A comparison of revised Bloom and Marzano's New Taxonomy of Learning

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ABSTRACT

The seminal *Taxonomy of Educational Objectives: The Classification of Educational Goals—Handbook I, Cognitive Domain* (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) represented years of collaboration by the Committee of College and University Examiners, and was the first of three volumes that together would become known as Bloom's taxonomy[1] of learning (so named after Benjamin Bloom, the original committee chair). The work instigated a paradigm shift in education, though subsequent volumes addressing affective (Krathwohl, Bloom, & Masia, 1964) and psychomotor (Harrow, 1972) domains of learning "had much less impact" (McLeod, 1992, p. 576) on curriculum and evaluation. McLeod (1992) postulates that the lessened impact was a consequence of the affective domain's focus on internal constructs, which clashed with the behaviorist focus on observable behaviors.

Since the publication of Bloom et al.'s taxonomy in 1956, there has been a proliferation of taxonomies of learning (e.g., Fink, 2013). Anderson and Krathwohl (2001) examined and incorporated features of 19 other taxonomies in their Revised Bloom's Taxonomy (RBT), while more recently Clarkson, Bishop, and Seah (2010) developed a five-stage taxonomy of Mathematical Wellbeing (MWB) by considering the original Bloom's taxonomy's (OBT's) cognitive and affective dimensions and adding an emotional taxonomy.

This paper compares and contrasts the RBT with Marzano's New Taxonomy (MNT; Marzano & Kendall, 2001, 2007) with regards to the two taxonomies' treatment of domains of knowledge, cognition, affect and self, metacognition, and psychomotor procedures. It also discusses the uses of taxonomies and the application of the RBT and MNT to education.

Keywords: Taxonomy, learning

[1] This paper uses the noun form of taxonomy, defined as "classification into ordered categories" ("Taxonomy," n.d., para. 2). Typically, taxonomies consist of non-overlapping categories organized across one or more dimensions. The original Bloom's taxonomy was cumulative in that its lower levels were assumed to be prerequisites to higher levels of mastery.

BRIEF DESCRIPTION OF THE TAXONOMIES

The RBT (Anderson & Krathwohl, 2001)[2] addressed criticisms of the OBT, such as converting the level descriptors to gerunds, renaming some levels, and reversing the top two levels. It also became a two-dimensional matrix, with six cognitive processes now acting on four different levels of a Knowledge dimension (see Figure 1). The six cognitive processes each have sublevels, similar to the OBT (Figure 2). Airasian and Miranda (2002), who were involved in the development of the RBT, state that the focus of the revision was on student learning rather than student performance. They argue that the revisions focus on cognitive processes and types of knowledge, rather than assessment items, which were the focus of the OBT (RBT, p. 254). The MNT is also two-dimensional (Marzano, 1998; Marzano & Kendall, 2001, 2007)[3]. The MNT's knowledge domains are somewhat different than the RBT and encompass six levels of processing (Figure 3), each with sublevels (Figure 4). The MNT explicitly recognizes the roles of metacognition and affect/self-system.

COMPARISON OF RBT AND MNT

STRUCTURE

The RBT is a "framework"of categories with an organizing principle, a continuum, with discrete, non-overlapping levels (RBT, p. 4). The RBT is usually assumed to be hierarchical based on cognitive demand or cognitive complexity, similar to the OBT (RBT, pp. 9-10). The RBT's stated objective is the classification of learning objectives, each of which consists of a verb (process) and a noun (knowledge) (RBT, p. 307). Similar to the OBT, the three lower levels are sometimes identified as "surface learning" and the three upper levels as stages of "deep learning" (Spring, 2010).

Marzano states that his taxonomy is hierarchical based on two dimensions: (a) flow of processing and information and (b) level of consciousness required to control execution (MNT, p. 60). This is consistent with Marzano's earlier work (McCombs & Marzano, 1990). Marzano proposes a theory of behavior (Figure 5) outlining how a new task is treated.

I see several problems with the MNT's sequence of levels. The Self-system, by Marzano's description, is the first system engaged, followed by the Metacognitive and Cognitive systems, respectively. Thus the MNT's top two levels are top down but the bottom four (Cognitive system) are bottom up. This is different than the RBT's completely bottom-up structure. Marzano's theory of behavior is at odds with the ordering of levels in the taxonomy based on the flow of processing and level of consciousness hierarchies. A second criticism of Marzano's taxonomy (and also of RBT) is that they do not explicitly deal with multiple feedback loops often considered inherent in human learning. During the learning process, it would be expected to find frequent and multiple returns to the Self-system, to confirm that the activity is still sufficiently important to continue with it, and to the Metacognitive system, particularly for its monitoring functions (process, clarity, accuracy). However, there are clear parallels in the Cognitive systems of Marzano and revised Bloom. For example, problem solving certainly requires greater cognitive demand than Retrieval or Comprehension.

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[2] Henceforth cited as RBT.

[3] Marzano and Kendall (2001, 2007) henceforth cited as MNT.

KNOWLEDGE DOMAINS

The introduction of knowledge domains both in the RBT and MNT is a major departure from the OBT, in that the RBT and MNT identify knowledge as objects acted upon by other processes. While the two taxonomies differ somewhat in what constitute knowledge domains, both of them separate the objects of cognition from the processes. The RBT emphasizes that knowledge is domain-specific and contextualized (RBT, p. 44), while the MNT points out that knowledge plays a key role in engagement in new tasks (MNT, p. 22).

