Inherent Details of Self-Regulated Learning Include Student Perceptions

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Abstract:

Winne' s (1995) thoughtful and proactive article stressed the role of metacognitive processes in self-regulated learning. Although metacognition and forms of knowledge are important, they provide an incomplete picture of the processes involved in self-regulation. Theoretical and empirical evidence support the inclusion of student perceptions and motivational processes as integral components of self-regulation. Research incorporating the operation of student knowledge and perceptions will make a significant contribution to the self-regulation literature and have important implications for instruction.

Article:

It is indeed a pleasure to comment on the article by Winne (1995). Like many of his earlier papers, this article makes a substantive contribution to the psychological and educational literatures on self-regulatory processes. His article summarizes an impressive body of research and reaches thought-provoking conclusions. Winne has given us a much-needed article on an important topic.

In recent years much has been written on self-regulated learning (SRL) and the functions played by self-regulatory processes in education (Schunk & Zimmerman, 1994; Zimmerman & Schunk, 1989). Winne' s article provides us with some new windows with which to view self-regulation. These new perspectives emanate from research in areas that are not regularly cited by researchers exploring self-regulatory processes in education but which appear to be relevant and suggest many promising directions for research.

The focus of his article is on contexts in which persons acquire skills in the absence of direct assistance from persons and technologies (e.g., when they study by themselves). This focus clearly captures the spirit of SRL. After reviewing this supplementary literature in light of extant research on self-regulation in education, Winne arrived at three conclusions. First, SRL includes deliberate and nondeliberate forms of cognitive engagement. Second, knowledge is a strong influence on how students engage in learning. Third, self-regulation occurs commonly and if problems hinder students' self-regulated efforts then better instructional design may help to alleviate the problems.

I think these are valid conclusions that suggest a useful framework within which educational self-regulation research can proceed. At the same time, the research summarized and these conclusions seem to offer an incomplete picture of the operation of self-regulatory processes in education. To introduce my discussion of this concern I comment on some methodological issues.

The studies by Eisenberger, Masterson, and McDermitt (1982), and by Rabinowitz, Freeman, and Cohen (1993), are representative of the research cited by Winne. In the Eisenberger et al. study, college women solved problems involving addition, anagrams, or differences between pairs of cartoon pictures. Within each condition problems involved low or higher effort. Following this task, subjects wrote an essay on a controversial topic to determine how antecedent effort and problem variety related to essay length and quality. Rabinowitz et al. presented undergraduates with randomly ordered words drawn from common categories. Students were advised

to categorize words for study and recall, and were presented with words high or low in category typicality. In a second session all students studied and recalled words medium in category typicality without mention of categorizing, in order to assess the effects of typicality of words in the initial list on cluster and recall.

The methodologies of these studies seem technically competent; however, they indicate several weaknesses that limit their contributions to the literature on self-regulation in education. For one, the participants were college students, which may limit generalizability of results to younger students. The component processes of self-regulation—such as attention, organizing, rehearsal, goal setting, and self-evaluation—undergo developmental changes in their nature and efficiency (Zimmerman & Martinez-Pons, 1990). For another, tasks devoid of meaningful contexts bear little relation to those typically found in educational settings involving SRL of meaningful content. Third, I suspect the motivational levels of subjects to perform reasonably well may have been moderate to high—a point that often cannot be made about students in school as they learn content and skills. In short, part of the reason why studies such as these have not found their way into the mainstream literature on self-regulation in education is because they fail to adequately consider the operation of self-regulatory factors in settings in which students learn.

What the research summarized by Winne shows is that knowledge is important in SRL—background knowledge, knowledge of strategies, knowledge of conditions underlying effective strategy use, knowledge about allocation of cognitive resources, and knowledge that particular actions will help one to attain important goals. As Zimmerman (1989) has shown, self-regulating students are active in cognitive engagement and are metacognitively aware of what they are doing and of how effective it is in leading to successful goal attainment. Knowledge of the type addressed by Winne is important in school and in those contexts he stressed in which learners are largely on their own.

This emphasis on the role of knowledge offers an incomplete view of self-regulation. What also is important, and what much of the literature cited by Winne does not address, is the role of learners' perceptions of themselves (e.g., their competencies, interests, values), of others (teachers, parents, peers), and of learning environments (classrooms, libraries, homes). These perceptions involve knowledge but are subjective and may conflict with other knowledge possessed by learners or others. Yet, such perceptions affect students' self-regulatory efforts.

Let me exemplify this process. In mathematics learning it is common for children to acquire *buggy algorithms—strategies* that are systematic but which when followed lead to erroneous problem solutions (Brown & Burton, 1978). A common buggy algorithm that develops in elementary-age children is that to solve a subtraction problem one reduces the larger number by the smaller number in each column. This algorithm works fine when problems require no regrouping but results in erroneous solutions when they do (e.g., 52,619 – 27,843 = 35,236).

An interesting point about this faulty strategy is that knowledge of it and being able to apply it well can result in a false sense of confidence characterized by high self-efficacy (i.e., perceptions of capabilities) and diligent self-determined efforts to solve problems in the absence of external assistance, which are the conditions Winne considers the hallmark of self-regulation. It is not veridical knowledge necessarily at work here but rather students' perceptions and self-evaluations of their capabilities to master challenges and therefore, be in command of the strategies they need to succeed. The opposite situation also is commonly found in which students demonstrate effective problem, solving skills but hold such a low sense of self-efficacy for learning that motivation suffers and SRL activities are minimized.

I agree with Zimmerman' s (1995) contention that SRL involves more than metacognitive knowledge. My point is that any account of self-regulation must emphasize the full range of cognitive processes. Self-efficacy is not the only type of student perception that is important, and Winne recognizes this general shortcoming. I will cite additional examples of research cited by Winne that are informative but which fail to consider the role of student perceptions in self-regulation.

