Motivation and Transfer: The Role of Achievement Goals in Preparation for Future Learning

Daniel M. Belenky (dmb83@pitt.edu)
Timothy J. Nokes (nokes@pitt.edu)
Learning Research and Development Center
University of Pittsburgh, 3939 O'Hara Street
Pittsburgh, PA 15260

Abstract

Knowledge transfer is critical for solving novel problems and performing new tasks. Recent work has shown that invention activities can promote flexible learning, leading to better transfer after instruction (Schwartz & Martin, 2004). The current project examines the role of achievement goals in promoting transfer. Results indicate that engaging in invention activities before being shown the correct method is beneficial for transfer, regardless of initial goal orientation (mastery versus performance), while a mastery orientation must be present for students to transfer from a direct instruction activity. Implications of these results for theories of learning and transfer are discussed.

Keywords: transfer; preparation for future learning; motivation; achievement goals

Introduction

Motivation is a critical factor in human learning and behavior. One realm in which motivation is frequently discussed is in academic settings. Researchers have assessed different goals students bring with them into the classroom, and observed the impact initial motivations have on subsequent learning (e.g., Wolters, 2004). Having goals such as wanting to master concepts or to look good in relation to peers have been correlated with measures of learning. However, the measures of learning in such studies are almost always coarse-grained, such as Grade-Point Averages. Less is known about how motivation interacts with underlying cognitive processes to mediate these achievement gains.

Separate research has investigated many cognitive processes involved in successful learning, such as self-explanation and analogical reasoning (Nokes & Ross, 2007). This work generally uses the ability to flexibly transfer knowledge from one situation to another as the dependent variable, a more sensitive measure of what has been learned than term grades. The typical paradigm used to assess this will compare two instructional interventions and measure performance, but the ways in which the interventions differentially interact with student motivation is almost never investigated.

The study reported here aims to bridge the divide between research on motivation, which leaves successful learning as a black box, and laboratory studies of cognitive processing for transfer, which do not take motivational variables into account. Specifically, this work begins to explore how motivation can influence what knowledge flexibly transfers to new problems.

Motivation

What motivates people is, of course, highly idiosyncratic and multifaceted. Different frameworks have been proposed for explaining various aspects of motivated behavior, such as self-efficacy, value expectancy, intrinsic motivation, and achievement goals (for a review of these constructs, see Schunk, 2000). Because we are particularly interested in how motivation affects learning in academic contexts, we have chosen to focus on achievement goals, which have been studied extensively in academic settings. Achievement goals, broadly stated, are the reasons why a person engages in a task. Two general goals have been differentiated, mastery (or learning) and performance (Elliott & Dweck, 1988). Mastery goals are those that deal with one's skill in and understanding of a topic, while performance goals deal with evaluation of ability. More recent work has included the distinction between approach and avoidance goals, within mastery and performance (Elliot & McGregor, 2001). Approach goals deal with seeking out positive outcomes, while avoidance goals deal with avoiding negative ones.

A number of assessments have been created to measure these aspects of student motivation for engaging in academics. In addition to measuring these constructs, studies have also examined the effect of having a particular orientation on different measures of learning and achievement, both as a covariate (e.g., Wolters, 2004), and experimentally (e.g., Elliott & Dweck, 1988). Generally, mastery-approach goals have been found to lead to more positive learning outcomes, such as increased interest in the topic and a deeper understanding of the materials (Somuncuoglu & Yildirim, 1999). The evidence is more mixed for the effect of mastery-approach goals on measures of achievement, such as grades; some studies show no correlation (Elliot, McGregor & Gable, 1999), while others find a positive relationship (Grant & Dweck, 2003). Performance-approach goals have been found to correlate with grades, but less well to beneficial strategies and deep learning, and avoidance goals are generally found to be harmful for learning (i.e., Elliot, McGregor & Gable, 1999).

Many studies have assessed motivation, and then correlated it with academic achievement. However, even among studies that have experimentally manipulated achievement goals, the dependent measure has generally been affective state, topic interest, strategy use, response to difficulties or simple measures of learning, but rarely of the transfer of knowledge (i.e., Elliott & Dweck, 1988).