COGNITIVE DOMAIN

The RBT's six cognitive levels are outlined in Figure 1. The authors of RBT state that the revision is meant to emphasize the goal of meaningful learning, which they define as learning that promotes retention and transfer (RBT, p. 63). They claim that the sequence of levels is based on research; while there is some research supporting the ordering of the OBT's lower levels (Madaus, Woods, & Nuttall, 1973; Miller, Snowman, & O'Hara, 1979), there is less support for the order of its higher levels. While the RBT relaxes somewhat the OBT's cumulative hierarchy, it still indicate that the taxonomy's higher levels are facilitated by its lower levels (RBT, p. 235). There are some parallels across both the RBT's and MNT's lower levels: MNT's Retrieval level is relatively equivalent to RBT's Remember; MNT's Comprehension level is similar to RBT's Understand (renamed from Comprehension in OBT), although Marzano acknowledges that for Comprehension (Understand), RBT's sublevels of translation, interpretation, and extrapolation go beyond his sublevels of integrating and symbolizing. The RBT indicates that Comprehension was renamed to Understand in order to reflect terminology that teachers ordinarily use (RBT, pp. 311-312). At the same time, the authors of RBT discuss in detail the use of the term *understand*, which carries a variety of different meanings and levels of understanding, and violates their specific criterion of non-overlapping taxonomic levels because it includes elements of other levels (Evaluate, Create, and Apply). The MNT's Analysis level is significantly more detailed than the RBT's Analyze level. There also are some internal issues with the RBT; for example, *attributing* has elements of other levels such as Evaluate.

By far the most significant difference in the cognitive domains is Marzano's Knowledge Utilization level (see Figure 4), whose subcategories seem "to be somewhat arbitrary" according to Mayer (2002, p. 553), one of the RBT's authors. Iran-Nejad and Stewart (2010) express concerns that knowledge acquisition without knowledge utilization results in inert knowledge, and a failure to teach for understanding. Thus, knowledge utilization is a key component of teaching for understanding. The RBT's authors identify "meaningful learning" as a critical objective of education: "Meaningful learning provides students with the knowledge and cognitive processes they need for successful problem solving" (RBT, p. 65). Problem solving, especially of problems in ill-structured domains, is a major goal of education (Spiro, Coulson, Feltovich, & Anderson, 1994). The RBT excludes problem solving from the taxonomy based on arguments around the domain specificity and contextualization of knowledge (RBT, p. 41). The RBT's authors argue that problem solving is also domain specific and that general problem-solving heuristics are ineffective, particularly for instances of transfer to other contexts (RBT, p. 41). Because problem solving is a complex process, there is support for both positions. Hattie (2009) found that teaching general problem-solving strategies had an effect size of 0.61 on student achievement. Ironically, the RBT's authors reject the term problem solving, even though they acknowledge that teachers use it frequently. This is the opposite of their reasoning in changing Comprehension to Understand.

Neither taxonomy includes a level for critical thinking. Marzano indicates that critical thinking is inherent in all the sublevels of Knowledge Utilization (MNT, p. 51). The RBT states that critical thinking occurs in multiple cells of the taxonomy, and thus relegates critical thinking to the same realm as problem solving—namely, contextual and domain specific (RBT, p. 311). Bissell and Lemons (2006) agree with this position, stating that critical thinking is difficult to define, and even more difficult to assess.

SELF-SYSTEM

McCombs and Marzano (1990) state that

Identifying the self with the cognitive system is not defensible in that the self as knower is more than information processing. It monitors and controls the rest of the system and is the basis of our experience of phenomenal awareness and intentionality. (p. 53)

Thus Marzano identifies the Self-system as a central aspect of human thought, separate and apart from the metacognitive system (MNT, p. 19), having primacy over all other systems. The sublevel "motivation" is considered an amalgam of the other self-system sublevels, namely examining importance, examining efficacy, and examining emotional response (Figure 4). Research supports Marzano's position that when a task is presented, the self-system is engaged first, and determines whether to engage in the task (based on motivation) or to ignore the task and continue with current activity (Figure 5). Lodewyk and Winne (2005) summarize the importance of the self-system's self-efficacy dimension, citing research that shows students with strong self-efficacy self-regulate more productively, more willingly take on challenging tasks, apply more effort, set higher goals, experience less anxiety, use more effective tactics and strategies, achieve better academic performance, and cognitively process information more effectively (p. 4). Schoenfeld (1992) in turn emphasizes the strong linkages between student beliefs and persistence in mathematical problem solving.

Treatment of self-system attributes is a major distinguishing feature between the MNT and RBT. Marzano's primacy of the self-system emphasizes the role played by emotion and motivation in learning in his theory of behavior. Mayer (2002) questions the primacy of the self-system, and states that this is an open question in need of empirical research. The RBT's relegation of self-attributes as a subset of metacognitive knowledge results in attributes such as motivation being considered inert objects to be acted upon by cognitive processes.

