Citation can be found here: http://vpal.harvard.edu/publications/setting-goals-who-why-how

Setting Goals: Who, Why, How?

On May 25, 1961, President John F. Kennedy announced a goal: America would put a person safely on the Moon before the end of the decade. Many thought this was impossible. To people's amazement, Kennedy's ambitious goal was achieved on July 20, 1969, when Neil Armstrong stepped onto the Moon's surface. In this context, JFK's initial goal setting guided and motivated Neil Armstrong's giant step for mankind. Goals are not only in the domain of leaders, though. They are part of our everyday lives.

Think about an athlete who practices every day for his big competition, a young physics major learning partial differential equations to help her with Electricity and Magnetism, or an instructor coming up with real life applications of her field to interest students. In each of these scenarios, setting goals drive people through their learning and desired accomplishments. This seems self-evident and we may not give another thought to the art and science behind goals and goal setting. But, it is worth reminding ourselves that goal setting costs little or nothing, and can aid successful results in our lives, both in academic and non-academic settings (for more info on the topic, see Shah & Gardner, 2008).

Goal setting is the process of establishing an outcome (a goal) to serve as the aim of one's actions. In educational settings, the ultimate outcome is usually some form of learning as operationalized by the instructor and/or the students (Marzano, Pickering, & Pollock, 2001, p. 93). This paper focuses on higher education, where there are multiple ways in which goal setting can advance learning.

First, setting goals increases motivation. In fact, goals and motivation are so intertwined that many definitions of motivation incorporate goals. For instance, Mitchell (1982) defines motivation as "those psychological processes that cause the arousal, direction, and persistence of voluntary actions that are goal directed" (p.81). The effects of goals on motivation and behavior, however, depend on their properties. For example, it has long been known that giving people specific goals to achieve rather than telling them to do their best increases their motivation (see Locke & Brian 1966, Brian & Locke, 1967; Locke & Latham, 2002).

Second, setting goals increases achievement. Hundreds of correlational and experimental studies show evidence that setting goals increase success rate in various settings, including education (Latham & Locke, 2007; Locke & Latham, 1990).
For example, Morisano, Hirsh, Peterson, Pihl, and Shore (2010) investigated whether an intensive, online, written, goal-setting program for struggling students would have positive effects on students' academic achievement. They led college students through a series of setting specific goals and defining detailed strategies for achieving those goals. After 4-month period, students who successfully completed the goal-setting intervention displayed significant improvements in academic performance (30% increase in average) compared to the control group.

In academic settings, we can categorize learning goals depending on who sets them: the student or the instructor. Therefore, the first half of this paper is allocated to clarify why

instructor set goals and student set goals are important for student motivation and achievement. In the second half the paper, I will outline the characteristics of good goals.

Instructor Goal Setting

Goal setting can advance learning by guiding pedagogy. For instance, “backward design” is a well-known instructional design model that uses goal setting as the focal point of lesson design (Wiggins & McTighe, 1998). When using backward design, instructors identify learning goals for the course first, considering what they want students to have learned and be able to do when they finish the course, then determine acceptable evidence on whether those goals are met, and plan learning experiences and instruction to achieve those learning goals (to learn more about backward design, see Wiggins & McTighe, 1998). This process can encourage instructors to evaluate the relative importance of course concepts and to account for their students’ prior knowledge when formulating a pedagogical approach.

In an experimental study comparing backward design with a traditional curriculum design, it was found that elementary pre-service teachers who were trained to design curricula using backward design outperformed those who used a traditional approach (Kelting-Gibson, 2005). Specifically, teachers using the backward course design method displayed higher levels of content knowledge, were more adept at connecting course knowledge to other disciplines, and developed plans that better reflected research on best pedagogical practices than teachers using a more traditional method of design. Teachers trained in backward design were also better able to develop goal-specific learning assessments, communicate assessment criteria, recognize students’ skills, interests and their learning approaches (Kelting-Gibson, 2005).