Based on Eisenberger's (1992) article, Winne suggested that learners should be given a diverse array of tasks to work on that require some degree of effort to master. That may be a reasonable conclusion but much contemporary motivational literature does not support it. Learners who believe tasks are greatly challenging may doubt that effort will produce success and so their motivation suffers. Further, as skills develop students should perceive that they are able to complete the same tasks with less effort, which promotes ability attributions for success and raises self-efficacy (Schunk, 1994). Effort should remain constant at a moderately high level only if difficulty were continually being increased as skills developed—a situation learners may find discouraging over a lengthy period.

A second example is found in the work of Kanfer and Ackerman (1989). Winne cited the results of computer simulation studies in which adults learned to land planes and monitor their learning. When specific and difficult goals were introduced in later trials they improved learning and self-regulation. Winne noted that because the goals were introduced later participants could effectively shift some cognitive resources from learning to self-regulation. The goals bring about monitoring that in the early stages of learning can disrupt the acquisition and proceduralization of skills but do not later on. Thus, goals are more effective once learning begins to become established.

This argument is compelling. Previous research shows that other types of competing tasks (e.g., self-verbalization of procedural steps) during skill acquisition can hinder learning in young children (Schunk & Rice, 1984; Zimmerman & Bell, 1972). At the same time, there is an extensive literature showing that goals can enhance learning early in the course of learning before skills become established, especially if the goals denote learning new skills (13andura, 1988; Locke & Latham, 1990; Schunk, 1990). Recent research also shows that self-evaluation of personal, capabilities, along with goal setting, is a powerful means for enhancing self-efficacy and SRL and that it works well even in the very early stages of learning (Schunk, in press).

Research of the type presented by Kanfer and Ackerman (1989) needs to be interpreted in light of our knowledge of the process by which goal setting operates. Kanfer and Ackerman report that perceived competence for goal attainment (a measure analogous to self-efficacy) relates to self-regulatory activity. Social cognitive theory (Schunk, 1990; Zimmerman, 1989) predicts that as students perceive they are making progress in learning they experience a sense of self-efficacy for continued learning. Self-efficacy leads students to engage in self-regulatory activities directed toward goal attainment. Once they attain their goals, students are apt to set new, challenging goals. Research examining this process contributes to our understanding of achievement behavior.

This type of research also might examine the effects of different types of goals. Kanfer and Ackerman' s goals referred to products of learning (perform at a given level). Goals also can be cast in terms of processes (i.e., learn how to do something). When people then gauge their progress against these early in the course of learning and note progress, that can effectively enhance self-regulation of effort and strategy use (Schunk & Swartz, 1993).

The final study I mention is the goal-setting research by Morgan (1985). Undergraduates were assigned to one of four conditions: self-monitoring of proximal goals, self-monitoring of time studying, self-monitoring of distant goals, or control (no goals). Students assigned to the self-monitoring of proximal goals condition learned to set subgoals for assigned readings and to monitor subgoal progress. In the time-studying condition, students received instruction on setting aside time for studying and on monitoring time spent. Distant goal subjects set a comprehensive goal for each study session. On the final exam, proximal-goal students scored higher than the other conditions. This effect was not due to time spent studying because students assigned to the self-monitoring of time-studying condition spent the most time. Proximal students also judged intrinsic interest in the course higher than those in the other conditions.

Winne explained these findings as involving monitoring performance against goals each session and changing behavior when problems are detected. This is a plausible explanation, but the literature on goal setting and self-

efficacy suggests that more is involved (Schunk, 1990). Self-efficacy was not assessed in this study, but had it been the proximal-goal group likely would have developed the highest efficacy. The perception of goal attainment is relatively straightforward when goals are cast in clear (short-term, specific) terms. A higher sense of efficacy also relates positively to intrinsic interest (Bandura & Schunk, 1981). In contrast, the time-studying goal was not tied to material to be learned, so it was not useful for perceiving progress in learning. Such a goal could even lower efficacy if students felt they accomplished little during the time. The comprehensive goal was distant and may have been too general to motivate students and allow assessment of skill acquisition. Winne noted that positive feelings are a likely consequence of increased monitoring; however, monitoring alone often is insufficient to raise efficacy. Monitoring involves self-observation and self-judgment of progress against goals. Monitoring will not increase positive feelings if the goals are too demanding. What is needed is monitoring coupled with attainable goals (Schunk, 1990).

In closing, I reiterate a collective appreciation to Winne from all of us interested in self-regulation for contributing an insightful and proactive article that attempts to advance the field in directions heretofore largely ignored. The array of research evidence is impressive and has the potential for adding significantly to our knowledge of the operation of self-regulation in education and learning settings in general.

At the same time, I underscore my belief that this evidence on the role of metacognitive knowledge must be considered in concert with student perceptions, especially as they affect motivation. An ever-expanding educational literature is showing that although knowledge components are necessary for self-regulation, they alone are insufficient to ensure the type of sustained task engagement to acquire competencies that is a characteristic trademark of SRL.

Thus, although I concur with Winne' s conclusion that important issues concern the learner's knowledge of SRL, and of when and under what conditions that knowledge is utilized, I also call for an expanded research agenda. My hope is that researchers holding different perspectives of SRL will broaden their views to incorporate a wider range of student perceptions and cognitive processes. This type of research agenda is exciting to anticipate and will have profound implications for instructional processes—an interest similarly expressed by Winne. Those interested in self-regulation will be most fortunate if others embrace issues of self-regulation with the same type of zeal displayed by Winne.

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