METACOGNITION

Flavell (1979) separates metacognition into two substrata: knowledge about cognition, and self-regulation, which encompasses control monitoring and regulation of cognitive processes. The RBT and MNT treat metacognition very differently. The RBT's focus is on the first substrate, and metacognition is identified as a knowledge domain. The RBT's authors indicate that there was significant debate about this placement; it was felt that placement of metacognition as a process would be redundant, since elements of metacognition infuse all the other cognitive processes (RBT, p. 44). While recognizing that it is difficult (perhaps impossible) to decompose the cognitive processes to extricate metacognitive elements, the RBT authors' treatment of metacognition is problematic, given their stance that knowledge is domain specific and contextualized (RBT, p. 44), and metacognitive knowledge possesses neither of these attributes. The RBT includes a number of qualitatively different dimensions in metacognitive knowledge: knowledge about cognitive tasks, including contextual and conditional knowledge; general strategic knowledge; strategic knowledge about self; self-knowledge, particularly strengths and weaknesses; motivation; beliefs about self-efficacy; beliefs about goals; and beliefs about value and interests (RBT, pp. 56-60).

Marzano identifies metacognition as a separate system, based on Flavell's (1979) second substrate of self-regulation. He develops the metacognitive system based on four subsystems (Figure 4). Marzano treats the beliefs and self attributes that are included in metacognition by the RBT as a separate self-system, which he places at the highest level of his taxonomy. There is support for this positioning of metacognition in McCombs and Marzano's (1990) earlier work:

The Metacognitive subsystem is a set of capabilities for higher or clearer awareness of self as agent (executive processes and knowledge) that support evidence for the "I" or agency. As this evidence is recognized, it contributes substantially to the development of the overall system—and particularly, metacognitive capabilities for self-awareness and self-regulation. Supporting the metacognitive subsystem and self-system are cognitive subsystem capabilities—specific built-in and developed cognitive processes that assist in planning and goal-directed activities. Finally, capabilities of the affective subsystem—emotional processes and knowledge triggered by self-system generated perceptions of self, others, and situations—provide the emotional context and tone for energizing action in support of personal self-determination and self-development goals. (pp. 56-57)

Other research supports this position. Jans and Leclercq (1997) identify metacognition as active judgments that occur before, during, and after learning, while Nunes, Nunes, and Davis (2003) state that a metacognitive approach to instruction can help students learn to take control of their own learning by defining learning goals and monitoring their progress towards them (p. 377).

The literature is inconclusive regarding whether metacognition is domain specific or general. A literature review by Veenman, Van Hout-Wolters, and Afflerbach (2006) found studies that support both positions and postulate the conflicting views may be due to the grain size of the various studies; for example, metacognition with respect to reading strategies (a fine grain size) may have attributes in common with metacognition involved in problem solving (a coarser grain size), since one of the activities in problem solving is reading the problem with comprehension. The former position would support the RBT's treatment of metacognition while the latter supports the MNT's. Meijer, Veenman, and Van Hout-Wolters (2006) meanwhile have constructed a metacognitive taxonomy whose fine-grained metacognitive strategies are seen as lower levels of the coarser-grained strategies. Self-regulation is often broadly construed. "In practice, self-regulation is manifested in the active monitoring and regulation of a number of different learning processes, e.g. the setting of, and orientation towards, learning goals; the strategies used to achieve goals; the management of resources; the effort exerted; reactions to external feedback; the products produced." (Nicol & Macfarlane-Dick, 2006, p.199) The critical component of this description is that self-regulation (and therefore metacognition) is considered an active process.

The treatment of metacognition is a major differentiator between the RBT and MNT. The RBT's placement of metacognition in the knowledge domains treats it as a passive object to be acted upon, while Marzano identifies metacognition as an important, active domain, placed second highest after self-system in the MNT. Activation of the metacognitive system is identified as critical in the chain of processes, falling between motivation to take on a task (self-system), and activation of the cognitive processes required for that task. A survey of the vignettes in the RBT provides little evidence to support its placement of metacognition, since there are very few instances where a learning objective is shown to address metacognitive knowledge (RBT, chapters 7 through 13). Marzano, on the other hand, is able to argue that his treatment of metacognition gives recognition to aspects such as goal setting, which is identified in the literature as an important aspect of learning. Hattie (2009) identifies an effect size of 0.56 on student achievement from explicitly teaching goal setting. He also cites an effect size of 0.69 for explicitly teaching metacognitive strategies. Other studies support Marzano's identification of metacognition as an active strategy rather than a passive object; for example, Meijer et al.'s (2006) literature review (conducted while developing their metacognitive taxonomy) cites numerous researchers who consider metacognition as active and ongoing throughout a cognitive activity.

PSYCHOMOTOR DOMAIN

Marzano places psychomotor procedures in the knowledge domains, based on his claim that the former are stored in memory in the same way as mental procedures, namely as if–then production networks (MNT, p. 31). He states that the stages of acquisition of a psychomotor procedure are the same as those for a mental procedure. Marzano goes on to state that psychomotor procedures are often developed without formal instruction, although they can be improved through instruction. He separates psychomotor procedures into skills—which can be further subdivided into foundational procedures and simple combination procedures—and processes, which are complex combinations of skills (MNT, p. 32). This parallels Marzano's division of mental procedures into skills (single rules, algorithms, tactics) and processes (macroprocedures). Marzano's placement is consistent with components of the knowledge domains as objects that are acted upon by the other systems. However, Mayer (2002) claims that the placement of the psychomotor knowledge is the most difficult to handle in the MNT (Mayer does not elaborate on his reasons for this claim).

