Taxonomies of Learning When Using Dance Notation: Cognitive, Affective, Conative, and Psychomotor

By: Teresa Heiland

Abstract:

This article provides innovative learning taxonomies that extend Bloom's taxonomies, and those of other educational theorists, to dance education outcomes, particularly regarding dance notation pedagogy. These dance notation-based learning taxonomies are intended to clarify specific learning outcomes and make particular functions of dance notation explicit and accessible. This article provides a brief history and working definition of dance notation-based dance literacy and how it can frame learning taxonomies (Cognitive Processes Domain, Knowledge Dimension, Affective Domain, Psychomotor Domain, and Conative Factors) found in other disciplines. The dance notation taxonomies presented here detail outcomes that can be gained when dance notation-based dance literacy is integrated into dance education curricula.

Keywords: dance | dance education | dance notation | pedagogy learning taxonomies | Cognitive Process Domain | Knowledge Dimension | Affective Domain | Psychomotor Domain | Conative Factors

Article:

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Taxonomies of Learning Outcomes Using Dance Notation:
Cognitive, Knowledge Dimension, Affective, Conative, and Psychomotor

Teresa Heiland

This article provides innovative learning taxonomies that extend Bloom's taxonomies, and those of other educational theorists, to dance education outcomes, particularly regarding dance notation pedagogy. These dance notation-based learning taxonomies are intended to clarify specific learning outcomes and make particular functions of dance notation explicit and accessible. This article provides a brief history and working definition of dance notation-based dance literacy and how it can frame learning taxonomies (Cognitive Processes Domain, Knowledge Dimension, Affective Domain, Psychomotor Domain, and Conative Factors) found in other disciplines. The dance notation taxonomies presented here detail outcomes that can be gained when dance notation-based dance literacy is integrated into dance education curricula.

The potential learning outcomes associated with dance notation-based dance literacy are likely not well understood across various sectors of dance education. A pedagogical framework featuring dance notation-based dance literacy could support better understanding of the potential of dance notation-based dance literacy and could reveal the spectrum of possible applications of notation to support performing, creating, responding, and connecting in dance. Laban-based dance notation systems, such as Labanotation and Motif Notation, are symbol systems that require dancers to analyze and interpret, even in their simplest application. Because analyzing and interpreting are ubiquitous when using dance notation I will examine theoretically how notation supports analyzing and interpreting in the categories of Performing and Creating within existing learning taxonomies found across various discipline using these taxonomies, (a) Cognitive Learning combined with Knowledge Dimensions (Bloom 1956, Anderson & Krathwohl et al. 2001); (b) Affective Learning combined with Conative Factors (Bloom 1956, Anderson &

Krathwohl et al. 2001, Fleener, Hager, Morgan, and Childress 2000); and (c) Psychomotor Learning (Simpson 1972). These three taxonomies manifested from inquiry by western educators, whose practice was rooted in democracy and pragmatism in western societies; however, the information provided in these dance notation literacy taxonomies is focused toward diverse learning opportunities, rather than toward teaching approaches found in particular cultural or educational settings or to particular genres of dance.

The taxonomies are provided as a tool to frame the scope of possible learning outcomes, and hence assessment, that dance notation engages. Educators who explore ideas found in these taxonomies can employ the parts of the taxonomies that best support the teaching methods appropriate to their needs, students, and setting. The Language of Dance® community, which has teacher preparation centers in England, United States, and Mexico, as well as certified teachers educating with dance notation in Japan, Singapore, Greece, and China, has focused pedagogy toward how dance notation serves learners across the four National Core Arts Standards for Dance (National Core Arts Standards 2014) While the Language of Dance community has focused on how notation might best be taught in dance curricula of PK-12, post-secondary, studio, and other dance settings, focus has shifted toward integrated practice and what students should be able to do with the literacy skills they are developing. It is this shift toward learning outcomes that inspired the taxonomies offered in this article. While these taxonomies were created with Laban-based notation (Labanotation and Motif Notation) in mind, educators using other forms of dance notation, such as Benesh, Beauchamp-Feuillet, Eshkol Wachman, Sutton DanceWriting, among others, might find these taxonomies useful for structuring curricula and assessment plans or analyzing learning outcomes in existing courses.

An overview of concepts of literacy, dance notation-based dance literacy, and the taxonomies of learning will be provided to establish how these dance notation-based dance literacy taxonomies were developed using established learning taxonomies. The taxonomies have either been augmented, revised, or re-combined to best demonstrate how dance notation-based dance literacy supports learning.

Brief background of literacy and dance notation-based dance literacy
In 1956, UNESCO referred to literacy as the ability to function with reading, writing, and arithmetic to achieve goals and develop one's potential in society (Gray 1961, 21). The basic definition of literacy has evolved throughout history and reflects the changing demands of cultural and social norms to include aspects of cross-cultural, technological, global, multi-media, and ethical literacy (Cope &

Kalantzis 2000). The National Council of Teachers of English (NCTE) provided a comprehensive definition of literacy in the 21st century:

> Active, successful participants in this 21st century global society must be able to develop proficiency and fluency with the tools of technology; build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought; design and share information for global communities to meet a variety of purposes; manage, analyze, and synthesize multiple streams of simultaneous information; create, critique, analyze, and evaluate multimedia texts; and attend to the ethical responsibilities required by these complex environments. (National Council of Teachers of English 2013)

Over time and geographic location, the concept of dance notation-based dance literacy has also evolved. Muriel Topaz, long a proponent of education using Labanotation, described the potential for learning by using Labanotation.