When instructors set explicit learning goals, students have a clear picture of course expectations, helping them to concentrate their efforts efficiently toward the attainment of those goals. Instructors can also outline objectives to guide students to accomplish learning goals (i.e. what behaviors will be demonstrated by the students). Moreover, when students have clear objectives, they are more likely to seek feedback to close the gap between their current understanding or skill and the desired goal (Hattie & Timperly, 2007). For instance, in the context of writing, poor writers are often preoccupied with correcting mechanical miscues and making minor word substitutions when revising — although they want to improve their writing, they do not know which concrete steps to focus on to achieve that goal. Studies have shown that these preoccupations can be mediated by assigning students goals that direct their attention to more substantive concerns (Page-Vorth & Graham, 1999). For example, Matsuhashi and Gordon (1985) found that college students who were poor writers made more substantive revisions when assigned a specific goal to add five new ideas to their compositions versus a more general goal to improve their papers. In essence, clear goals increase one’s likelihood of achieving these goals.

Student Goal setting /Self-set Goals

While instructors can set course-level learning goals to help structure their content, they can also encourage students to set their own goals. This goal setting process can

improve students' learning and motivation (Zimmerman, 1990). Specifically, when students set their own goals, they take responsibility and ownership of their learning goals. Such goal-directed behavior that results from goal setting is empowering and proactive (Elliot & Fryer, 2008). Research has shown that proactive actions increase sense of agency: a recent fMRI study found that self-determined behavior of goal setting is indeed closely related to people's sense of agency and correlated with increased intrinsic motivation (Lee & Reeve, 2013).

Setting goals can be especially important for students with low achievement motivation. In an experimental study, authors identified college students as having either high or low achievement motivation. Students in each group, were, then randomly placed into either goal setting group where they decided how many anagrams they would solve or into the control group where they were assigned to comparable goals (Horn & Murphy, 1985). While students with high achievement motivation performed equally well in both goal conditions, self-set goals enhanced the performances of students with low achievement motivation. Therefore, instructors may encourage students to set goals if their motivation to achieve is low.

The effect of goal setting on achievement depends critically on the students' investment (or commitment) in that goal (Klinger, 1977). There are several reasons for this. First, once someone makes a commitment, it is likely that s/he will behave consistently with that commitment (Cialdini, 2009). Second, people are model likely to seek and receive feedback when they have a commitment to attain their goals (Locke & Latham, 1990). Third, individuals are also quite successful at suppressing alternative goals when they are engaged in the pursuit of their goals. In a set of experimental studies, Shah et al. (2002) showed that the more committed college students are to their focal goals, the more they are able to suppress alternative ones. This is especially true when students value their self-set goals. For instance, Emmons and Diener (1986) instructed undergraduate students to self-rate importance of their goals. Their study showed a strong correlation between importance and positive affect toward their goals (as much as attaining those goals). When there are multiple distractors, identifying and setting valuable personal and academic goals can direct learners' attention to important activities help achieving their goals.

Students who invest in their goals also demonstrate greater persistence, creativity, and risk-taking in their achievement of those goals. (Dewett, 2007; Lepper, Greene, & Nisbett, 1973). For example, Moeller, Theiler & Wu (2012) conducted a 5-year long quasi-experimental study to investigate the relationship between student goal setting and achievement in high school Spanish language classrooms. This longitudinal study with 1273 students in 23 high schools used language-learning software with a goal setting process. The goal setting process required students to establish personalized goals and action plans in accordance with chapter objectives, to collect classroom-based evidence throughout a chapter or unit. Students wrote a reflection at the end of the chapter. This process was repeated with each subsequent chapter. Results of this study showed a significant correlation between student goal setting, persistence and language learning achievement (Moeller, Theiler, & Wu, 2012).

Another important learner behavior that determines the effect of goal setting on learner achievement is self-regulation. Self-regulation is one of the most critical skills for success (Getzels & Csikszentmihalyi, 1976). When people commit in achieving their goal, they are likely to self-regulate their behaviors towards this achievement. Therefore, goal setting and commitment may enhance students' self-regulation skills. A self-regulated learner is able to set task-related, reasonable goals, taking responsibility for her learning (Schunk, 1991). Arguably, self-regulation is becoming especially crucial in the 21st century as the majority of students' learning takes place outside of traditional classrooms and in digital learning environments (i.e., flipped classrooms, MOOCs). In fact, some online learning environments (e.g, Khan Academy) recently started to utilize goal setting to help learners regulate their own learning. Pearson's new Efficacy Tool is also designed based on the goal setting theory of motivation. In addition, there are various mobile and web applications designed to help people with their self-regulation skills, set goals and track their progress (i.e., goalmingo.com, goalbot.com). Many of these web applications are free and easy to use.