Marzano's placement of psychomotor procedures is in dramatic contrast to Bloom's. The RBT makes no reference to psychomotor procedures, while the OBT treated psychomotor procedures as a separate domain, although Bloom himself did not participate in the development of a taxonomy of the psychomotor domain. Table 1 provides a summary comparison of the two taxonomies.

HOW ARE TAXONOMIES OF EDUCATION USED?

Larkin and Burton (2008) used both OBT and RBT to create case study evaluations in nursing, while Valcke, De Wever, Shu, and Deed (2009) also used both taxonomies to analyze learning outcomes and cognitive processes in online collaborative groups. Airasian and Miranda (2002) used RBT to align course objectives and assessment, as well as to increase precision in the language of course objectives. Jideani and Jideani (2012) adopted the RBT to align objectives, assessment, and instruction in food science and technology courses, with particular emphasis on higher order thinking skills. Finally, Hanna (2007) provides a rationale for using RBT in the context of music education:

> There are several reasons why the revised taxonomy is particularly appropriate for music education. First, the additions of knowledge domains are important because procedural and metacognitive knowledge are integral to music learning (Taylor, 1993). Second, the new taxonomy elevates creativity as the most complex of the cognitive processes. (p. 14)

Hanna uses RBT to align course objectives, instruction, and assessment; to demonstrate that music education is amenable to structures similar to those of other subjects that are sometimes perceived as being more important; to advocate for inclusion of music education in education policies and, therefore, to advocate for increased funding. Interestingly, Hanna laments the exclusion of affective recognition in the RBT, whereas the use of MNT, with its inclusion of the self-system, would have substantially addressed Hanna's concerns.

I found limited examples of educational researchers' use of MNT. Colley, Bilics, and Lerch (2012) chose MNT for their analysis of students' critical reflections in several college courses, specifically because it includes the self-system and metacognitive system. Colley et al. were also cognizant of MNT's structure based on levels of processing, and MNT was used to analyze changes in students' critical thinking, based on their reflective entries, over the course of several months. The assignments particularly emphasized the construction of goals that were sufficiently specific to engage the metacognitive system (Colley et al., 2012, p. 6). In their discussion, Colley et al. identify three major conclusions, all related to MNT:

> In this study, we asked the question: "How do we use reflection to facilitate students' learning and their thinking?" We found that we asked students to use reflection in three ways: (a) to set goals (self system), (b) to monitor their progress (metacognition), and (c) to think at different levels of processing. (p. 11)

The taxonomies also can used to identify and delineate questions involving higher order and lower order thinking skills. The OBT has been used extensively towards this end, with the top three levels of the taxonomy considered higher order thinking skills, and questions at the lower three levels considered lower order thinking skills. The linking of OBT to higher order thinking skills has been criticized (e.g., Oliver, Dobele, Greber, & Roberts, 2004; Thompson, 2008), including its placement of the level Apply; some studies include it in higher order thinking, while others exclude it.

It is tempting to use the same classification system to categorize thinking skills with RBT; however, that would be somewhat simplistic. A closer examination of RBT's sublevels shows that the Implementing sublevel of Apply is "applying a procedure to an unfamiliar task" (RBT, p. 67). This would be classified as a higher order thinking skill, as well as the sublevels in Analyze, Evaluate and Create (Figure 2) (RBT, pp. 56-57). RBT has been applied to identify higher order thinking skills in subject areas such as biology, whereby students were taught in an inquiry-based system and then examined with tests that were identified as high level or low level based on RBT (Jensen, McDaniel, Woodard, & Kummer, 2014); the study found that students in the high level test regimen developed deeper understanding of concepts and performed better on both high level and low level examination questions.

DiBattista (2013) used RBT to ensure that higher order thinking skills were addressed in creating multiple-choice questions, while Su, Osisek, and Starnes (2005) used it to identify thinking skills involved in diagnosing head injuries in a clinical setting. Eber and Parker (2007) developed a curriculum in human services in which both instruction and assessment were framed using RBT; they point out that lower levels of RBT can be subsumed by higher level questions for assessment purposes (p. 48). Eber and Parker mainly are interested in developing graduates who can exhibit higher order thinking skills when working with clients; however, Eber and Parker did not discuss whether the program they devised resulted in improvements in graduates' client service quality, and they suggest that further research needs to be done in this area. Afferbach, Cho, and Kim (2015) used RBT to identify higher order thinking in reading; they invoked the grain size argument to identify and separate routine reading strategies (small grain size) from higher order thinking required to make complex inferences, evaluate authors' claims, or synthesize information across several texts (larger grain size). Lastly, FitzPatrick, Hawboldt, Doyle, and Genge (2015) employed RBT to evaluate higher order thinking and critical thinking in assessments in pharmacy courses.

Marzano's taxonomy provides a much richer landscape for higher order thinking skills. Included here are some sublevels of the Cognitive System—Analysis (generating, specifying); all the sublevels of the Cognitive System—Knowledge Utilization (decision making, problem solving, experimenting, investigating); and all the sublevels of the Metacognitive System (specifying goals, process monitoring, monitoring clarity and accuracy) (MNT, p. 62). Thus, Marzano give a much fuller treatment to higher order thinking skills, especially in the inclusion of metacognitive processes, which, as noted earlier, RBT treats as an inert knowledge domain. MNT is much more useful for differentiating higher and lower order thinking skills; however, my literature search revealed few instances of such use. Faragher and Huijser (2014) employed MNT to analyze higher order thinking in undergraduate writing; while their research supported the primacy of the self-system and the position of metacognition in higher order thinking, they found no support for the hierarchy of the cognitive system. Faragher and Huijser's research showed a large number of occurrences of elements of the knowledge utilization level, but significantly fewer occurrences of the lower levels of the cognitive domain.

