urged to mindfully answer the metacognitive questions either to themselves (individual writing) or aloud to their team partners while engaged in the
writing of five essays on five different writing sessions. Teams were told that the essays are to be jointly written as a team project with each team member taking turns at the keyboard. The comparison of individuals with the pairs across the three versions of the tool yielded essentially the same results as in the study with the Reading Aid: pairs, on the average (regardless of conditions), performed less well than the individuals. Again, ability and posttest writing performance interacted: individual writing benefitted the initially poor writers and team writing benefitted the initially better writers. Furthermore, while self-reports of effort expenditure correlated positively with learning when students worked alone, effort and learning were negatively correlated in the teams. That is, mental effort expenditure appeared to have facilitated learning in the individual conditions, as the tenet stated in the beginning of this paper would have led us to expect. But in the team conditions effort appeared to have debilitated learning; the more mental effort team members reported expending, the less their writing improved, suggesting that their efforts were directed away from the task.

In both studies we followed closely the way the teams functioned. Here is a sample of a brief, typical interaction between two students, Sue and John, writing jointly an essay about drugs while using the Writing Aid.

Sue: I hate the topic we chose.
John: Nevermind, we have to get it done somehow.
Sue: So, write something.
John: Ooops, here is another one of these questions. [A metacognitive question.]
Sue: Hit the return key. it will go away.
John: Let's hold it on the screen for a moment; we are supposed to answer it aloud. Do you care about it?
Sue: Nope, so hold it for a minute, and then let's write that drugs are bad and that one can become hooked.
Teachers love to read such things.
John: OK, here it is. Anything more?
Sue: No not really, write this again in another way, to fill up space.

The Team as a Social System

Students in these teams did not perform at the top of their abilities nor at the top of what the pooling of their abilities would have afforded. In fact, they performed quite poorly. Such poor performance could, of course, have been extreme and atypical. Alternatively, it could have been typical but result from a number of factors which have already been found to debilitate team learning. For example, the poor team performance in the two studies could have resulted from a poorly prescribed task or script for cooperation, allowing the students to deal more with their public image than with the task (O'Donnell et al., 1987). The poor results could have stemmed from tasks that do not lend themselves to team work, or from the absence of appropriate group rewards (Slavin, 1987). Or, they could have resulted from excessive homogeneity of pair-composition (Larson, Dansereau, O'Donnell, Hythecker, Lambiotte, & Rocklin, 1984), from cognitive overload (Hythecker, Dansereau, & Rocklin, 1988), or from an unfortunate combination of some of these factors. However, closer examination of the tasks and the teams' behaviors indicates that none of these appears to fully account for the observed behaviors. Similar tasks of reading and writing have been given to teams with positive results (O'Donnell et al., 1985; Topping, 1987); no rewards were offered to our teams, but none were offered to the individuals either; the tasks did not exceed the learners' cognitive capacity, considering
the fact that individuals coped with them successfully; nor were the teams homogeneous in composition. Something else must have operated in these two studies.

To understand why and in what ways cooperative team learning can have beneficial or debilitating learning outcomes one needs to examine the processes that take place in the group (e.g., Webb & Cullian, 1983). Indeed, a number of such cognitive and interactive processes have been observed and found to account for learning outcomes. Great emphasis has been put on such instructional processes as modeling, immediate feedback, overt summaries, and reciprocal tutoring, and on such interactive processes as giving or asking for help, raising questions, and providing explanations or solutions. Of particular interest are processes evoked when more or less explicit scripts for cooperation are provided (O'Donnell et al., 1987), when teams are composed of same or different ability members (e.g., Cosden & English, 1987), and whether reciprocal teaching is carried out by teachers or peers (Palincsar, Brown & Martin, 1987).