There is an affective aspect of goal attainment. When students accomplish self-relevant goals, their success elicits positive emotions such as interest, joy, and pride (Kreibig, Gendolla, & Scherer, 2010). The sense of competence resulting from successful goal achievement encourages students to set more challenging goals and eventually adopt goal directed mindsets. According to meta-motivational Self-Determination Theory (SDT), goal choice and sense of competence in a classroom learning community will motivate students to continue on their learning trajectories (Deci & Ryan, 1987). Therefore, it is important to set achievable and self-and task-relevant goals.

Although setting goals improves performance robustly across various settings, it is nevertheless a skill: one must learn how to effectively set goals. In this respect it is amenable to intervention (e.g., Barron & Harackiewicz, 2001). For instance, students may not weigh their abilities, resulting in setting either too easy or too easy difficult goal, and may get discouraged if they cannot achieve the goals. Instructors may set upper and lower limits on student goals if they choose to give students autonomy on their goal setting (Schunk, 1985). Schunk (1990) suggests that goal setting is appropriate only when task difficulty remains relatively constant, and that direct instruction on goal setting may be necessary until students can set realistic goals for themselves. A particularly effective way for instructors to help students practice goal setting is to provide them with opportunities for self-evaluation and reflection, and to give constructive and specific feedback in the goal setting process. For example, students can learn to set goals that are likely to have desirable effects within a reasonable time. As students increase their goal setting abilities for learning, their ability to self-evaluate and self-regulate their participation and performance also increases (Saphier & Gower, 1997). Goals, in turn, provide a structural benefit to self-regulation by helping people to organize, prioritize and manage their motives (Shah & Kruglanski, 2008).

In spite of the benefits of goal setting, students may not be aware that goal setting can be an effective method for their learning. Instructors can help students to understand the effectiveness of goal setting and purposeful learning. For example, they can model student behavior by talking about their own learning experiences and describing how they

set goals for themselves, the challenges students may face, and how to overcome those challenges. Another way to facilitate goal-directed learning is to present specific cases where academic goal setting has enabled students to achieve success. For instance, instructors can build a database of successful goal setting stories to share with their students and learning community to encourage the goal directed mindset. Earley and Kanfer (1985) showed that modeling can be effective to encourage students to show more commitment towards achieving their goals. Authors had participants watch a film of either a high-performing student or low performing student completing a class-scheduling task. Following this, students were assigned or encouraged to set difficult goals. Those who watched high-performing student video had significantly higher commitment levels to their goals than those who watch low-performing role model.

Lastly, goal setting can be a collaborative practice. In this case, instructors and students set goals collaboratively based on a mutual agreement and common understanding. When students participate in the negotiation of setting learning goals, not only do they take responsibility for and ownership of the goals, but also they learn from the instructor how to set productive and achievable goals. Moreover, giving students choices on their learning goals or assignments can enhance their autonomy satisfaction, which may lead to increased motivation towards goal achievement.

How to set goals? / What makes a good goal?

The most important step toward goal attainment is to set effective goals. There are many factors that influence the effectiveness.

Studies have documented that individuals with clear, written goals are significantly more likely to succeed than those without clearly defined goals. In a study conducted by Ferguson and Sheldon (2010), participants wrote 'why' and 'how' they will achieve a goal. There was an interaction between the level of initial goal-relevant skills and the effectiveness of writing 'why' or 'how' of the goals. Students with initially low goal-relevant skills were more likely to internalize their goals over time and report greater goal expectancies if they wrote about the ''how'' of the goals.