CONCLUSION

The two taxonomies address different dimensions: RBT deals only with the cognitive domain while MNT, with its three systems, adds and emphasizes metacognition and the self-system, and treats the cognitive system somewhat differently. Marzano and Kendall's (2007) second edition text clarified some aspects of their earlier work, and a further text (Marzano & Kendall, 2008) provided a framework for teaching the concepts of the taxonomy to students, and constructing instructional and assessment activities using the taxonomy as a framework. Marazano's taxonomy has several unique features. It explicitly recognizes the primacy of the self-system in learning, as well as the importance of the metacognitive system. Also, for Knowledge Utilization—which is frequently identified as a goal of education (Martinex, 2010)—MNT explicitly addresses problem solving, which is a key aspect of learning, especially for instances of transfer. Marzano's taxonomy also provides a framework for identifying higher order thinking skills.

RBT includes metacognition (and self attributes) as a form of knowledge, but places no particular emphasis on these dimensions. It includes no reference to problem solving, although aspects of critical thinking are infused in the taxonomy's levels of Evaluate and Create.
Both RBT and MNT have the benefit of simplicity. This attribute, shared by OBT, resulted in the widespread applicability of the latter. The application of both RBT and MNT by teachers and educators is relatively straightforward and easy to understand. Currently, there appear to be more instances of RBT's application than of MNT's.

The greatest weakness of both taxonomies is that they present a linear theory of learning. While there are many theories of learning—Davis (1996) estimates that there are hundreds—much current research in complexity theory indicates that learning is anything but linear (Davis, 1996; Davis, Sumara, & Luce-Kapler, 2008). Learning is most frequently nonlinear, recursive, and emergent in nature. Marzano states that MNT is a theory of human thought. The authors of RBT state that their taxonomy is for learning, teaching, and assessing. On this basis, neither linear taxonomy appears to meet the needs for which it was designed.

It appears that some educators and researchers are not aware of RBT and MNT. When researching this article, I found that the most numerous references and applications by far were to the OBT developed some 60 years ago. Both RBT and MNT are more than a decade old, yet the number of references to either of these taxonomies was miniscule compared to the OBT. Raising awareness of these two taxonomies and encouraging their use has the potential to provide richer educational opportunities for students.

In sum, both taxonomies have strengths as well as weaknesses. The treatment of metacognition should be investigated further, with consideration of both metacognitive knowledge and metacognitive processes including self-regulation. Marzano's chronological placement of self-system and metacognitive system in the learning process needs to be confirmed. Further, explicit inclusion of feedback loops and the nonlinear nature of learning needs to be examined. In addition, action is needed to increase educators' awareness of the taxonomies.

This paper examined two taxonomies: RBT and MNT. A comparison of several other taxonomies would benefit educators who are making decisions concerning their use. Among these are the SOLO taxonomy, Fink's taxonomy, and the Wiggins and McTighe taxonomy, which will be the subject of a subsequent article. There are potential gains to be made in structuring curriculum using taxonomies. We need to take advantage of such opportunities.

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APPENDICES

Table 1

A Comparison of Revised Bloom's Taxonomy and Marzano's New Taxonomy

	Revised Bloom's Taxonomy	Marzano's New Taxonomy
Structure	6 levels, cognitive domain only (see Figure 1)	6 levels, self, metacognitive, 4 cognitive (see Figure 3)
Knowledge domains	Factual, conceptual, procedural, metacognitive	Information, mental procedures, psychomotor procedures
Cognitive domain	Entire taxonomy	4 of 6 levels, subordinate to self and metacognitive systems
Affective/self system	Subsystem of metacognition (knowledge domain, passive)	System (active) dominant, 1st activated
Metacognition	Knowledge domain (passive)	System (active), 2nd activated after self system
Psychomotor	Not addressed	Knowledge domain