> It would seem that the more one treats Labanotation as a living language, the closer one comes to incorporating it into the mainstream of the dance world. Surely there must always be the specialists and the researchers; however, I believe it behooves those of us who are teaching to recognize that each different practitioner of the system will learn and use it in a different way. Profound knowledge only comes with time and use. There is a need and a place for those who wish to "speak" the "language" of dance. (Topaz 1975, 12–13).

Since as early as the 1950s, Valerie Preston-Dunlop and Ann Hutchinson Guest had been working to explore creative use of Labanotation in the form of Motif Notation. Dunlop worked at the Beechmont Movement Study Centre, in England, to develop a series of booklets about dance notation, titled *Readers in Kinetography Laban*, with Series A focusing on Labanotation (Preston-Dunlop 1966), which gives the exact details of movement, and Series B focusing on Motif Notation (Preston-Dunlop 1967), which gives a basic outline of movement, thus providing flexibility of use. Hutchinson Guest developed ways to use Motif Notation with children at the Dance Education Laboratory in New York City (92nd Street Young Men's and Young Women's Hebrew Association 2014), which led to the creation of her seminal text, *Your Move: A New Approach to Study of Movement and Dance* (Hutchinson Guest 1983). Both of these women embarked on providing dancers a broader range of application of dance notation, a range that we now call the core arts standards of performing, creating, responding, and connecting (National Council of Teachers of English 2014).

To bring dance notation-based dance literacy into existing literacy definitions, Tina Curran, co-founder of the Language of Dance USA, devised a dance literacy definition that includes dance notation. She placed the terms "dance," "movement," "spoken language," "symbolic means," and "art" at the center of the 2004 UNESCO literacy definition:

> [Dance] literacy is the ability to identify, understand, interpret, create, communicate and [analyze], using [movement, spoken language,] written materials, [and symbolic means in] varying contexts. [Dance] literacy involves a continuum of learning [to] enabl[e] individuals to achieve their goals, to develop their [art,] [knowledge,] and potential, and to participate fully in their community and wider society (2011, 28).

Curran's definition parallels NCTE's comprehensive definition of 21st century global society, which focuses on developing proficiency and fluency with the tools of, in this case, dance and dance notation, to make connections and build relationships; to pose and solve problems; to design and share information; to manage, analyze, and synthesize multiple streams of information; and to attend to complex situations in learning (National Council of Teachers of English 2013).

Literature and Definitions
Within the comprehensive definition of dance literacy provided, I refer specifically to dance notation-based dance literacy, the symbol systems that are used to experience, create, read, record, and analyze movement. However, I do not intend to present them as tools/processes that are separate from dancing. Rachael Riggs Leyva frames an important misunderstanding about dance notation-based dance literacy. Riggs Leyva states,

> Dance [notation] literacy scholarship has typically fallen on two sides of a literacy/orality binary, defining dance literacy either as multimodal processes of dance-making or the use of and fluency in written dance notation systems. Rarely have dancers or dance scholars considered these two seemingly opposing definitions in relation to one another. (2015, ii-iii)

Dancers discuss this relationship using the term "embodiment," a way of knowing that bridges psychomotor, cognitive, and affective knowing—what Maurice Merleau-Ponty coined as mind-body knowing in response to the Descartian notion of body-mind duality (Merleau-Ponty 1965, 72). Karen Nicole Barbour discusses how feminists argue that embodiment is not only a bodily experience with intellectual cognition, but it also involves awareness through gender, race, age,

ability, sexuality, history, and experience—an overlap between the physical, intellectual, and the cultural (2011, 68). Contemporary philosopher and feminist theoretician, Rosi Braidotti, states that embodiment is also not simply biological or sociological, "but rather a point of overlapping between the physical, the symbolic, and the sociological" (1994, 4). This embodied experience called dance is, essentially, a way of knowing and, hence, a multi-modal form of literacy using the cognitive, psychomotor, and affective processes, performing, and creating dance and, henceforth, results in expression and meaning-making. There are many types of literacy involved in dance, as far ranging as literacy with kinesiology, fitness, culture, music, aesthetics, composition, leadership, and so on, each with their image schemas that map ways of knowing in dance. The potential for learning in dance is unquestionably rich, and dance notation-based dance literacy using dance notation can provide a discipline-based symbol system that makes tangible the ephemeral experiences that emerge through the human movement creation and performance of dance.

Like Riggs Leyva, when I refer to dance notation-based dance literacy with symbol systems, I refer to varied forms of meaning-making that use of dance notation can provide through performing, creating, analyzing, and responding while meaning-making. Lev Vygotsky asserts that symbols mediate construction of knowledge between language, experience, and development of cognition (1978, 114–16). Cognitive linguist George Lakoff (1990) discusses how recurring structures or image schemas within our cognitive process provide patterns of understanding and reasoning that motivate conceptual metaphor mappings. It is my notion that dance notation-based dance literacy can provide dancers with tools for making sense of our world, and for taking action and engaging in our world, thereby creating what critical pedagogue Joan Wink considers critical literacy (languages providing more complex understandings) and constructive literacy (languages we construct with the printed word) (Wink 2004, 49).

Wink reminds us that critical literacy, or reading the word and the world, provides liberty and the means to know how and why knowledge is constructed, by whom and for whom, and supports one's ability to be in control of all the words that are needed (Wink 2004). Symbol systems influence the physical, cognitive, affective, and conative processes of learning and foster a critically reflective, creative, literate practice, as has been described by Nelson Goodman in his book *Languages of Art* (1976). Goodman explains that we "read" the arts in many ways to create meaning:

> We have to read the painting as well as the poem, and that aesthetic experience is dynamic rather than static. It involves making delicate discrimination and discerning subtle relationships, identifying symbol systems and characters within these systems and what these characters

denote and exemplify, interpreting works and reorganizing the world in terms of works and works in terms of the world. (241)

In reference to symbols, Goodman was referring to any variety of dynamic interpretations of salient features of the work that become relevant for an individual to make meaning. The system of dance notation-based literacy has evolved by dancers for dancers as a way to capture their meaning making in a dance-based symbolic movement language, thus providing dancers multiple forms of representation to denote and construct meaning in movement. Dance notation systems evolve when dancers seek ways to visually re-present and think more analytically to describe and understand movement.