There are also different levels of goals, ranging from task-specific outcome goals to cross-situational procedural goals (Schunck, 1990; Harackiewicz & Sansone, 1991). Procedural goals are strategies that students may use to achieve a goal such as learning a problem solving strategy. Outcomes goals are specific to an activity at hand such as solving 15 fraction problems or writing an essay on a specific topic. Researchers have studied the effects of procedure and outcome goals on students' motivation, learning and self-efficacy[1]. Schunk and Rice (1991) found that the best way to promote self-efficacy and achievement is to couple the process goal with progress feedback on how well the students use a strategy. In a similar vein, Zimmerman and Kitsantas (1999) found that starting from procedure goals (e.g., learning a writing strategy) and shifting the focus to

[1] The concept of self-efficacy, introduced by Albert Bandura in 1977 refers to personal beliefs about one's capabilities to learn or perform actions at designated levels (Bandura, 1997). In academic settings, it can be defined as students' belief about their ability to accomplish an academic task. Bandura (1997) suggested that successfully achieved a set goal increases a person's sense of self-efficacy.

outcome goals (e.g., number of words in an essay) is beneficial in increasing students' self-efficacy and skill. This outperforms pursuing only procedure or outcome goals.

As it has been hinted by some of the studies mentioned above, goals must be specific (as opposed to "doing your best"), short-term rather than long-term, and challenging (Latham & Locke, 1979; Mento, Steel & Karren, 1987). Similarly, "Specific, Measurable, Attainable, Relevant, Timely Goals" or SMART Goals, is a ubiquitous mnemonic used to explain the desirable quality of goals in many areas including education and self-help programs (Drucker, 1954).

Specific

Clear goals increase persistence and self-efficacy, making individuals less susceptible to the undermining effects of anxiety, disappointment, and frustration (Schunk, 1990). It is also easier to evaluate one's progress towards a specific goal: well-defined goals help individuals discover and use efficient strategies and modes of thought and perception (e.g., Locke & Latham, 2002; Smith, Locke, & Barry, 1990). For example, in one study, Schunk (1990) provided elementary school children with instruction on arithmetic operations and opportunities to practice solving problems. Some students received a specific goal denoting the number of problems to complete, whereas others were given a general goal of working productively. Students who received the specific goal showed higher self-efficacy and mathematical achievement. The learning benefits of goal setting are not limited to a particular topic, discipline, or domain. In language learning domain, Chang (2012) investigated the effects of specific goals vs. vague goals on EFL students' self-efficacy and performance of vocabulary learning. Students in the control group were told to "do your best" and "work hard" whereas the instructor assigned students in the experimental group a clear individual goal. Results showed that the specific goal group outperformed the non-specific goal group in performance and self-efficacy.
Instructors can also achieve specificity by using targeted vocabulary when describing learning goals and objectives. For example, instead of using the word "understand," which may be vague to some students, verbs such as, "describe" or "explain" may communicate the instructors' goal more clearly. In summary, there are multiple research studies prove the importance of specificity as a goal characteristic, and multiple ways of accomplishing specificity (for more information, see Locke & Latham, 2002).

Challenging

Multiple theories highlight the effect of challenge on learning and intrinsic motivation. According to expectancy-value theory of motivation, people are motivated the most when they think their actions will produce positive outcomes and when they value these outcomes (Wigfield & Eccles, 1992). If the goals are too difficult to attain compared to their value, people may give up on their goals. The right amount of challenge based on students' skill level is key to their engagement and learning. Such optimal amount of challenge (not too easy or not too difficult) compared to one's skill is also the key ingredient for optimal enjoyment or in other words for the sense of flow (Csikszentmihalyi, 1990). In a study with chess players, Abuhamdeh and Csikszentmihalyi (2012) showed that challenge is particularly important for the enjoyment of intrinsically motivated and goal-directed activities. In addition, cognitive evaluation

theory (Deci & Ryan, 1985) considers enjoyment of challenge being intrinsic to the perception of competence because achieving optimally challenging tasks gives people a true feeling of competence (Deci & Ryan, 2000).