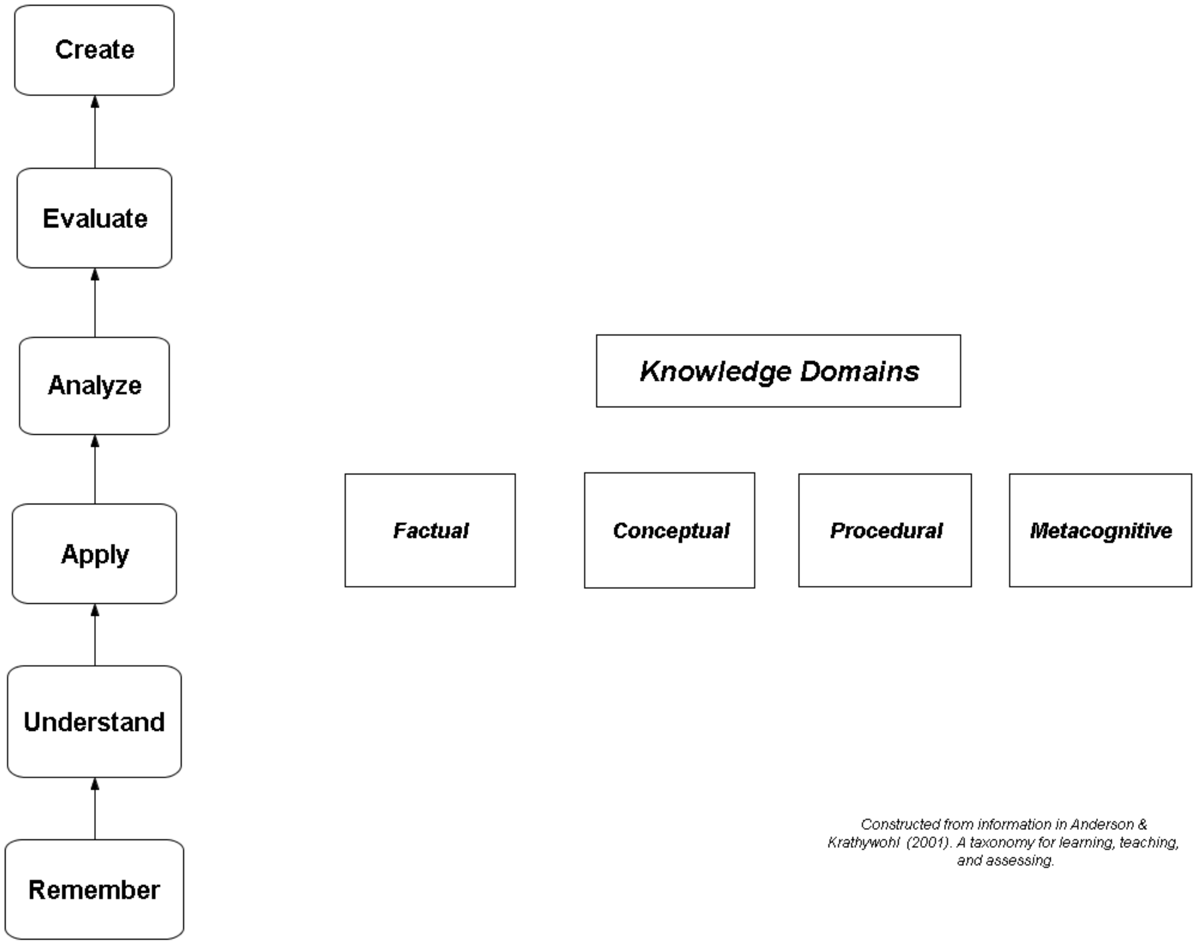

Figure 1. Revised Bloom's Taxonomy.

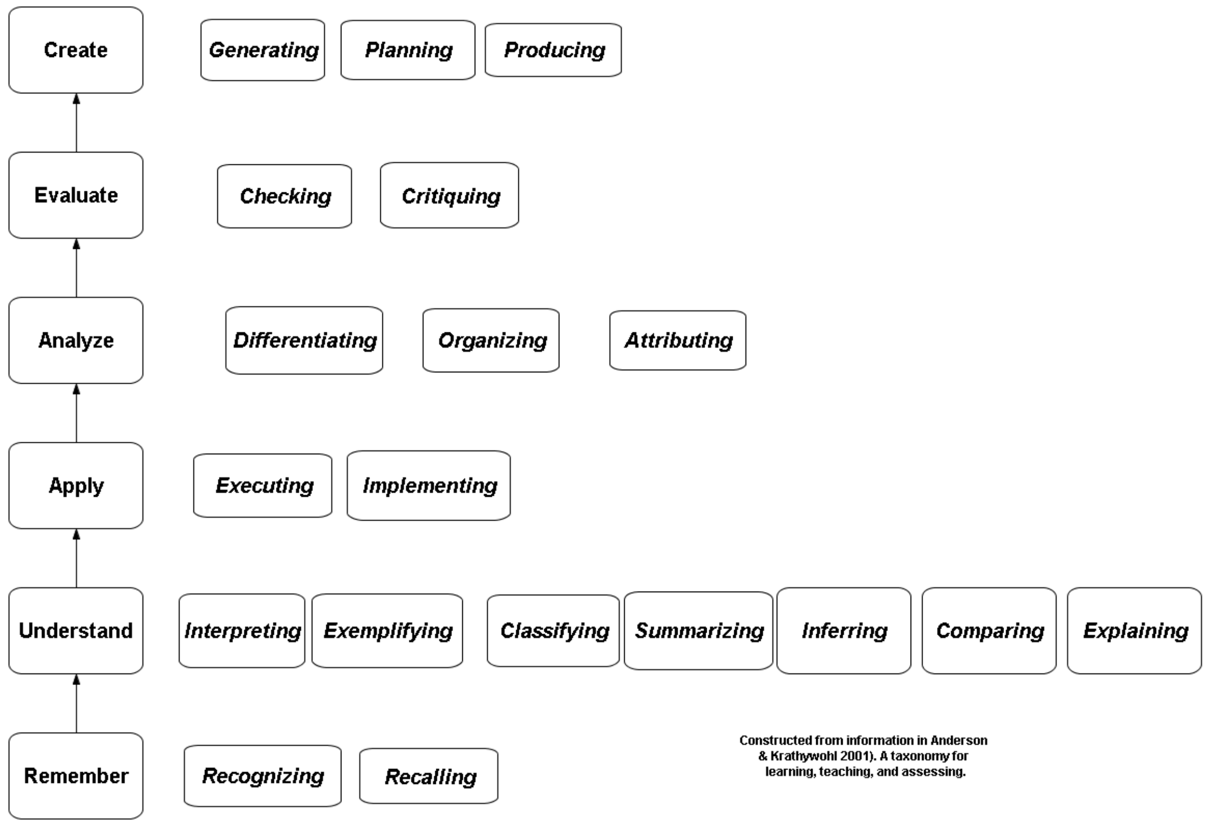

Figure 2. Revised Bloom's Taxonomy showing sublevels.