It is interesting to note that scientists do know which areas of the brain are typically activated during syntactic comprehension in reading (Pulvermüller 2005; Kaan & Swaab 2002; Cohen, Dehaene, Naccache, Lehéricy, Dehaene-Lambertz, Hénaff, & Michel 2000). Various regions of the cortex work together to achieve language-related tasks such as reading the written word (Dubac 2002) and those areas vary based on the type of language being read, such as Italian versus English (Dahaene 2009). Brain-based research reveals that reading is about recognizing patterns and even knowing how to look for patterns, all which are related to the occipital lobe (visual), frontal lobe (meaning making), temporal lobe (processing translation of notation into English words, sounds, even rhythms), cerebellum (eye movements and attention), and the angular and supramarginal gyrus (the two regions that receive somatosensory, visual, and auditory inputs from the brain) (Dubac 2002). Research on musicians shows that musicians who play an instrument while reading sheet music (touch, listen, read) have "an improved ability to process information from more than one sense at the same time" (Roy et al. 2013). In neuroimaging studies by Lauren Stewart, Vincent Walsh, and Uta Frith (2004) and Stewart et al. (2003), reading of music notation was shown to involve a sensorimotor translation in which the spatial characteristics of musical notation are used to guide selection of the appropriate key press. After 15 weeks, musicians were able to automatically process entirely new sheet music easily, showing that literacy occurred and the angular and supramarginal gyrus provided learning flexibility. These studies serve to illustrate the power that the culture of music notation education has in shaping brain function and points toward the potential of dance notation as well. With learning flexibility in mind, the taxonomies, as a whole, address the potentiality of using dance notation in teaching and learning to perform, to create, to respond, and to make connections with dance.

Delimitations

In each component of each of the proposed dance notation-based learning taxonomies, I provide three experiential dance categories modeling how dancers could explore each component of each matrix of the taxonomy. While each of the four categories of Creating, Performing, Responding, and Connecting are key processes in learning in dance, to economize space, I will focus primarily on two of the Core Arts Standards, Creating and Performing. These two Standards will be accompanied by a third category of Dance Notation, which implicitly represents the final two categories of Responding and Connecting through a focus on using dance-notation for analyzing, interpreting, critiquing, synthesizing, and relating.

Creating, Performing, and Dance Notation will be explored in three learning taxonomies, divergently representing learning in dance related to mental cognition and content; attitudes, feelings, and behavior; and cognitive functions in relation to physical movement. For the taxonomy of mental cognition and content, I will use the existing combined taxonomy of Cognitive Learning and Knowledge Dimensions by Bloom 1956, Anderson & Krathwohl et al. (2001). For the Affective and Conative taxonomy, I created my own taxonomy by intersecting the Affective Learning taxonomy by Bloom (1956) and Anderson & Krathwohl et al. (2001) with the Conative Factors taxonomy by Charlene Fleener, Jane Hager, Raymond Morgan, and Marc Childress (2000). Finally, there were many choices for pairing between a Psychomotor Taxonomy and Dance Notation. My ideas about dance notation best align with the psychomotor taxonomy by Elizabeth Simpson (1972), rather than those conceptualized by Ravindrakumar Dave (1970) and Anita Harrow (1972). Simpson's categories of Perception (becoming aware) and Set (getting ready) parallel the perception and production of movement using symbolic notation systems and, in turn, the perception and production of movement that inspires dance notation-based dance literacy development and practice. A learning taxonomy already in existence that involves cognitive, affective, and conative factors, created by Dee Fink (2003), will not be explored here because the other three models already mentioned comprehensively detail the concepts.

While the discipline processes of Performing dance, Creating dance, and the third category of using Dance Notation rarely occur in isolation, I represent these processes separately in the taxonomies to provide detail and linear simplicity within matrices. As these three processes are situated together within the taxonomy matrices, readers will be free to form their own connections between the categories of Performing and Creating with the category of Dance Notation. These three categories provide a range of activities in dance education capturing a broad spectrum of how dance notation may serve dancers in various dance education activities.

Background of the Taxonomies

With his eye on education for mastery, educational psychologist Benjamin Bloom began developing learning taxonomies in the 1950s to categorize educational objectives with gradated scaffolding to support curriculum design and assessment. The taxonomy of learning behaviors can be thought of as learning goals to be achieved in order to promote what are called lower and higher forms of thinking in education. Bloom worked with a team, publishing the Cognitive Learning Domain (Bloom et al. 1956) and Affective Domain (Krathwohl, Bloom, & Masia 1964); however, the committee felt that others, who better understood motor learning, were more equipped to devise the Psychomotor Domain, and, hence, we have a variety of psychomotor taxonomies (Simpson 1972, Dave 1970, Harrow 1972). Various educators have revised and expanded upon the three taxonomies over the years. Lorin Anderson & David Krathwohl et al., revised the Cognitive Processes Domain, switching nouns to verbs and rearranging the order of the two top categories (2001). Using Bloom's original headings, Roger Wagner devised a more drastic revision of Bloom's Cognitive Processes Domain taxonomy, which will be used in this paper, and will be explained when introduced below.