Challenging goals also increase self-efficacy. In one of Schunk's (1990) studies, students received long-division instruction and practice opportunities. All students received the same instruction and practice time. Some children were given a more difficult goal (higher number of problems to complete), whereas others received an easier goal (lower number to complete). In this study, more challenging goal of completing higher number of problems in short amount of time led to higher self-efficacy, skill acquisition and motivation during learning. In a similar vein, a recent meta-analysis of 30 years of research on self-regulated learning showed that goal level correlated strongly with learning; in other words, the higher a student's achievement goals (e.g., desired grade, as in Vancouver & Kendall, 2006), the more they tended to learn (Sitzmann & Ely, 2011).

When encouraging student to set challenging and high quality goals, instructors can use examples of stellar work (Stiggins, 2008). Such practice will also give students a clear picture on expectations. For classroom activity goals, one way to set optimal challenging goals is to use computer software to determine students' ability levels (Han & Finkelstein, 2013) and adapt to their competence by targeting students' zone of proximal development (Vygotsky, 1978). For example, Harvard University physics professor Eric Mazur utilizes software, Learning Catalytics, to determine students' level of knowledge at physics concepts before they start peer learning oriented classroom activities. In addition to Learning Catalytics, similar software exist (i.e., Nearpod, Socrative) that would allow instructors to do a quick skill check or knowledge check before proceeding the next level of difficulty of learning tasks.

Proximal

"The value of achievement lies in the achieving." — Albert Einstein --- To D. Liberson, October 28, 1950. AEA 60–297

Another characteristic of a good goal is its temporal distance from when the goal is set. While some researchers argue that goals that can be achieved in short-term are more motivating than distant ones (Bandura & Schunk, 1981; Schunk, 1990), others found that long-term goals also increase motivation. A long-term goal for students can be something they want to accomplish for the entire school year or can be targeting a career. A short-term goal may be something they want to accomplish on a daily, weekly or monthly basis (Rader, 2005, p.124).

Instructors can set learning objectives for the students on a weekly or monthly basis to move students toward long term learning goals. There are strategies that instructors can use to connect small goals to larger ones to make learning experience more immersive. For instance, they can utilize successive re-learning or test learners on the material on weekly basis while working towards long-term goals (Roediger & Karpicke, 2006). These study strategies would not only propel students towards their long-term goal but also increase their learning.

The proximity of goals relative to the beginning of the semester can make a difference in student motivation and achievement. Ambrose and colleagues (2010) suggest that instructors should provide students with early success opportunities, which can be achieved through low stake target goals/activities/assignments. Such success can play a crucial role in shaping students' expectation for future performances and self-efficacy by increasing their sense of competence (Bandura, 1986). Setting small achievable and frequent goals can also space learning sessions apart rather than massing them together (which students usually use as their most common study practice). Such spacing has been found to increase learning (Whitten & Bjork,1977; Kornell, 2009). In a similar vein, studies have shown that frequent and low-stake classroom activities result in higher intrinsic motivation than high stake activities (Cauley & McMillan, 2009). Low stakes assignments can act as formative assessment and help instructors understand how student minds are working based on their teaching: whether they understand the course material, and react to their teaching.

In short, a combination of short-term and long-term goals is ideal for sustained student motivation and persistence. Instructors may set and encourage students to set weekly learning objectives in addition to learning goals for the semester.

Meaningful

Goals should be meaningful and valuable to students. Even though the goals may be SMART, if students don't perceive them as meaningful or valued, their engagement with goal attainment progress will diminish (Wigfield & Eccles, 1992). One way to achieve meaningful goal setting is to relate the assignments and topics to students' beliefs and values. Making connections between current news events and learning objectives as well as assignments would help construct meaningfulness (Lang, 2013). Another way to set meaningful goals is to make a clear connection between what students will learn and how this learning goal is important outside of that particular course. Similar to the goal writing practice in Ferguson and Sheldon's study (2010), students may benefit from writing why they choose goals to affirm the meaningfulness of their goals before they commit. Writing down the reasons to pursue course related goals help students with higher task relevant skills to internalize their goals (Ferguson & Sheldon, 2010).