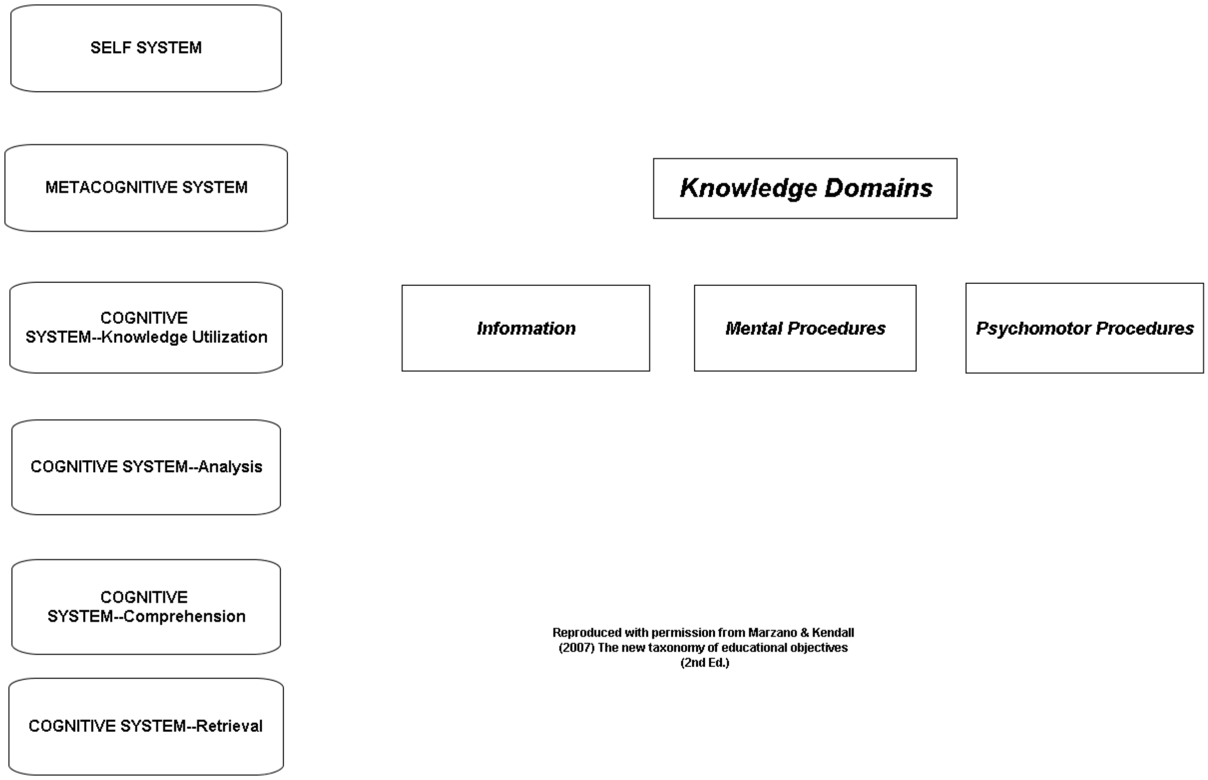

Figure 3. Marzano’s New Taxonomy.