While these Cognitive, Affective, and Psychomotor taxonomies are clearly important to educators, a fourth lesser-known taxonomy about supporting student agency and engagement could be helpful for teachers who use, or plan to use, dance notation in their teaching. This taxonomy is the Conative Taxonomy (Fleener, Hager, Morgan, & Childress 2000), which gets at the root of the "why" of learning. Conation is the point where cognitive knowledge, affective growth, and psychomotor development intersect with human behavior, or in other words, how one is motivated to deliberately, proactively, and intentionally channel ideas and feelings toward goal-oriented behavior (Baumeister, Bratslavsky, Muraven & Tice 1998; Emmons 1986). Educational psychologist, William Huitt, expresses that the conative skills will be increasingly important for life-long, self-regulated learning through the 21st century (Huitt, 2007). The Conative Taxonomy is essential for dance educators, who plan to use dance notation, because dance students bring with them ideas of what a good dance class is, and suddenly dance notation habits of mind may challenge their way of knowing dance and themselves. The Conative Taxonomy provides tools for how to negotiate curricula to support engagement during that shift into a brand new type of literacy.

      Three taxonomies focused with dance activities. Each of the three taxonomies is augmented with objectives or learning outcomes related to three different aspects of dance education mentioned earlier—Performing dance, Creating dance, and using Dance Notation. The Cognitive and Knowledge Domain is discussed first, followed by the Affective and Conative Domain, and finally the Psychomotor Domain. Readers will likely be familiar with Bloom's taxonomies, so

descriptions of the basic structures that he established will be brief, hence leaving room to discuss the additions of learning outcomes from the discipline of dance.

Cognitive Processes Domain combined with the Knowledge Dimension
The Cognitive Processes Dimension created by Bloom (1956), revised by Anderson and Krathwohl et al. (2001), and again by Wagner (n.d.), involves knowledge and the investigation of specific facts, procedural patterns, and concepts that serve in the development of intellectual skills (Bloom, 1956). The original Cognitive Processes Domain included six categories of mental/intellectual skills (Knowledge, Comprehension, Application, Analysis, Synthesis, Application). While these six categories are often grouped as lower order and higher order learning, with a progression of increasing complexity, brain based theorists believe there is no evidence that the higher three levels are based on the lower three levels, neither that the higher levels are more complex than the lower levels, nor that each of the thinking skills is discrete and identifiable (Kagan 2005). What the levels do provide are ways to differentiate various ways of thinking in our teaching and learning environments. Roger Wagner (n.d) devised an intriguing revision of Bloom's Cognitive Processes Domain by reconfiguring the categories so that categories 1–3 and 6 (Recall, Comprehension, Application, and Synthesis) become the main categories and 4 and 5 (Analyze and Evaluate) are shown to occur overlapping the main four categories simultaneously (Wagner n.d.). In my taxonomy, the eight subtypes of Analyzing and Evaluating are situated alongside and can be used at any time with any category to achieve Recall, Comprehension, Application, and Synthesis. See Figure 1 for a comparison of the three iterations of Bloom's Cognitive Processes Domain (Bloom 1956, Anderson & Krathwohl et al., and Wagner n.d.).
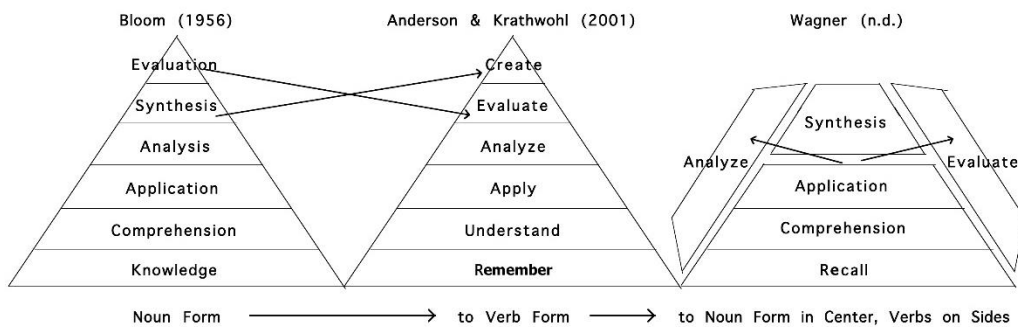

Figure 1. *Comparison of Three Versions of Bloom's Cognitive Processes Domain*

Wagner's iteration, in Figure 1, resonates with my experiences with notation, so I have chosen to explore Wagner's model in this version of Bloom's

Cognitive Processes Domain. Bloom's Cognitive Processes Domain is sometimes merged into a matrix with the Knowledge Dimension by Anderson and Krathwohl. The Knowledge Dimension represents how one is aware of cognitive processes in relation to facts, concepts, and procedures, and finally of metacognition, or awareness of one's cognition (see Table 1). The first three categories are not to be thought of as more or less complex; however, metacognition is considered a more complex process (Anderson & Krathwohl et al. 2001, 44). I have merged Wagner's version of Bloom's Cognitive Processes Domain with Anderson and Krathwohl's Knowledge Dimension to explore a matrix of possibilities between intellectual processes and awareness of content and cognitive processes in relation to performing dance, creating dance, and using dance notation.

Placing Bloom's Cognitive Processes Domain on a matrix with the Knowledge Dimension provides the opportunity to highlight many layers of knowing that occur in dance education. For example, in Bloom's lower category of Recall, there are four Knowledge Dimensions, factual recall (called List), conceptual recall (called Recognize), procedural recall (called Recollect), and metacognitive awareness (called Identify). These four Knowledge Dimensions describe knowledge students are expected to acquire or construct. For each of these four Knowledge Dimension categories, I have provided an example for Performing, Creating, and Dance Notation. Each topic listed after each category of Performing, Creating, or Dance Notation can be thought of as a learning objective, and teachers can think of them as they would when organizing learning outcomes by stating, "At the end of this lesson/unit, students will know and be able to…" See Table 1 for details for each category.