Conclusion

Goal setting is an important component of academic settings both for instructors and students. Appropriate goal implementation (both instructor set goals and student set goals) in the classroom encourages students to take a more active role in the learning process. It has fundamental impacts on increasing student motivation, self-regulation, self-efficacy and achievement. When they practice goal setting in different classrooms, students will be able to develop goal setting and flexible thinking skills that are widely applicable in many areas of their lives. Overall, goal setting deserves more attention as a technique for improving students' academic achievement and motivation.

Moreover, goal-setting research in educational settings shows that student learning, motivation, and self-regulation can be improved when students pursue goals that are

concrete, proximal, meaningful and optimally difficult. These have implications for instructors who want to use goal setting as part of their classroom pedagogy. Students may need to be taught how to set SMART goals. Any instructor would know that a majority of students are not quite realistic about how much time and effort is required to complete a project, especially if it is a semester long project. They may procrastinate and try to complete all the steps last minute. According to goal-setting research, dividing a long-term task into short-term goals would both keep student motivation high and get work done towards the ultimate goal. For example, if students are given a research paper as their final project, the instructor may subdivide the task into specific and timely steps: deciding on the topic, doing the literature review, outlining the paper, and turning in the first draft, so on and so forth. After establishing the subgoals, the instructor can place them on a timeline and distribute the plan to students. Similarly, instructors can encourage students to think about and write down why they choose a goal and how they plan to accomplish it. After students gain experience with goal setting with instructors' help, they will be able to set realistic goals on their own.

Although it was not the main focus of this paper, the importance of feedback on goal attainment is enormous. Students need to know their progress toward their goals, especially when working on accomplishing procedure goals. Instructors can give feedback that stresses processes, such as how well students are using a strategy, budgeting their time, and completing subgoals. When instructors implement outcome goals, they may consider giving students feedback on how well they are doing currently compared with how they did previously. Such comparisons would raise student self-efficacy. Ultimately, students should learn to monitor their goals and analyze the progress made toward attaining them.

In summary, there is no 'one-size-fits-all' way of utilizing goal setting. Instructors who are interested in using goal setting as part of their pedagogy should both encourage their students to set goals and assign students different types of goals (procedural and outcome) in differing proximity (short term and long term) depending on students' skill levels. They should also help students to become better goal setters by teaching them how to divide long-term goals into short-term subgoals, establish timelines, assess their progress toward their goals, and come up methods to visualize the progress. As students go through the cycle of goal setting, regulating and attaining, they will become proficient in evaluating their capabilities to engage in these tasks and develop their self-regulatory competencies, which is one of the key skills for 21st century learners.

References

Abuhamdeh, S., & Csikszentmihalyi, M. (2012). The importance of challenge for the enjoyment of intrinsically motivated, goal-directed activities. *Personality and Social Psychology Bulletin, 38,* 317-330.

Ambrose, S. A., Bridges, M.W., DiPietro, M., Lovett, M.C., & Norman, M. K. (2010). *How Learning Works: Seven Research-Based Principles for Smart Teaching.* San Francisco, CA: Jossey-Bass.

Bandura, A. *(1977).* Self-efficacy: Toward a unifying theory of behavioral change.

Psychological Review, 84, 191-215.

Bandura, A. *(1997). Self-efficacy: The exercise of control.* New York: Freeman.

Bandura, A. (1986). From thought to action: Mechanisms of personal agency. *New Zealand Journal of Psychology, 15,* 1-17.

Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: A multiple goals approach. In C. Sansone & J.M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 229-254). New York: Academic Press.

Bryan, J.F., & Locke, E.A. (1967). Goal setting as a means of increasing motivation. *Journal of Applied Psychology, 51*, 274-277.

Cauley, K. M., & McMillan, J. H. (2009). Formative Assessment Techniques to Support Student Motivation and Achievement. *Clearing House: A Journal of Educational Strategies, Issues and Ideas, 83*(1), 1-6.

Chang, S-M. (2012). The effect of specific goals on EFL students' self-efficacy and performance on vocabulary learning. *NCUE Journal of Humanities. 5*(1), 53-74.

Cialdini, R. B. (2009). *Influence: Science and practice* (5th ed.). Boston, MA: Pearson.