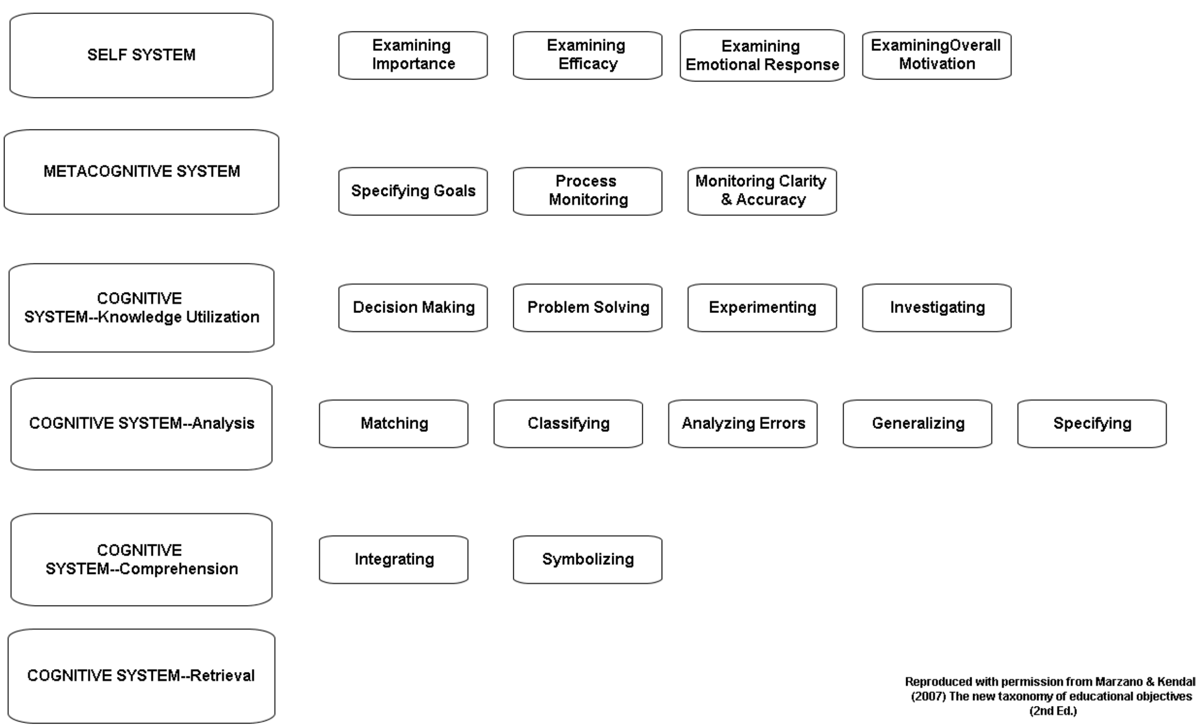

Figure 4. Marzano’s New Taxonomy with sublevels.

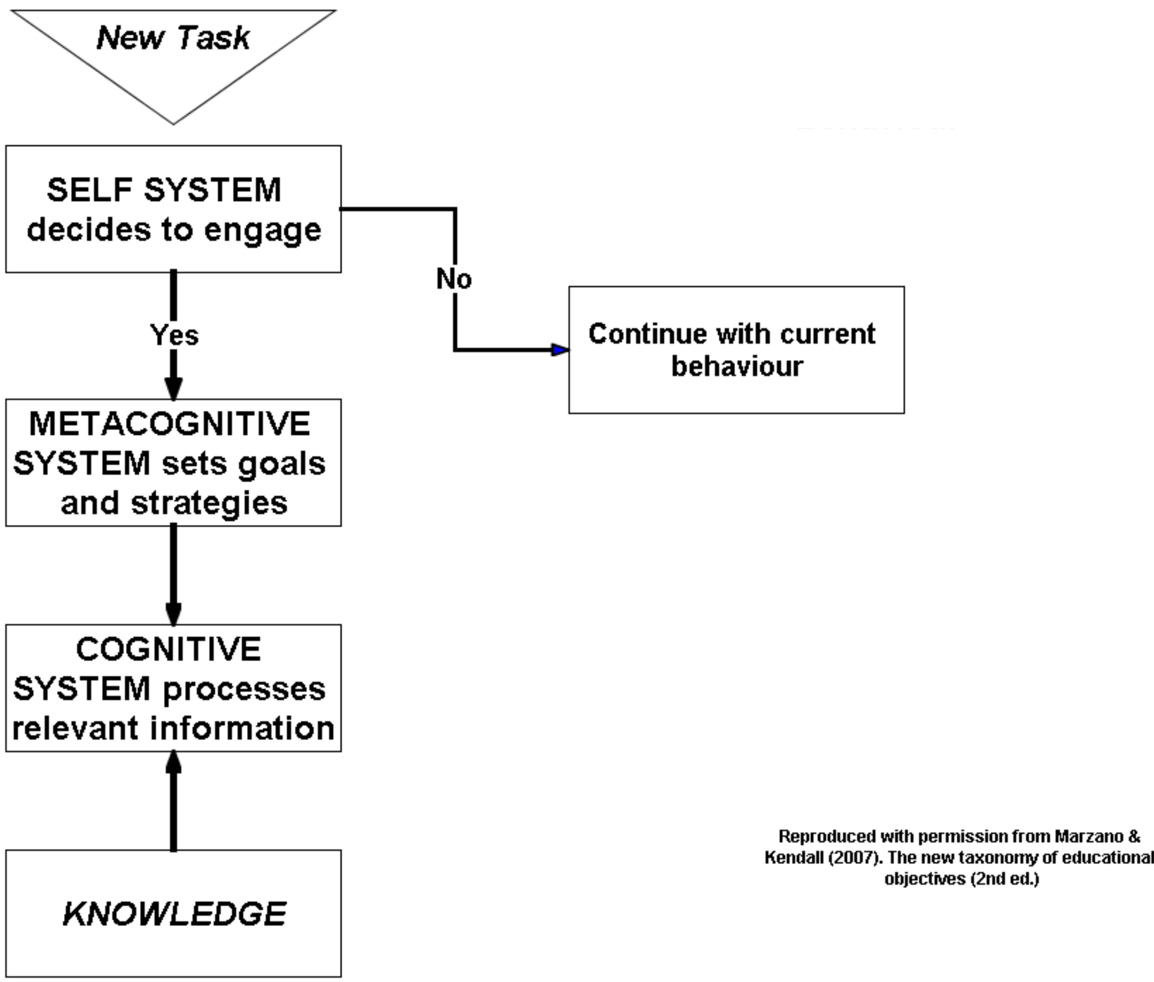

Figure 5. Marzano’s model of behavior.