However, the interaction in a team is not fully captured by such variables. The very fact that a team, not an individual learner is involved implies that the interaction among team members is not just of unrelated questions and answers, queries and responses and individual's cognitive processes. A team is a social system, and as such it is a qualitatively different entity than a few individuals working alone side-by-side. Behaviors and cognitions in the group have two major characteristics: they become interdependent and this interdependence develops over time in a reciprocal manner. This developing interdependence implies that individuals' cognitive processes affect and become affected by the ones of the other team members. Communication among the team members serves as the means for the gradually growing interdependence of cognitions and behaviors such that efforts (or effort avoidance) become coordinated and shared.

To be sure, when very short experiments are conducted, involving students who neither know each other, nor are given the opportunity to know each other, the question of a developing interdependence is a mute one. But this is not the way teams operate in a real classroom: students know each other, they have likes and dislikes of each other, they share (or do not share) a view of the task, they come to have expectations of each other and of themselves, and they compare their own performance with the performance of the others in the team. Unfortunately, educational research on team collaboration rarely considers such processes as the development of a shared motivation to work in a team towards a common goal, a developing coordination of mutual expectations, a shared willingness to exert task-relevant mental effort, or a coordination of expectations (Bandura, 1986).

When such or similar processes are considered, important findings emerge. To illustrate, O'Donnell et al. (1987) compared the learning, affective and social outcomes of scripted dyads, unscripted dyads and individuals learning from texts. Scripted dyads, but not the unscripted ones or the individuals, were given specific instructions of how to interact with each other. Results showed that members of the scripted dyads perceived their partners more positively, indicated lower levels of anxiety when faced with a new partner on a subsequent task, and developed more similar perceptions of the learning situation to those of their partners than the students in the other experimental groups. Learners in the scripted dyads also interacted more with their partners as compared with the learners in the unscripted dyads who displayed behaviors more typical of individual learning.

Unfortunately, no correlations between such interpersonal variables and learning outcomes are reported in that study. Still, it stands to reason that when more interaction
time is provided, interpersonal and intrapersonal variables come to affect each other reciprocally. Such social cognitions both affect the social interaction and result from it, thereby affecting learner's cognitions that mediate individual learning, which in turn feed back to social cognitions. We need to direct our attention to the multiplicity of factors that become involved in the newly created social system we call a team, and even more importantly, to their developing reciprocal influences.

Debilitating Effects

The "Free Rider" Effect

Think, by way of a simple illustration, of a team in which one of the participants is particularly talented and initially hard working. Now think of what this can do to the other, less able team member. One possibility is that the latter decides that his or her efforts are dispensable, thus "leaving it to George" to complete the task. A "free rider" effect thus develops (Kerr & Bruun, 1983) whereby one of the team members expends decreasing amounts of mental effort, just going through the team-work motions, assuming that the job will be done mainly by the other, more talented and more highly motivated member of the team.

Not all group tasks are equally susceptible to the free-rider effect. Kerr and Bruun (1983) have studied this effect in different types of task. They found, as predicted, that the free rider effect is more likely to take place with disjunctive tasks, that is, when the group's performance depends on the performance of the most able member (e.g., solving anagrams; coming up with new ideas for an essay to be written jointly). The effect is also likely to take place when the group is involved in a conjunctive task: when the group's performance greatly depends on the least able member (e.g., group mountain climbing; team cooperative reading becoming slowed down by the poorer reader). However, there is an important difference between the two kinds of task. Whereas in disjunctive tasks the less able member feels dispensable, becomes unmotivated, exerts little effort and displays the free-rider effect, it is the more able member who feels this way and refrains from effort expenditure in a conjunctive task. The free-rider effect is least likely to take place when the group is involved in an additive task where performance depends on the maximal contribution of all members (e.g., tug of war; reciprocal teaching). Additionally, the chances of the free-rider effect increase in disjunctive and conjunctive tasks as the group size increases. Larger groups allow more free-riding than small ones.

