Teams and Individual Learning: Is the Whole Greater than the Sum of its Parts?

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Abstract

Businesses continue to utilize workgroups to complete a variety of tasks in organizations in part because evidence demonstrates that groups tend to make better decisions than individuals. While this may be true, organizations are also interested in whether individuals are learning within these workgroups. Based on theoretical arguments regarding team and individual learning, I argue that the learning process within a team environment is such that it has a negative impact on individual learning. This is partly due to the way in which team members share and process information. In addition, I argue that this relationship is moderated by an individual's goal orientation, as well as the level of feedback team members receive about a specific task.

A continuing trend in business is to utilize workgroups to complete a variety of tasks in the organization (Guzzo, 1995). There has been significant research supporting the notion that these groups are more beneficial to the organization than are individuals in effecting certain organizational outcome. This is particularly true in decision-making groups (Cohen & Bailey, 1997; Gully, 2000; Ilgen, 1999; Kozowski & Bell, 2001). This line of research basically argues that groups of individuals are able to pool their cognitive resources while offering differing perspectives that, eventually, lead to the optimal decision. While this stream was later expanded to provide boundary conditions for when groups are most likely to be more effective than individuals (Hollenbeck, Colquitt, Ilgen, LePine, & Hedlund, 1998), subsequent research has examined whether these groups not only improved their performance, but increased their learning as a group as well. Because performance and learning measures are so highly correlated, and often operationalized in the same way, the effects antecedents have on either learning or performance are often confounded. However, literature on learning theories highlights the fact that, although not mutually exclusive, they are quite separate constructs (Goodman, 1998). Positive affects on one do not necessitate positive affects on the other.

To have "learned" something implies a mastery of that information in such a way as to be applied to similar, though novel, situations. The information acquired from earlier tasks would be encoded and stored in an individual's long-term memory bank to be retrieved and utilized as needed (Hinsz, Tindale &Vollrath, 1997). However, learning not only suggests the ability to simply apply this information, but to recognize the similarities between the two environments, access the appropriate information, and make the necessary adjustments to fit this new situation. As the prevalence of workgroups continues, there is a growing interest in whether or not these workgroups are, in fact, learning.

Although there is evidence that teams can learn (Bunderson & Sutcliffe, 2003;; Ellis, Hollenbeck, Ilgen, Porter, West & Moon, 2003; Kasl, Marsick, & Dechant, 1997; Yeo, 2002) learning has been found more likely to take place under certain conditions (Edmonson, 1999; Sarin & McDermott, 2003). For example, Bunderson & Sutcliffe (2003) found that teams will learn if the team has a learning orientation. They found that teams with a learning orientation, unlike individuals, will not be affected by poor performance early on in the practice trials, and that they will utilize learning strategies that have a positive impact on their performance on a transfer task. They also gave empirical support of the notion that learning can have a negative effect on the team's performance in the short term, but a positive impact in the long term. However, there is little evidence of whether team learning is an aggregate of what individual members have learned, or whether it is a social process that cannot be disaggregated to reflect what each individual has learned in the same environment. The purpose of this research is to examine how team learning differentially impacts the individuals on that team

Learning can be evidence through performance on transfer tasks, and there is support that teams can learn. Ellis, Hollenback, Ilgen, Porter, West and Moon define team learning as "a relatively permanent change in the team's collective level of knowledge and skill produced by the shared experience of the team members" (2003:822). It is this shared experience that differentiates this construct from individual learning in that it is not simply an aggregation of what knowledge was gained by individual team members. Team learning instead, reflects the way in which information is integrated in this social context.

Because learning is often captured as a measure of performance, it is important to identify some of the antecedents to team performance in order to unpack the factors affecting team learning. Unlike team learning, team performance does not necessarily reflect the permanent changed described by Ellis et. al. (2003). Scholars who discuss the paradox between learning and performance note that the latter is a response to a present stimulus and does not automatically predict a permanent change in behavior (Goodman, 1998). In other words, a team, or individual, may not perform in the same way when presented with a similar, but altered stimulus. Although it is important to understand how to improve performance in organizations, we run the risk of leading managers to short-term goals as opposed to focusing their attention on producing the long-term benefits of learning in the organization.