While brain-based researchers understand that learning and critical thinking do not always occur in a linear fashion (Kagan 2005), it seems valuable to examine the approaches to learning with dance notation-based dance literacy by exploring each Cognitive Domain category in relation to each of the Learning Dimensions.

Summarizing the dance notation-based dance literacy outcomes of the combined Cognitive Processes Domain and the Knowledge Dimension. In the Cognitive Processes Domain category of Recollect (see Table 1), in which students retrieve relevant dance knowledge from long-term memory using dance notation, the outcome goals related to Learning Dimensions are, (a) list basic elements of dance and corresponding concepts using movement/dance notation symbols, (b) recognize and convey movement phrases of dance concepts through writing, reading, dancing using dance notation, (c) recollect basic movement mechanics by writing, reading, or dancing a dance from a dance notation score, and (d) identify and assess how much we know about dance notation. These outcome goals are

related to listing, recognizing, recollecting, and identifying the symbolic language of dance notation-based dance literacy, as detailed in Table 1.

In the Cognitive Processes Domain category of Comprehension, in which students construct meaning from dance experiences using dance notation from instructional messages, including oral, written, and graphic communication, the outcome goals related to the Learning Dimension are, (a) summarizing features and goals of a dance through its graphic representation in dance notation, (b) classifying categories of movement elements using dance notation symbols to deconstruct and understand components, their families, and relationships between movement concepts, (c) clarifying a plan and focusing attention on key dance movement concepts in order to read, write, and dance using dance notation, and (d) predicting one's own response to challenges with dancing by using dance notation as a metacognitive tool. These outcome goals are related to students' skills with summarizing dance ideas, classifying ideas and themes, clarifying focus, and predicting and planning with the assistance of a symbolic language of dance notation-based dance literacy.

In the Cognitive Processes Domain of Application, in which students carry out or use a procedure in a given dance situation with notation, the outcome goals related to the Knowledge Dimension are, (a) respond to frequently requested requirements with reading, writing, or dancing using notation, (b) provide conceptual application of multiple concepts juxtaposed in notation to create a larger meaning or purpose, (c) implement concepts during reading/writing/dancing to explore meaning in the dance using notation as a tool, and (d) using investigations and explorations with metacognitive awareness when reading, writing, and dancing by using dance notation that match one's strengths based on prior successes. These outcome goals are related to students' skills with responding, conceptualizing, implementing, and using techniques with the symbolic language of dance notation-based dance literacy with metacognitive awareness.

In the Cognitive Processes Domain of Synthesis, in which students put elements together to form a coherent whole and/or reorganize into new patterns or structures, the outcome goals related to the Learning Dimension are, (a) generate activity by selecting, noticing, and representing in dance notation and related movement experiences what is needed to convey concepts, ideas, thoughts, and feelings (b) assemble and/or organize familiar dance notation symbols into coherent patterns and structures on paper and in dance movement based on prior knowledge, (c) design a plan for a larger project including reading, dancing, creating, or writing notation based on an expected outcome, and (d) produce an innovative learning portfolio using past experience with dance in which dance notation was used to capture and reveal areas of success and possible areas for improvement. These learning outcome goals are related to students' skills with generating, assembling,

designing, and producing using the symbolic language of dance notation-based dance literacy.

Wagner (n.d.) questions whether it is possible to do any of the cognitive activities that result in Comprehension, Application, and Synthesis without engaging in analyzing and evaluating? His view is that analysis and evaluation are necessary to make the transition from Recall to Comprehension, and that analysis and evaluation are integral parts of the learning process during Application and Creation. Unlike in previous iterations of Bloom's taxonomy, Wagner (n.d.) considers Analyze and Evaluate as processes that can occur in any of the Cognitive Processes, and, in this chart, I devise four levels of each that, similarly, can occur at any time within the Cognitive Processes. To fit comfortably in Table 1, I situate the four noun forms of the Wagner iteration of Bloom's Cognitive Processes (Recall, Comprehension, Application, Synthesis) across the top of the page and the two verb forms (Analyze, Evaluate) perpendicularly across the bottom.

In the Cognitive Processes Domain of Analysis, in relation to the use of dance notation, students have an opportunity to break dance material into constituent parts and to determine how parts relate to one another and to an overall structure or purpose. The outcome goals related to the Learning Dimension are, (a) select/identify common themes or ideas in the dance to write, read, or perform the dance using dance notation, (b) differentiate and know how themes or ideas exist in the dance and how to write, read, and perform the dance using dance notation, (c) integrate concepts using dance notation in a systematic fashion, (d) deconstruct one's preferences by using notation and various types of notation to read, write, create movement. These outcome goals are related to students' skills with identifying, differentiating, integrating, and deconstructing through the use of the symbolic language of dance notation-based dance literacy.

Table 1. *Cognitive Processes Domain and Knowledge Dimension: Dance and Dance Notation Learning Outcomes*