Transfer

A standard experiment on transfer consists of two groups who receive some learning intervention (treatment versus control) followed by a novel test (i.e., a new problem or task). Any differences in test performance are attributed to the effect of experimental manipulation; if participants are able to solve the new problem or perform a new task, transfer is said to have occurred. This experimental paradigm has led to a body of results that show mixed evidence for transfer (see Detterman, 1993 for a discussion). Implicit within this paradigm is the assumption that knowledge transfer should be defined as the applicative and replicative use of the acquired knowledge (Bransford & Schwartz, 1999). That is, knowledge is said to "transfer out" if it can be used to solve new problems outside of the original learning environment. However, this paradigm does not capture other aspects of transfer, such as preparation for future learning, or what one "transfers in" to a new learning situation.

Recently, a new methodology was developed to better understand transfer phenomena and to account for the difficulty of finding transfer in the laboratory. Schwartz and colleagues have called this paradigm "Preparation for Future Learning" (Bransford & Schwartz, 1999; Schwartz & Martin, 2004). This paradigm was constructed to capture the transfer in / transfer out distinction. Specifically, it allows researchers to test whether certain types of initial activities allow better preparation for transfer by creating knowledge that is more suitable to be "transferred in" to a subsequent learning experience. Because we have adapted this paradigm and materials in this study, we will briefly review the original work and its experimental methodology (Schwartz & Martin, 2004).

Preparation for Future Learning. To test how different learning activities influence both what "transfers in" and what "transfers out," a double-transfer paradigm was developed (as in Figure 1; Schwartz & Martin, 2004). In this paradigm, the outside lines represent conditions that test how an initial activity prepares one to transfer that knowledge to solve a novel problem. These are equivalent to "standard" transfer experiments, where what is being tested is the ability to apply the acquired knowledge to solve a novel problem. In contrast, the inside lines represent conditions that test how the initial activity impacts learning from a new instructional resource (i.e., a worked example) and how those combined learning experiences impact solving the same transfer problem.

Comparison between the four experimental conditions allows one to separate the effect of the original learning on transfer from the effect of learning from a resource. For example, in one study, half of the students were instructed to invent a method for calculating a way to standardize scores (Schwartz & Martin, 2004). The other half was given direct instruction and shown a graphical procedure to solve such a problem (i.e., the tell-and-practice condition in Figure 1). Then, all students took a test that included a transfer question dealing with comparing individuals' performance from two different samples. However, rather than dealing with the raw data, this question dealt with descriptive statistics. From each of those two groups, half received a worked example in the test (i.e., the learning resource), showing them how to compute a standardized score.

The results revealed that the only students to show improvement were those who completed invention activities *and* received the worked example. All other conditions showed almost no improvement, including those who had received a worked example after being shown and practicing a perfectly valid method for answering such a question. This provided strong evidence that the invention activities had better prepared students to learn from the worked example, and notice when that knowledge applied to a novel problem.

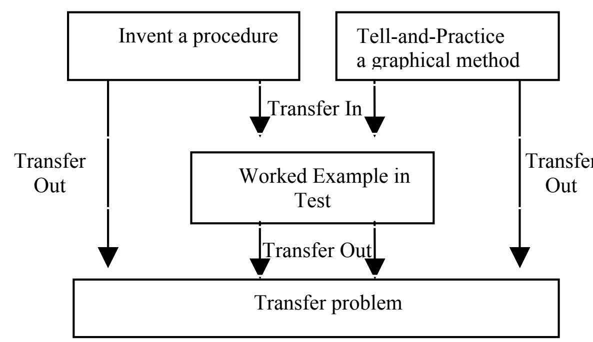

Figure 1. The PFL design tests whether the original intervention is adequate preparation for the transfer problem, and separates the effects of initial activities from those of later ones.

This measure of transfer showed the utility of invention activities to 'transfer in' for future learning, while more traditional transfer paradigms would have missed this distinction (i.e. the outside lines, which showed no improvement).