One factor affecting team performance is team composition. Changes to team composition over time can have a negative effect on the team's performance (Harrison, Mohammed, McGrath, Florey & Vanderstoep, 2003; McGrath, 1991), in that this turnover can negatively impact information flow, particularly if the information in question resided in that individual. If other members of the team acquired this pertinent information, and these team members are able to utilize this information in similar situations, the impact of turnover on the team can be reduced. Although we are beginning to understand what factors lead to improved team performance, further research is necessary to determine whether individuals are actually learning in a team environment and, if not, to offer some reasons as to why this phenomenon is taking place.

This paper intends to contribute to this literature in two ways. First it will offer a multilevel perspective of learning in the team environment by comparing whether improved team performance is related to individual performance on a similar task to demonstrate learning. (A transfer task is one that is specifically designed to resemble a practice task, with some adjustments to discourage the exact replication of a certain behavior. Using such a task can establish if the individual understands the rules behind a behavior by using his or her subsequent performance to determine if and how well those rules are applied to analogous situations.) Second, it will examine ways in which the problems individuals my have in learning in a team environment can be alleviated.

Theoretical Background and Hypotheses

As was stated earlier, organizations have increasingly moved toward the trend of utilizing teams in their work structure, which has prompted a great deal of research focused on the effects teams have on performance, Much of this change is due to the understanding that, particularly for complex, decision-making tasks, groups perform better than individuals. For example, Tindale (1989) showed that groups consistently outperformed individuals on a personnel decision task. There are a number of reasons that have been given as to the reason for these findings. First, working in a group reduces the cognitive load associated with these complex tasks (Kanfer & Ackerman, 1989) by diffusing it throughout the group. In this way there is, in general, more attention paid to the cues the task presents. Secondly, each individual, theoretically, brings a different perspective to the group, which should increase the number of alternatives examined, thereby increasing the likelihood of reaching the optimal solution. However, it is my contention that these same factors that lead to enhanced decision-making at the team level may also be a deterrent to individual learning in a team environment.

Team decision-making is an example of how scholars measure performance in organizations. Hollenback, Ilgen, Sego, Hedlund, Major & Phillips (1995) provide a multilevel theory of team decision making They argue that leaders are lead to the accurate decision at four different levels. The team members take relevant cues from the environment to begin their assessment of the problem (this, they argue, is a team-level phenomenon).

Each member processes the information based on his or her own perspective (individual-level), after which they each present the information to the team leader and

give their input on what the decision should be according to what they know (dyadic-level). Finally, the team leader intergrates this information to reach a decision (decision-level). Hollenback and colleagues note that, although the team members can make poor decisions individually, it is still possible to integrate the information in a way that will result in the optimal decision. While it is apparent that these different stages in the decision-making process can still lead to decision accuracy, the question still remains whether or not the team has acquired enough information from this process to continue to perform well in subsequent tasks. In other words, has this team learned how to perform based on preliminary interactions on the task?

There is a series of work on team learning that help to explain this phenomenon, For example, Ellis, et. al. (2003) found that the degree to which a team learned was related to personality factors (agreeableness and openness to experience) as well as team structure. Teams learned more if the team members tended to be less agreeable, but more open to experience. Research has also found that when individuals work together on a team, a transition must take place wherein each team member's focus changes from addressing their personal needs to those of the team in order for the team to learn. (Yeo, 2000) This change in focus allows for the individuals to better integrate their disparate perspectives to improve subsequent performance.

Kasl, Marsick and Dechant (1997) developed a model of team learning, in which the construct is categorized into four different team types. They argue that these teams learn based on how team members process information. In a fragmented production system, team members function as individuals, therefore preventing them from finding a way to reframe separate information and integrating their perspectives to reach an optimal solution to a problem. In a pooled system, team members are beginning to learn how to integrate their experiences. However, because they do not see the full value of being part of a team, team members engage in interpersonal conflicts that impede a full integration. In a synergistic system, members have a collective orientation in which team and individual goals overlap and the team members are able to pull from their different sources to reframe the information they each provide and form an optimal solution. Finally, the continuous mode of learning results in the synergistic system becoming habitual for the team members (p: 231), wherein they routinely function and learn as a collective.