		Bloom's Cognitive Processes Domain 1–4			
		1. Recall Repeat what was previously read, seen, heard, or demonstrated	**2. Comprehension** Re-express or construct meaning from instructional messages, including oral, written, and graphic communication	**3. Application** Carry out, use a procedure, solve a problem with a solution that is already known	**4. Synthesis** Solve a problem with combined solutions that are not already known
Knowledge Dimension	**A. Factual** The basic elements students must know to be acquainted with a discipline or solve problems in the discipline	**List** P: basic vocabulary of steps/moves C: basic vocabulary of composition tools DN: basic dance notation symbols used	**Summarize** P: basic qualities and requirements to do steps and movements C: features/goals of choreographic tools DN: features and goals of graphic symbols found in dance notation	**Respond** to frequently requested P: skills and physical tasks C: aesthetic requirements or tasks DN: requirements with reading, writing, or dancing using dance notation	**Generate** activity by P: pulling apart common steps and knowing their purpose and function biomechanically or expressively C: selecting, noticing, and demonstrating compositional tools and knowing when to use them DN: selecting, noticing, and representing in dance notation or movement what is needed to convey concepts
	B. Conceptual The interrelationships among the basic elements within a larger structure that enable them to function together	**Recognize** P: coordinating concepts and combinations of elements C: and coordinate movement and concept choices DN: and convey phrases of concepts in writing, reading, dancing using dance notation	**Classify** P: steps/moves by their purpose C: compositional devices based on purpose or goal DN: sets of dance notation/symbol categories based on how they aid in communication	**Provide conceptual application of** P: imagery and theory to technique C: composition frameworks to phrases, etc DN: multiple concepts juxtaposed in dance notation to create a larger meaning or purpose	**Assemble** and/or P: pull apart experienced steps and performance ideas and string them together in other situations C: by putting movement motifs and phrases together based on knowledge or exploration DN: organize familiar dance notation symbols into coherent patterns and structures on paper and in dance movement based on prior knowledge
	C. Procedural How to do something, methods of inquiry, and criteria for using skills, techniques, and methods	**Recollect** P: and complete a series of moves that are memorized C: and know how to generate and compile movement motifs, phrases, and sentences DN: basic mechanics for writing, reading, dancing a dance notation score	**Clarify** P: and cognitively identify, determine, and organize into pattern or construct, e.g., repeat and transfer to other side of body C: and have a formula to create movement ideas DN: a plan and focus attention on key dance movement concepts in order to read, write, and dance using dance notation	**Carry out** P: and implement the procedural patterns or constructs in movement C: and implement layers of concepts to achieve a unified whole DN: and implement concepts during reading/writing/ dancing to explore meaning in dance notation (e.g., support column)	**Design a** P: plan for improving one's technical and expressive performance C: plan for achieving a final piece of choreography for a performance DN: plan for a larger project including reading, dancing, creating, or writing dance notation based on an expected outcome
	D. Metacognitive Knowledge of cognition in general as well as awareness and knowledge of one's own cognition	**Identify** P: patterns, relationships, sides, images, pneumonic devices, stories, meaning making C: awareness of one's composing choices DN: and assess how much we know about dance notation	**Predict** one's own response to P: steps given C: compositional challenges DN: dance notation challenges	**Use** approaches or method of investigation and exploration when P: applying modes of learning that facilitate technique, imagery that works, multiple intelligences, learning styles C: by noticing work habits that inspire you to create DN: reading, writing, and dancing using dance notation that match one's strengths based on prior successes	**Produce** an innovative learning portfolio P: using past experience to capture and reveal areas of success and possible areas for improvement C: using past experience to capture and reveal areas of success and possible areas for improvement DN: using past experience with dance notation to capture and reveal areas of success and possible areas for improvement
Bloom's Cognitive Processes Domain 5–6	**5. Analyze** Break material into constituent parts and determine how parts relate to one another and to an overall structure or purpose (Constructivism, Critical Thinking, Problem-Based Learning)	Select/identify P: parts of movement phrase to memorize order of them; C: piece together various choreographic devices and Elements of Dance; DN: common themes or ideas in the dance to write, read, or perform the dance using dance notation Differentiate and know P: how parts of movement phrase relate and memorize order of them; C: how to piece together various choreographic devices and E of D; DN: how themes or ideas exist in the dance and how to write, read, and perform the dance using dance notation Integrate P: with awareness of parts of movement and put into action with a procedure; C: movement and compositional devices and implement using a procedure; DN: concepts using dance notation in a systematic fashion Deconstruct one's preferences P: with exploring styles and genres of movement; C: with exploring creativity through movement; DN: by using notation and various types of dance notation to read, write, create movement			
	6. Evaluate Make judgments based on criteria and standards (Constructionism, Divergent Thinking, Project-Based Learning)	Check for consistency among sources P: regarding what moves are right and wrong in relation to what is expected or taught; C: by referring to a list of aesthetic criteria and notice if they are present in the dance; DN: by reading dance notation and judging against the dance movement shown Determine relevance of results P: based on standards and ways they were demonstrated in movement; C: based on aesthetic criteria and goals based on assignment; DN: based on how the dance notated elements function as a whole and in relation to the salient parts Judge efficiency of approaches and techniques P: in movement toward expected results; C: employed to create movement with expected outcomes; DN: regarding how to best implement refining ways to create dance movement and studies, to read or write a score, or to check these for accuracy Reflect on one's progress P: with technique and performing goals; C: with creating and composing in relation to goals; DN: with reading, dancing, writing, and creating with dance notation based on students' goals			

In the Cognitive Processes Dimension of Evaluate, in which students make judgments based on criteria and standards, the outcome goals related to the Learning Dimension are, (a) check for consistency among sources by reading dance notation and judging against the dance movement shown (b) determine relevance of results based on how the dance notated elements function as a whole and in relation to the salient parts function in relationship and as a whole, (c) judge efficiency of approaches and techniques regarding how to best implement refining ways to create dance movement and studies, to read or write a score, or to check these for accuracy, and (d) reflect on one's progress with reading, dancing, writing, and creating with dance notation based on student's goals. As outlined in Table 1, these learning outcome goals of Evaluate in conjunction with the four Knowledge dimension categories provide students' with opportunities to practice their judgment of consistency, relevancy, efficiency, and progress with the symbolic language of dance notation-based dance literacy.