Csikszentmihalyi, M. (1990). Flow: The psychology of optimal experience. New York: Harper Perennial.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*, New York, NY: Plenum Press.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11* (4), 227-268.

Dewett, T., (2007). Linking intrinsic motivation, risk taking, and employee creativity in an R& D environment. *R&D Management, 37*(1),197-2008.

Drucker, P. F. (1954). *The Practice of Management,* Harper & Row.

Earley, P. C. & Kanfer, R. (1985).The influence of component participation and role models on goal acceptance, goal satisfaction and performance. *Organizational Behavior & Human Decision Process, 36*(3), 378-390.

Elliot, A. J., & Fryer, J. W. (2008). The goal construct. In J. Shah, & W. Gardner (Eds.), *Handbook of motivation science* (pp. 235–250). New York: The Guilford Press.

Emmons, R. A., & Diener, E. (1986). A goal–affect analysis of everyday situational choices. *Journal of Research in Personality, 20,* 309–326.

Ferguson, Y., & Sheldon, K.M. (2010). Should goal-strivers think about 'why' or 'how' to strive? It depends on their skill level. *Motivation and Emotion, 34,* 253-265.

Getzels, J.W. and Csikszentmihalyi, M. (1976). *The creative vision: A longitudinal study of problem finding in art.* New York: Wiley.

Han, J. H., & Finkelstein, A. (2013) Understanding the effects of professors' pedagogical development with Clicker Assessment and Feedback technologies and the impact on students' engagement and learning in higher education. *Computers and Education. 65* (1), 64-76.

Harackiewicz, J.M. & Sansone, C. (1991). Goals and intrinsic motivation: You can get there from here. In M.L. Maehr, & P.R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 7, pp. 21-49). Greenwich, CT: JAI.

Hattie, J. & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77* (1), 81-112.

Horn, H.L., & Murphy, M.D. (1985).Low need achievers' performance: The positive impact of a self-determined goal. *Personality and Social Psychology Bulletin, 11*, 275-285.

Karakowsky, L., & Mann, S. L. (2008). Setting goals and taking ownership: Understanding the implications of participatively set goals from a causal attribution perspective. *Journal of Leadership & Organizational Studies, 14,* 260–270.

Kelting-Gibson, L.M. (2005). Comparison of Curriculum Development Practices. *Educational Research Quarterly, 21*(1), 26-36.

Klinger, E. *(1977). Meaning and void: Inner experience and the incentives in people's lives.* Minneapolis: University of Minnesota Press.

Kornell, K. (2009). Optimising learning using flashcards: Spacing is more effective than cramming. Applied Cognitive Psychology, 23, 1297-1317.

Kreibig, S. D., Gendolla, G.H.E., & Scherer, K.R. (2010). Psychophysiological effects of emotional responding to goal attainment. *Biological Psychology. 84*(1), 474-487.

Lang, J.M. (2013). *Cheating Lessons: Learning from Academic Dishonesty.* Cambridge, MA: Harvard University Press.

Latham, G. P., & Locke, E. A. (1979). Goal setting: A motivational technique that works. *Organizational Dynamics, 8*(2), 68-80.

Latham, G. P. & Locke, E. A. (2007). New developments in and directions for goal-setting research. *European Psychologist, 12*(4), 290-300.

Lee, W. & Reeve, J. (2013). Self-determined, but not non-self-determined, motivation predicts actions in the anterior insular cortex: An fMRI study of personal agency. *SCAN, 8*(2013), 538-545.

Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic rewards: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology, 28*, 129–137.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57*, 705–717.

Locke , E.A., & Bryan, J.F. (1966). Cognitive aspects of psychomotor performance: The effects of performance goals on level of performance. *Journal of Applied Psychology, 50*, 417-420.

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). *Classroom instruction that works*. Alexandria, VA: ASCD.

Matsuhashi, A., & Gordon, E. (1985). Revision, addition, and the power of unseen text. In S. Freedman (Ed.), *The acquisition of written language: Response and revision* (pp. 236–249). Norwood, NJ: Ablex.