The "Sucker Effect"

Interdependence may develop in a different direction as well. Given a disjunctive task (e.g., a task that greatly depends on one member's artistic ability), the more able member may gradually discover that he or she is taken for a free ride, left to do all the work for the whole team. A hard-working team member with such a perception may thus gradually come to expend less mental effort to avoid being taken advantage of, that is — to avoid the "sucker effect" (Kerr, 1983). For example, one of our teams in the study with the Writing Aid displayed the following behavior. While one of the participants would come up with an idea for an essay, and try to stimulate the other into a brief brainstorming process, the other would just lean back and contribute little. As the session progressed, and as the team...
moved from the first to the second writing session, the more eager-to-write member offered a decreasing number of ideas, reporting on the post-session questionnaire the expenditure of increasingly less mental effort. As she commented: “It is no fun to work with a partner who leaves all the work for you to do for the two of you.”

It is interesting to note that the avoidance of the sucker effect occurs both when the better able member believes that the others are capable but do not try very hard, or when he or she believes that the others show poor performance because of poor ability (Kerr, 1983). In either case team members lose motivation and the team operates well below the level it could have.

**Status Differential Effects**

Other cases of poor team performance can be easily described once the development of interdependence between team members is taken into consideration. Dembo and McAuliffe (1987) focused on such interdependencies in mixed and homogeneous groups whose (additive) task was to arrive at an agreed upon solution to a problem. They found, among other things, that perceived high ability of some team members creates status sensitivities in mixed groups. Higher status members dominate group activity and become communication centers: they receive and give more help than lower status ones. This, in turn, results in the high-status students gaining additional social influence as manifested in their impact on the team’s final solution to the given problem. To the extent that active participation, giving and receiving help, and tutoring of others, are related to learning (Lambiotte *et al.*, 1988; Webb, Ender & Lewis, 1986), one might say that the “rich get richer and the poor get poorer”: low status students in the Dembo and McAuliffe (1987) study interacted less with the others and influenced less the group process. The team in which such a process takes place does not realize its optimal learning potential.

**“Ganging up on the Task”**

Or consider another script. Team members facing a task that only one of them likes or values negotiate the amounts of effort to be jointly expended. They resolve their conflicts by subscribing to a least effort solution. After all, if one of the members wants to do all the work, she is most welcome to do so; but if she wants cooperation then she has to accommodate to the other member’s poor interest in the task or the expected award. Group harmony is thus achieved as the team gangs up on the task, finding ways to just go through the motions without actually expending and pooling their efforts as expected. Paradoxically, they expend effort in doing away with the effort requirements of the task; they successfully avoid the effort they were expected to expend (Rollett, 1987). It seems that this was precisely what some of our teams in the *Writing Aid* study, reported above, have done, as manifested in the negative correlation between reported effort expenditure and learning by the teams, but not the individuals. If more effort expenditure results in less learning, what was the target of that effort expenditure? Since more effort expenditure was reported by the better writers, it stands to reason that they tried harder than the less able writers to circumvent the writing task and get it done with as little effort as possible. As one of the better students commented: “my partner and I hate writing and we found ways to pretend that we are busy thinking about the essay.”
Other Effects

I suspect that such and similar phenomena are far more prevalent in real classroom teams than is reported in the educational and the educational- psychological literature. Not many team debilitating phenomena have been studied with school-based learning teams. But recent research in social psychology and related areas provides us with some clues. These can be divided into processes that debilitate the performance of a particular team member and processes that debilitate the whole team’s performance. Concerning individuals, there are the “free rider” and the “sucker” effects already discussed. In addition, there is reason to believe that learning teams are likely to cause some team members, possibly the ones whose attempted contributions are rejected by the others, to develop self-induced helplessness as a function of their self-perceived feeling of incompetence (Langer & Benevento, 1978). Similarly, given certain types of “male” tasks, girls can come to believe that they are less capable than boys who come to dominate the team (Johnson, Johnson & Stanne, 1985). Last, given a demanding task for which one team member is clearly better equipped than the others, an agreed upon division of labor is likely to develop such that only that member does the thinking (“I’m the thinkist you’re the typist”; Sheingold, Hawkins, & Char, 1984).