This work has provided evidence of team learning, but seems to assume that it is an aggregate of what individuals have learned on the team. However, there is sufficient evidence to show that elements which contribute to team learning may impede individual learning, such that the team is greater than its individual parts. The transition from an individual toa team member that is necessary to enact team learning changes the focus from the individual to the team. This focus may prompt team members to view the team in general as an information reservoir to be tapped when necessary. This will reduce the effort an individual exerts in encoding and storing this information and, therefore have a negative impact on learning. As a result, I hypothesis the following:

Hypothesis 1: Individuals will learn more after completing an individual activity as compare with a team activity

Information Sharing and Processing

Hinsz and colleagues (1997) argue that the ability of team members to interact with one another makes teams more effective and efficient in learning by allowing knowledge to transfer from one member to another. This may be evidenced by Hollenback and colleagues assertion that dyadic interactions are an integral part of team decision-making (1995). However, the team's ability to apply knowledge team members have gained to similar situations is based on two things: information sharing and information processing. Ellis, et. al, (2003) argue that in order for information to be shared, it is not enough for one individual on that team to have access to the information. At least two people on the team must have a common knowledge base for that information to even be accessed, much less shared. They argue that these "role partners" will engage in a dialogue that facilitates information sharing, which otherwise might not have taken place.

One factor that has been found to predict whether information is shared is whether or not it reflects a minority opinion, the perspective that is held by the fewest number o f members on the team. In their work on the effects of using group decision support systems (GDSS), McLeod, Baron, Marti & Yoon, 1997) showed that there were almost twice as many minority opinions shared via the GDSS than were mentioned during face-to- face sessions. Ellis, et. al., (2003) also suggested that teams high on agreeableness were less likely to offer minority opinions for fear of causing conflict within the group. However, these opinions often spark the debate that leads to better performance (Wood & Lundgren, 1994). These same debates may prompt the information sharing necessary for all team members to learn from the task.

In addition, the level of interaction between team members can also be problematic for learning from team tasks. If we look at the team from a network perspective (Granovetter, 1973, 2005) we will find that there are those teams with tight connections between all team members, while there are other teams consisting of an imperfect series of dyadic relationships. In these instances, some team members are more central to the knowledge source than are others on the team. These members are more likely to share information than are those less central to the team (Kameda, Tatsuya. Ohtsubo, Yohsuke. Takezawa, Masanori, 1997). If team members are not sharing information, or are differentially sharing information with other team members, there may still be evidence of team learning that has not transferred to all team members. Even if information is shared throughout the team, those with multiple dyadic relationships are more likely to share imperfect information due to the number of channels through which the information must past to reach the receiver. As a result, team learning can disguise the fact that individuals on the team are experiencing different levels of learning.

In conjunction with the role information sharing plays in learning, information processing is also an important element. These methods appear to be quite different for the team than they are for the individual. Tindale (1989) demonstrated that groups and

individuals process information differently, while Kasl et. al. (1997) used their model of team learning to show how changes in processing are essential in order for the team to learn. Whereas Lord and Maher (1990) found that most individuals utilized either the rational model or limited capacity model of decision making, studies on group information processing have found that the team members must integrate their perspectives based on a common goal to reach an accurate decision. I argue that the presentation of the information has changed to accommodate the different group perspectives, and what was once relevant to that individual and immediately accessible no longer is. Team members must use their attentional resources to assist in the decision making process, as well as attend to the changes in information and exert additional effort to store it for later use. Kanfer and Akerman (1989) state that individuals have a limited capacity for cognitive activities, and must reduce that load to be effective. The differences in the way individuals and groups process information will create a load for the individual such that they will not be able to attune to both effectively. As a result, the activities that contribute to team learning will often come at the sacrifice of individual learning. These arguments lead to the following hypothesis:

Hypothesis 2a: Information sharing will have a positive impact on individual learning in a team such that individuals will learn more on teams where more information is shared as compared to teams where less information is shared

Hypothesis 2b: Individuals will learn more through individual information processing than through team information processing.

Goal Orientation

Goal orientation has had a significant presence in the psychology and organizational literature. Taken from educational psychology, the basic premise is that goal orientation is a robust indicator of what motivates an individual to behave. Although the different streams of research have assigned them different names, they are essentially defined as either a learning or performance orientation (Dweck, 1986). Learning oriented individuals are ones who feel that ability is malleable and that effort plays a role in whether one can change their capabilities. They are interested in learning for the sake of learning, and generally are not affected by poor performance in the short term. Performance oriented individuals, on the other hand, are feel that ability is stable and that no amount of effort can change it. They are interested in outperforming their competitors and prefer to perform either above the norm, or with reduced effort. Initial research argued that goal orientation was on a continuum with learning and performance on either end, but subsequent research has found that the two are distinct constructs (Button, Mathieu & Zajac, 1996).