These combined taxonomies using Wagner's (n.d.) version of the Bloom's Cognitive Processes Domain, and Anderson and Krathwohl et al. (2001) are situated together to assist design of lessons and focus assessment. I provide a sample lesson plan (see Figures 2a and 2b) that uses Motif Notation titled, "Rotation, Pathways, Levels," to model how one might use the combined Bloom's Cognitive Doman and Knowledge Domain to select appropriate learning outcomes and plan assessments. To narrow the scope of dance notation learning outcomes, I selected only outcomes related to Dance Notation. This choice is for demonstration purposes only.

The Cognitive processes that are used in this lesson are (1C) Recollect basic mechanics for writing, reading, dancing a dance notation score, (3C) Implement concepts during reading, writing, and dancing to explore meaning-making using dance notation, (4B) Assemble and/or organize familiar dance notation symbols into coherent patterns and structures on paper and in dance movement based on prior knowledge, (5) Integrate concepts using dance notation in a systematic fashion, and (6) Determine relevance of results based on how the dance notated elements function as a whole and in relation to the salient parts. To formatively assess achievement of 3C, the instructor can read and respond to students' journal entry about meaning making. To formatively and/or summatively assess students' achievement of 1C, 4B, and 6, students and the teacher can assess alignment and accuracy between scores and dances.

Rotation, Pathways, Levels Lesson Plan
by Teresa Heiland
Taught June 2016 at Loyola Marymount University

Lesson Aim: Teacher will provide exploration of Rotation (pivot turns), provide students with meaning-making experiences rather than performing turns as a genre-related skill by using rotation flash cards and structured improvisation alone and with a partner, with the goal of composing a duet and writing a dance notation score.

Focus of Lesson:	Connecting ways of turning and traveling with level changes to life situations and with a partner.
Intended Audience:	Middle school and above.

***National Core Arts Standards—Creating: Explore* DA: Cr1.1** (National Coalition of Core Arts Standards)
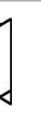
Anchor Standard:	Generate and conceptualize artistic ideas and work.
Enduring Understanding:	Choreographers use a variety of sources as inspiration and transform concepts and ideas into movement for artistic expression.
Essential Question:	Where do choreographers get ideas for dances?
Performance Standards: (HS Proficient)	a. Explore a variety of stimuli for sourcing movement to develop an improvisational or choreographed dance study. Analyze the process and the relationship between the stimuli and the movement. b. Experiment with the elements of dance to explore personal movement preferences and strengths, and select movements that challenge skills and build on strengths in an original dance study or dance.

Learning Outcomes: [Due to limitations of space, attention is given only to dance notation outcomes; items are selected from Table 1.]
By the end of this lesson, participants will be able to . . .
1C.   Recollect basic mechanics for writing, reading, dancing a dance notation score.
3C.   Implement concepts during reading, writing, and dancing to explore meaning-making using dance notation.
4B.   Assemble and/or organize familiar dance notation symbols into coherent patterns and structures on paper and in dance movement based on prior knowledge.
5.   Integrate concepts using dance notation in a systematic fashion.
6.   Determine relevance of results based on how the dance notated elements function as a whole and in relation to the salient parts.

Assessment: [Due to space constraints, only notation outcomes are shown]
3C: To formatively assess achievement of 3C, read and respond to students' journal entry about meaning making.
1C, 4B, 6:   To formatively and/or summatively assess achievement of 1C, 4B, and 6, have students check students' scores against students' performed dances. Instructor checks as well and uses rubric to guide progress and/or grade.

Vocabulary terms: Pivot/turn left or right, pin used to depict amount of turn; straight path, circular path, and levels are reviewed.

Turn left	Turn right	Turn, left or right	Pins	Straight path	Circular path counter-clockwise	Circular path clockwise	Circular path, c-cw or cw	Low level	Middle level	High level

Essential Theory:
    Rotation (pivot turn) left or right: Turns apply to whole body turning around one of its axes (pivot around vertical axis).
- Duration: All rotation symbols are variable in length.
- Terminology: Use "turn left" or "turn right" with pivot/turn.
- Amount of turn is indicated by angle of pin inside turn symbol.

    Straight path: General indication for traveling on a straight line.
- Duration: Path symbols are variable in length.
- Terminology: Travel on a straight path.
- Duration of travel is relative to the length of the symbol drawn in a score.

    Circular path: General indication for traveling on a circle.
- Duration: Path symbols are variable in length.
- Terminology: Travel on a circular path counter-clockwise (anti-clockwise), or clockwise.
- Duration of travel is relative to the length of the symbol drawn in a score.

    Levels: Three specific levels in the kinesphere in which one can explore.
- Duration: All level symbols are variable in length.
- Terminology: Use "low level," "middle level," and "high level."
- Depiction of levels: Low level is depicted by a dark, filled in symbol. Middle level is depicted by a dot in the middle, and high level is depicted by diagonal lines.

- 1 of 2-

Figure 2a. *Sample lesson plan depicting appropriate learning outcomes adopted from Table 1. Used with permission by Language of Dance Center USA*

Materials Needed for Teaching the Lesson:

Notation Flash Cards:
- Two sets of notation concept cards for turns including: 1, ½, ¼, $^1/_8$, 1 ½, 2 ¼.
- Bring symbol card for right forward high and left forward high to compare to the Pivot Turn Right and Pivot Left Turn symbols.
- Bring Pivot Turn Right or Left flash card.

Music: Music could be used, but it is not necessary.

Handouts: Blank motif notation scores with two staffs in relative time used to depict two dancers performing a duet. Include starting position.

Teaching Guidelines

Elicit: Make connections to prior learning about directions (reaching to the future, past, gathering, accessing what is needed) and pathways (going somewhere and arriving at a destination). Today we will explore pivot turning/rotation. What expressions in everyday life deal with the word turn? "Turn toward, turn away, turn back, turn it loose, turn about face, turn a corner, turn the tables, take turns, turn it over in your mind, etc." We have many names for turns in various genres of dance, "pirouette, *chaînés*, *soutenou* turn, pique turn, underarm turn, pencil turn, etc." Today we will look, not at known types of turns, but what you feel when you turn certain amounts in relation to something or someone.