The prediction that invention would better prepare students for future learning was based on prior work that hypothesized that contrasting cases would draw attention to critical features of the concept to be learned. This would create "differentiated" knowledge that could be integrated with new information, such as a lecture. Although the results of the experiment are consistent with this interpretation, other possibilities remain. One possibility is that the invention activities produced a mastery orientation in students, causing them to actively seek out a deeper understanding of the materials. This possibility was the focus of the current study.

Transfer and Motivation

Both the double-transfer paradigm and the findings for a benefit for invention activities have provided valuable evidence, tools, and ideas with which to explore the effects of motivation on transfer. In the current study we investigate the following three hypotheses: 1) invention activities will best prepare students to learn from an embedded worked example and to transfer that knowledge to a novel problem, 2) initial motivation orientation will interact with learning activities and assessment items, such that those who perform invention tasks would do better on the transfer item, while only those already high in mastery would transfer from direct instruction, and 3) invention activities will produce a more mastery-oriented response, regardless of initial orientation.

Methods

Our materials and procedure were modeled on the Schwartz and Martin (2004) study, with three critical differences. One is that participants in our study worked individually. Another is that, in their study, all students invented first, and then were split into experimental groups. In our study, the invention group invented throughout, while the tell-and-practice group practiced methods they were shown throughout. Finally, our study used college students, while theirs had used high school students.

Participants

One hundred and four undergraduates from the University of Pittsburgh participated in return for course credit.

Design and Materials

The present study used a 2 (learning activity: invention versus tell-and-practice) X 2 (learning resource: present versus not), between-subjects, pre-posttest design (see Figure 1). Materials were presented as packets in binders. These packets contained, in order, an initial questionnaire, a pre-test, a learning activity, an activity questionnaire, space to work on practice problems presented in a video, another learning activity, a post-test, a final questionnaire, and a demographics sheet. The pre-test included an item on the critical transfer concept, standardization. Then, on post-test, participants completed an isomorphic problem (the order of problem presentation was counterbalanced). This way, we could compute an adjusted score, which we used as our critical dependent variable.

Learning activities. All participants completed a problem-solving activity on variability, watched a video explaining the mean deviation formula, and then completed a problem-solving activity on standardization. The variability problem asked students to calculate which pitching machine was the most reliable, requiring students to consider how variable the data sets were (see Figure 2). The video introduced the mean deviation formula, and demonstrated its use in a worked example. The video then gave two simple practice problems students completed on their own, each of which was followed by a walkthrough of the solution steps. The standardization problem required students to decide which of two world records was "more shattered," requiring students to compare individual scores from two different samples. The experimental manipulation was instantiated through different instructions and examples provided with the variability and standardization problem, which asked participants to complete the activities in different ways, as will be described next. It is important to note that the actual problems to be completed were identical across the two conditions, and both groups watched the same video.

The invention condition had instructions such as "Your task is to invent a procedure for computing a quantity that expresses the variability for each of the pitching machines and decide which is most reliable. There is no single way to do this, but you have to use the same procedure for each machine, so it is a fair comparison." They were given scrap paper and a calculator, but no other resources. In the tell-and-practice condition, the two problems were preceded by worked examples. For the variability problem, this example described how to compute mean deviation. For the standardization problem, the example illustrated how to graphically arrive at a solution. In both activities, tell-and-practice instructions explicitly stated to "… use the procedure shown before" in solving the problem.

Embedded Resource. The other factor, learning resource, was manipulated by the presence or absence of a worked example in the post-test. This was presented as a problem to solve, and it demonstrated how to calculate a standardized score. Participants were randomly assigned packets, half of which included the resource and half of which did not. In packets containing the embedded resource, the transfer question always appeared at least two problems after the worked example. If participants noticed the applicability of the worked example to the transfer problem, this was not due to simple temporal proximity, as at least 10 minutes had passed, during which other types of problems had been considered.