Concerning the debilitation of performance of whole groups, one can expect larger teams to cause diffusion of responsibility — whereby each participant expects the others to expend the effort, or social loafing — whereby team effort just withers away because one member outdoes others (Latane, Williams, & Harkin, 1979). “Ganging up against a task”, as has been illustrated earlier, can be expected when an undesired team task is assigned. Reactance could take place when team members perceive that their legitimate freedom to choose partners, tasks or individual expression is threatened (Brehm & Brehm, 1981). Debilitation can also be anticipated when dependence on the teacher develops as she is pulled into the social system with the possible result of growing expectation for her help (Webb et al., 1986), or when teams engage in intergroup competition (Johnson et al., 1985).

Such interdependent behaviors, whether pertaining only to selected team members or to the whole team, gradually develop over time and can debilitate group performance such that efforts are not pooled. In some cases a few individuals may perform well and learn well in teams, but the teams as social systems, not as collections of individuals, cannot be said to achieve an optimal level of learning behavior.

Concluding Speculations

To be sure, debilitating processes need not take place in all teams or under all instructional conditions. The available literature affords the inference that well structured, well scripted team interactions in carefully composed teams that involve simple and relatively routine tasks serve, if you want, as motivational, status, even perceptual scaffolds; they prescribe who does what and when, thus circumventing some of the social-cognitive processes from affecting the interaction.

But such highly structured procedures as found in scripted cooperation (Lambiotte et al., 1988), reciprocal teaching (Palinscar & Brown, 1984), or group attempts to gain awards (Slavin, 1987), may not be the most desirable arrangements for when teams have
to engage in more complex, free exploratory activities on a prolonged basis. In the latter
cases, mindful engagement in learning tasks faces competing motivations, social strains,
and other team-initiated interdependencies; thus, no well prescribed interactional scripts
or external awards are likely to sustain task-focused effort expenditure of all team
members. Rather, motivational, perceptual and attributional interdependencies may gain
prominence and thus strongly affect group learning outcomes.

Research in this area is still scant and thus no empirically based recommendations can
be offered at present pertaining to ways in which socially debilitating effects in free
exploratory tasks can be avoided. However, taking the liberty to speculate, it appears to
me that a number of factors can help to avoid the negative effects mentioned above. One
such factor is intergroup (rather than intragroup) competition (Johnson, Maruyama,
Roger, Nelson, & Skon, 1981). A second factor is group interdependence that can be
established when different teams become engaged in complementary components of a
complex task and have to exchange the fruits of their work with other teams. If team
products become the exchange tender, teams could not afford “paying” for the
information they need from other teams with unsatisfactory “currency”. A third possible
factor is intergroup differential expertise (the “jigsaw” method; Aronson, 1978) whereby
each participant takes responsibility for a different aspect of the joint task and thus comes
to be a relative expert of it. If the final product depends on the combination of the different
aspects, each member would be compelled to expend much effort in carrying out his or her
share. The common denominator of these three factors is their invitation for greater task-
related interdependencies among team members. It remains an empirical question
whether this facilitates teams’ learning in actuality.

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Biography

Gavriel Salomon received his Ph.D from Stanford University (1968) and has taught since then at the Hebrew University of Jerusalem and the Tel-Aviv University in Israel, the University of Michigan, Stanford, USC, and Harvard in the U.S.A. He is presently on leave from the Tel-Aviv University, teaching at the University of Arizona. Salomon’s work over the years has pertained mainly to the cognitive effects of media’s symbol systems, to the facilitation of transfer of learning, and more recently — to the ways in which computer-related activities can be made to foster thinking processes. He is the author of two books in English (*The Interaction of Media, Cognition and Learning*, Jossey-Bass, 1979, and *Communication and Education*, Sage, 1981), two books in Hebrew, and a number of research and theoretical papers published in the U.S.A. and in Europe. Salomon is a fellow of the American Psychological Association and the President Elect of
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