Mento, A.J., Steel, R.P., & Karren, R.J. (1987). A meta-analytic study of the effects of goal setting on task performance. Organizational Behavior and Human Decision Processes, 39, 52-83.

Mitchell, T.R. (1982). Motivation: new direction for theory and research. *Academy of Management Review,7*(1), 80-8

Moeller, A. J., Theiler, J., & Wu, C. (2012). Goal setting and student achievement: A longitudinal study. *Modern Language Journal*, 96,153–169.

Morisano, D., Hirsh, J. B., Peterson, J. B., Pihl, R. O., & Shore, B. M. (2010). Setting, elaborating, and reflecting on personal goals improves academic performance. *Journal of Applied Psychology, 95*(2), 255-264.

Page-Voth, V., & Graham, S. (1999). Effects of goal setting and strategy use on the writing performance and self-efficacy of students with writing and learning problems. *Journal of Educational Psychology, 91*(2), 230-240.

Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 452–502). San Diego, CA: Academic Press.

Rader, L. A. (2005). Goal setting for students and teachers: Six steps to success. *Clearing House, 78* (3), 123-126.

Roediger, H. L. & Karpicke, J. D. (2006). The power of testing memory: Basic research and

implications for educational practice. *Perspectives on Psychological Science, 1*, 181-210.

Saphier, J., Gower, R. (1997). *The skillful teacher: Building your teaching skills.* Research for Better Teaching, Inc., Carlisle, MA.

Schunk, D. H. (1991). Goal setting and self-evaluation: A social cognitive perspective on self-regulation. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 7, pp. 85–113). Greenwich, CT: JAI Press.

Schunk, D. H. (1990). Goal setting and self-efficacy during self-regulated learning. *Educational Psychologist, 25*, 71-86.

Schunk, D. H., & Ertmer, P. A. (1999). Self-regulatory processes during computer skill acquisition: Goal and self-evaluative influences. *Journal of Educational Psychology, 91*, 251–260.

Schunk, D. H., & Rice, J. M. (1991). Learning goals and progress feedback during reading comprehension instruction. *Journal of Reading Behavior, 23*, 351–364.

Shah, J. & Gardner, W. (Eds.) (2008) *Handbook of Motivation Science.* New York: Guilford.

Shah, J.Y., Friedman, R., & Kruglanksi, A.W. (2002). Forgetting all else: On the antecedents and consequences of goal shielding. *Journal of Personality and Social Psychology, 83,* 1261-1280.

Shah, J. Y. & Kruglanski, A. W. (2008). Structural dynamics: The challenge of change in goal systems. In J. Y. Shah & W.L. Gardner (Eds.), *Handbook of motivation science* (pp. 217-229). Guildford Press.

Sitzmann, T., & Ely, K. (2011). A meta-analysis of self-regulated learning in work-related training and educational attainment: What we know and where we need to go. *Psychological Bulletin, 137,* 421-442. doi:10.1037/a0022777.

Smith, K. G., Locke, E. A., & Barry, D. (1990). Goal setting, planning and organizational performance: An experimental simulation. *Organizational Behavior & Human Decision Processes, 46*, 118-134.

Stiggins, R. J. (2005). From formative assessment to assessment FOR learning: A path to success in standards-based schools. *Phi Delta Kappan, 87* (4), 324–28.

Vancouver, J. B., & Kendall, L. N. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology, 91*, 1146-1153.

Vygotsky, L.S. (1978). *Mind in society: the development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Whitten, W. B., & Bjork, R. A. (1977). Learning from tests: The effects of spacing.*Journal of Verbal Learning and Verbal Behavior*, *16*, 465-478.

Wigfield , A. , & Eccles , J. (1992). The development of achievement task values: A theoretical analysis. *Developmental Review, 12* , 265 – 310 .

Wiggins, G. & McTighe, J. (1998). *Understanding by design.* Alexandria, VA: Association of Supervision and Curriculum Development.

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist, 21*, 3–17.

Zimmerman, B. J., & Kitsantas, A. (1999). Acquiring writing revision skill: Shifting from process to outcome self-regulatory goals. *Journal of Educational Psychology, 91*, 241–250.