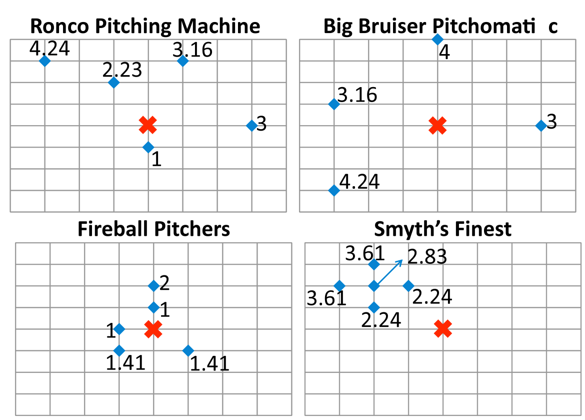

Figure 2. Image of the data sets given in the learning activity about variability.

Test Items. The test consisted of items designed to measure procedural fluency, qualitative reasoning, conceptual knowledge, adaptive use of knowledge, and transfer. Procedural fluency was defined as successful use of the mean deviation formula in a simple problem. The qualitative reasoning problem asked participants to compare two different data sets which differed in important qualitative ways (i.e. consistency vs. higher values). Conceptual knowledge was rated by asking participants to describe why the mean deviation formula requires dividing by "n." The adaptive use item asked students to invent a method for calculating variability from bivariate data, which was not covered in the instructional materials. The transfer item gave participants two individual scores from different distributions, and asked them to decide which was better, with directions to "use math to back up your opinion." These problems were presented in a randomized order.

Three types of problems appeared on both the pre-test and post-test (procedural fluency, qualitative reasoning, and transfer); two isomorphic versions of these problems were used and their order of presentation was counter-balanced across subjects.

Motivational measures. Achievement goals were assessed using a 12-item, validated measure (Elliott & McGregor, 2001) which had three items for each of the four constructs (mastery-approach, mastery-avoidance, performance-approach, performance-avoidance; see Table 1 for examples of each). Each item consisted of a statement about one's goals in math classes, and asked the participant to rate the degree to which they agree or disagree on a 7-point Likert scale. This measure was adapted to be specifically about goals in math classes, rather than a global assessment about academics. Two forms were created with all 12 items in a randomized order; one was administered at the beginning of the experiment and one at the end. We also developed a questionnaire to measure participants' motivations and affective experiences during the initial learning activity. Items on this questionnaire assessed both mastery and performance orientations.

Table 1. Examples of items on the motivation questionnaires (adapted from Elliot & McGregor, 2001).

Mastery-Approach	*Performance-Approach*
▪ In math class, I want to learn as much as possible.	▪ In math class, it is important for me to do well compared to others.
Mastery-Avoidance	*Performance-Avoidance*
▪ In math class, I worry that I may not learn all that I possibly could.	▪ In math class, my goal is to avoid performing poorly.

Procedure

The study was run in groups of 6 in a 2-hour laboratory session. The study consisted of an initial questionnaire, a pre-test, a learning activity, the activity questionnaire, a video, another learning activity, a post-test, a final questionnaire, and a demographics sheet. Participants took as long as they needed to complete the questionnaires, with no one taking longer than 3 minutes. The two learning activities and the video took 15 minutes each. Participants were given 5 minutes for each test item.

Results

Our analyses focus on measures of target knowledge, transfer, and motivation. Target knowledge was assessed to see if basic skills were acquired through our interventions. Transfer performance allowed us to see if students were prepared for future learning. Motivation was examined both in terms of how our interventions affected motivation, and whether initial motivation interacted with instructional activities to produce different learning outcomes.

Target knowledge. We first assessed whether the intervention produced learning gains on knowledge necessary for transfer. Participants clearly learned the target knowledge, as far as execution of the mean deviation formula. Only 6 out of the 104 participants correctly calculated mean deviation on the pre-test, while 73 could compute it correctly at post-test. More participants in the tell-and-practice condition were able to successfully compute mean deviation on the post-test (41 correct out of 52) than in the invention condition (32 correct out of 52), X^2 (1, N = 104) = 3.72, p = .05. This is not surprising, as they learned it earlier and were practicing it while the invention group was creating their own procedure. There was also a marginal effect for the participants in the invention condition to perform better than the tell-and-practice group on the adaptive use problem $t(102)$ = 1.967, p = .05. This provides evidence that invention students had more flexible knowledge, as it required adapting the concept of deviation to apply to deviation from prediction (i.e., residuals). However, it is possible that the invention students were just more prepared to do such a task, as they had practiced turning their ideas into mathematical procedures during their invention-based learning activities. There were no significant differences on the other test items, all Fs (1, 99) $\leq$ 1.58, *ns*.