Although there is equivocal support for its direct impact on performance (Bell & Kozlowski, 2002; Brett & VandeWalle, 1999), goal orientation has also been found to have an impact on learning (Colquitt & Simmering, 1998; Ford, Smith, Weissbein, Gully & Salas, 1998). Ford and colleagues, for example, found that learning orientation has an indirect effect on performance of a transfer task through metacogntion and learning strategies. These individuals do more deep level processing, which increases their performance on the transfer task. Team learning literature, on the other hand, has found

that teams with a learning orientation will show higher levels of learning than will teams that are low on learning orientation (Bunderson & Sutcliffe, 2003).

I previously argued that individuals would have to exert more effort in a team environment to learn from the task. However, an individual's goal orientation will have an effect on the strength of this relationship. Individuals high on learning orientation will view working in this context as an opportunity to increase their knowledge base. They will use more of their cognitive resources to process information at a deeper level, which will impact the degree to which they learn in this environment. Those high on performance orientation, however, will be more interested in the team's performance and how they have contributed to the team's success. They are more likely to do the surface processing necessary to complete the task successfully, but will not be interested in storing the information for later use. Based on this reasoning I hypothesize the following:

Hypothesis 3: Goal orientation will reduce the negative effect team information processing has on individual learning such that individuals high on learning orientation will show more evidence of learning than those high on performance orientation.

Feedback

A significant amount of research has shown the importance providing individual-level feedback has on performance (Earley, Northcraft & Lee, 1990; Karl, O'Leary-Kelly & Martocchio, 1993; Kluger & DeNisi, 1996; Mesch, Farh & Podsakoff, 1994; Sengupta & Abdel-Hamid, 1993). This research has shown that, feedback must be specific, timely and frequent in order to be effective. The reason it has been effective is because this information can tell an individual exactly what he or she has done wrong and allows them the opportunity to correct the appropriate problem. However, it is the nature of this type of feedback that has lead to subsequent research arguing that feedback impedes learning (Goodman, 1998; Goodman, Wood & Hendrickx, 2003). These authors argue that people will utilize this information to make changes in the short term, but that there will not be evidence of a stable change to their behavior. They argue that this is due to the reduction in processing prompted by using the feedback that individual was given. Because that individual did not have to figure out what the problem was and try to attend to it, the problem itself is not really relevant. What is relevant for an individual in this instance is a change in performance. This change suggests to them that they have improved, and will probably do equally as well in the future. Unfortunately, this is not empirically supported. What has been found, in fact, is that the more specific the feedback is, the less evidence there is that learning is taking place (Goodman, Wood & Hendrickx, 2003). Unlike what happens at the individual level, I will argue in the following that certain forms of feedback at the team level will increase an individual's knowledge base, thereby increasing the degree to which they have learned in this environment.

Anderson's (1990) typology of knowledge includes two types of knowledge bases: declarative or procedural knowledge. Declarative knowledge is primarily factual information, such as that found in the terminological explanations. It gives the user an understanding of what bits of information have been inputted to generate a decision. Procedural information, on the other hand, is multi-layered and informs the individual

how the information was combined to create a particular solution. In order for individuals to access explanations that enhance their procedural knowledge, they have to have a certain level of expertise. To ask the right questions, one must know what to ask.

Whereas outcome feedback was shown to have a negative impact on learning (Tindale, 1989), process feedback in a team environment will have the opposite effect. It will prompt information sharing, in that it will bring some topics to the surface, and enact a platform for team members to ask other relevant questions. Because teams are likely to have different levels of expertise (Hollenbeck, et. al., 1995) some team members may defer to the automatic processing of the more knowledgeable members, possibly without questioning their rationale. Process feedback will slow down the processing for the less knowledgeable team members and provide them with information pertinent to the decision. Exposure to this information will enhance the degree to which individuals in this team environment will learn.

Hypothesis 4: The relationship between information sharing and learning will be moderated by feedback such that individuals will learn more on teams that receive more specific feedback than will individuals on teams that receive less specific feedback.

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