Transfer Performance. To analyze whether invention and tell-and-practice activities differentially prepare students to learn from a worked example, we computed an adjusted score for the transfer question (posttest – pre-test), using the coding scheme described by Schwartz and Martin (2004). Correct answers received a score of 2, qualitatively correct answers received a score of 1, and all other responses scored 0. Only 5 of the 104 (5%) participants had a computationally correct answer on the pre-test, and only 22 (21%) had a qualitatively correct answer. Results reported here include all participants, even those who answered correctly on the pre-test. For all analyses, the pattern of results is the same if we exclude those participants who scored at ceiling on the pre-test.

A 2 X 2 ANOVA was used to evaluate the effects of learning activity (invention or tell-and-practice) and embedded resource (present or not) on adjusted transfer score. There was a large effect for receiving a worked example (M =.87, SD = .99 for worked example vs. M = .10, SD = .50 for no worked example), $F(1, 99)$ = 24.33, p <.05, d = .98. There was no main effect for learning activity F(1, 99) = 1.01, *ns*, nor was there an interaction effect $F(1, 99)$ = .53, *ns.* Planned comparisons revealed no difference among those who received the worked example after performing invention activities (M = 1.00, SD = 1.02) or tell-and-practice activities (M = .73, SD = .96), $t(101)$ = .957, *ns*. This pattern of results shows that both of the learning activities seemed to prepare students for future learning, which is different than the findings in Schwartz & Martin

(2004). Potential reasons for this difference will be discussed in relation to results on motivation and transfer.

Motivation. There were no significant differences between invention and tell-and-practice groups on the initial questionnaire items in terms of their achievement goals, all X^2 (6, N = 104) ≤ 10.10, *ns*. There were also no significant changes on responses to items from the initial questionnaire to the final questionnaire, all X^2 (7, N =104) ≤ 12.08, *ns*. It is perhaps not surprising that the intervention did not produce large changes in patterns of response. One reason may be due to memory effects, as participants might be able to recall how they answered the first time. Another possible interpretation is that the constructs being measured are stable dispositions of the participants and not vulnerable to large, immediate changes.

There were, however, differences in responses to items on the activity questionnaire, administered immediately after the first learning activity. Those in the invent condition were more likely to agree with the statement "During this activity, I was concerned with the quality of the procedure I was using," X^2 (4, N =104) = 10.975, p < .05. Differences on the item "During this activity, I was concerned with how well I understood the procedure I was using" were marginally significant, X^2 (4, N = 104) = 8.870, p = .064. This provides evidence that the manipulation of activities produced a difference in achievement goals on the particular tasks they were engaged in. Specifically, both of these items were designed to test mastery orientations, and they were both more highly reported by those who invented.

We had predicted an interaction of initial motivation orientation and activity type, such that those high in performance-approach who completed the tell-and-practice activities would do better on simple measures of procedural skill. We also predicted that those high in mastery-approach who performed invention activities would do better on the transfer item. To examine the effect of initial motivation on subsequent performance, we created a high and low group for each motivation construct based on a median split of the data.

The most direct measure of procedural skill was the test item which asked participants to compute a mean deviation. Among those low in performance-approach, there were no differences between those who invented or received tell-and-practice instruction X^2 (1, N = 52), = .197, *ns*. However, among those high in performance-approach, completing the tell-and-practice packet led to a correct calculation of mean deviation more frequently than inventing (24 tell-and-practice correct vs. 15 invention correct), X^2 (1, N = 51) = 4.917, p < .05, d = .65; phi = .31.

Motivation and Transfer Interaction. The interaction effect of mastery-approach orientation, activities, and the embedded resource on transfer performance led to a more complex pattern of results. As discussed earlier, there was a large difference on the adjusted transfer score between groups who received a worked example and those that did not. There was no effect of activities or initial orientation among those who did not receive a worked example; everyone did poorly (all Ms < .17). However, among those who received a worked example embedded in the test, an interaction effect between motivation and activities emerged, F(1, 48) = 5.463, p < .05, d = .67 (see Figure 3). Invention activities prepared one to learn from the worked example, regardless of initial mastery-approach motivation. However, tell-and-practice activities only prepared those who entered with a high mastery-approach orientation to learn from the worked example. A post-hoc t-test showed a large effect; among tell-and-practice participants who received the embedded resource, those that entered the study with a high mastery-approach orientation did much better than those that did not, t (24) = 4.715, p < .05, d = 1.85.

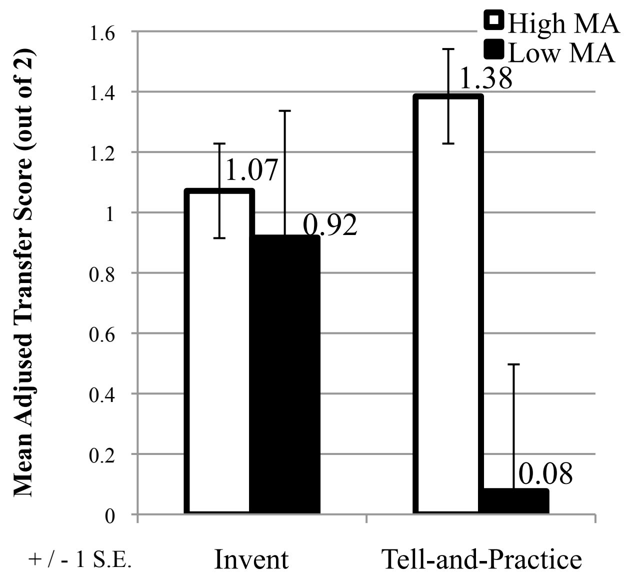

Figure 3. Mean performance on transfer task for each learning condition with a worked example as a function of participants' mastery orientation (high or low).

Discussion

We had hypothesized that only those students who invented would be prepared to learn from the worked example, resulting in increased transfer performance. Though previous research had found that effect, this was not supported in our study. Instead, we observed that students who received the worked example did better than those that did not. One potential reason for this difference comes from the sample populations used, as our study included college students, and previous work had been conducted with high school students. However, we did see differences on particular test items. Tell-and-practice led to better procedural skill calculating mean deviation, while invention led to more adaptive use of knowledge to solve a novel problem dealing with bivariate data. This pattern is in line with the idea that invention prepares students to use their knowledge more innovatively, while tell-and-practice is an efficient way to acquire skill in a domain.

The other hypotheses dealt with motivation, and these were both supported by the results. We had predicted that invention activities promoted more mastery-approach goals, and found evidence for this on a questionnaire administered right after the activities. We had also predicted interactions between initial motivation orientation, type of learning activity, and problem type. Results from two test items supported this view; those high in performance-approach who completed tell-and-practice activities did better on simple measures of procedural skill, and those high in mastery approach performed better on the transfer item.

In addition, some interesting patterns emerged in relation to initial motivation. While being high in mastery-approach was beneficial for measures of conceptual knowledge and transfer, as was expected, we did not see a difference between tell-and-practice and invention for those who entered our study high in mastery-approach. However, we did see important differences among those low in mastery-approach – namely, those who invented did better than those who were shown a method and practiced it. Impressively, invention produced strong learning gains regardless of initial mastery-approach orientation, while tell-and-practice was only beneficial for those who entered with a high-mastery approach orientation. Previous research suggests that people with a mastery-approach orientation may have shown more improvement because they used better strategies and persisted through difficulties (Elliot, McGregor, & Gable, 1999), or had more positive affective responses, such as feeling interested in the topic (Hulleman, Durik, Schweigert, & Harackiewicz, 2008).

Conclusions

Our study illustrated the utility of the "Preparation for Future Learning," double-transfer paradigm by enabling us to examine the effect of motivation on transfer. The interaction between initial motivation, learning activities and preparation for future learning provided clear evidence that motivation can influence what people notice, and how they can transfer their knowledge. The results also provide evidence for our hypothesis that invention activities are beneficially motivating, as those who entered low in mastery-approach ended up doing just as well as those who had endorsed mastery-approach goals. A reasonable alternative hypothesis is that invention activities are beneficial regardless of initial motivation. Schwartz & Martin (2004) grounded their work in the idea that the act of contrasting cases creates a base of knowledge about important, relevant features of the problem space, and this knowledge is more easily integrated with future instruction. Such an account is quite plausible, and more work is necessary to unpack this cognitive account, such as whether there are crucial pieces of knowledge necessary for students to notice before being shown the correct procedure, or whether some "critical mass" of features is sufficient. However, the activity questionnaire provides converging evidence for the view that invention actually changed motivation, as it showed that people in the invent condition were more concerned with the quality of the procedure they were using, and how well they understood that procedure.

This study highlights the importance of integrating cognitive theories with motivational analyses. Further exploration of interactions between activities and motivation such as the one we observed will be critical for expanding theories of learning, as well as for understanding learning outside of the laboratory. In classroom settings, learning occurs at the intersection of social influences, active interaction with different materials, cognitive processing, affective responses, and personal motivations. This research has illustrated that integration of motivation with learning activities grounded in cognitive theories can produce both practical and theoretically fruitful results.

Acknowledgments

This work was supported by the National Science Foundation, Grant Number SBE-0354420 to the Pittsburgh Science of Learning Center (http://www.learnlab.org).

References

Bransford, J. D., & Schwartz, D. L. (1999). Rethinking transfer: A simple proposal with multiple implications. In A. Iran-Nejad & P. D. Pearson (Eds.), *Review of Research in Education,* (vol. 24; pp. 61-100). Washington, DC: American Educational Research Association.

Detterman, D. K., (1993). The case for the prosecution: Transfer as epiphenomenon. In D. K. Detterman & R. J. Sternberg (Eds.), *Transfer on Trial: Intelligence, Cognition, and Instruction* (pp.1-24). Norwood, NJ: Ablex

Elliot, A. J., McGregor, H. A., & Gable, S. (1999). Achievement goals, study strategies, and exam performance: A meditational analysis. *Journal of Educational Psychology, 91* (3), 549-563.

Elliot, A. J., & McGregor, H. A. (2001). A 2 X 2 achievement goal framework. *Journal of Personality and Social Psychology, 80*(3), 501-519.

Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54*(1), 5-12.

Grant, H. & Dweck, C. S. (2003). Clarifying achievement goals and their impact. *Journal of Personality and Social Psychology, 85* (3), 541-553.

Hulleman, C. S., Durik, A. M., Schweigert, S. A. & Harackiewicz, J. M. (2008). Task values, achievement goals, and interest: An integrative analysis. *Journal of Educational Psychology, 100* (2), 398-416.

Nokes. T. J., & Ross, B. H. (2007). Facilitating conceptual learning through analogy and explanation. In L. Hsu, C. Henderson, and L. McCullough (Eds.), *2007 Physics Education Conferenc*e (pp. 7-10). American Institute of Physics Conference Proceedings.

Schunk, D. H. (2000). Coming to terms with motivation constructs. *Contemporary Educational Psychology, 25*(1), 116-119.

Schwartz, D. L., & Martin, T. (2004). Inventing to prepare for future learning: The hidden efficiency of encouraging original student production in statistics instruction. *Cognition and Instruction, 22*(2), 129-184.

Somuncuoglu, Y. & Yildirim, A. (1999). Relationship between achievement goal orientations and the use of learning strategies. *The Journal of Educational Research, 92* (5), 267-277.

Wolters, C. A. (2004). Advancing achievement goal theory: Using goal structures and goal orientations to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology, 96*(2), 236-250.