Explain: Describe how pivot turns, which we are exploring today, rotate around the vertical axis. Review the direction symbols and show how Right Forward High looks somewhat similar to a new symbol for Right Turn. Show symbol cards for Right Turn, Left Turn, and Turn either way. Explain pins for one full turn, one half turn, one quarter turn, one eighth turn, one and a half turns, and 2 and a quarter turns. Invite students to ask questions. Explain that the turns are in relation to the dancer's personal facing, and not the front of the room.

Engage 1: Ask students to spread around the room. Invite two different people (possibly teacher and a student) to take turns holding up a flash card to challenge dancers to find new facings toward the person holding the card, and then achieving the turn in an interesting way to the correct direction and amount of turn. The two people holding the cards alternately call out their own names, so the dancer faces that person, reads the card, and then performs the amount of turn on the card in the proper direction. As the "card holders" take turns switching back and forth and alternating through their card decks, they can walk around the room to provide more challenge for people to practice facings and turns. Repeat about 25 times, or until the students have explored this intellectual and physical process. Challenge the students to create interesting turns as they become secure with how to read the notation on the cards.

Explore: Explore the next improvisation activity with a partner. Stand near a partner, about 2-5 feet apart. Without talking, choose a rather small amount of turn and notice how you feel in relationship to that partner. Repeat with varying amounts of turn to notice how you feel in relation to your partner merely because you've turned toward or away from him or her. Alter the style or quality of your turns for a few more variations. Change levels as you turn. Alternate the turns with a path, but don't go too far; stay in relationship. Teacher calls out: (1) Straight path, (2) turn, (3) circular path, (4) turn, Repeat 1-4 as many times as is needed to create meaning in some way in duet.

Elaborate: We will now compose based on this improvisational experience. We are using 3 basic concepts in notation, with your creativity and expressivity. Explore with your partner until you find a dance that you find interesting, compelling, enjoyable, or meaningful. Talk with your partner about those parts you want to keep, toss, modify, or repeat. Negotiate and collaborate. Memorize this dance you are building. Added Requirement: You must change level every time you turn.

Experiment: Now that you know your dance thoroughly, let's see what happens when you have different partners even if what you do remains the same. Repeat your phrase with a new a new partner, then switch two more times, so you experience the phrase with 3 different new partners. The third time you switch, we will perform in small groups (divide group in to 3 small groups for observing each other).

Experience: Observe the relationships that happen by chance in this activity. Notice the theme and variations that occur.

Engage 2: Return to your original partnership. Talk through your dance and as you progress through your dance, identify each and state aloud to each other the type of path; the direction, level and amount of turn; and the type of pathway for each part of the dance. When you are secure in what is there, we will write out the dance in dance notation on a score. Hand out score sheets and pencils.

Extend: Hand your score to another duet. Perform your dance for them and have the check your score to see if they can read it, and to see if it matches accurately to your dance.

Evaluate: Discuss in your quartet what you learned through this process. You might discuss meaning making with the elements of dance of rotation, the improvisational collaboration, the cognitive process of notating dance, and/or what the score making process taught you about yourself and dance. Write in journals about these topics for homework. Collect dancers' scores today. Collect reflective journals periodically.

- 2 of 2 -

Figure 2b. *Page two of sample lesson plan. Used with permission by Language of Dance Center USA*

In Table 2, the Cognitive Processes Domain of Recall and Comprehension are cross-referenced with the Knowledge Dimension of Procedural, resulting in the categories of Recollect and Clarify. The topic of Recollect is made up of (C) Procedural methods of inquiry, and developing criteria for using skills, techniques, and methods, and (1) Recall and restating what was previously read, seen, heard, or demonstrated. Hence, in reference to Performing during the sample lesson on Rotation, Pathway, and Level, students will be able to Recollect and complete a series of moves that are memorized. In terms of Creating, students will be able to Recollect and know how to generate and compile movement motif, phrases, and sentences, and in terms of Dance Notation, students will be able to recollect basic mechanics for writing, reading, and dancing a dance notation score.

Table 2. *Cross-referencing Recall and Comprehension from Bloom's Cognitive Domain with Procedural knowledge from the Knowledge Dimension, resulting in Recollect and Clarify, in relation to performing dance, composing dance, and using dance notation*

		Bloom's Cognitive Processes Domain	
		1. Recall Repeat what was previously read, seen, heard, or demonstrated	**2. Comprehension** Re-express or construct meaning from instructional messages, including oral, written, and graphic communication
Knowledge Dimension	**C. Procedural** How to do something, methods of inquiry, and criteria for using skills, techniques, and methods	**1C. Recollect** P: and complete a series of moves that are memorized C: and know how to generate and compile movement motifs, phrases, and sentences **DN: basic mechanics for writing, reading, dancing a dance notation score**	**2C. Clarify . . .** P: and cognitively identify, determine, and organize into pattern or construct, e.g., repeat and transfer to other side of body C: and have a formula to create movement ideas **DN: a plan and focus attention on key dance movement concepts in order to read, write, and dance using dance notation**

P = Performing Dance, C = Composing Dance, DN = Dance Notation

The topic of Clarify is made up of (C) Procedural methods of inquiry, and developing criteria for using skills, techniques, and methods and (2) Comprehension, or re-expressing or constructing meaning from instructional messages, including oral, written and graphic communication. Hence, in reference to Performing during the sample lesson on Rotation, Pathway, and Level, students will be able to Clarify and cognitively identify, determine, and organize pattern or constructs. In terms of composing, students will be able to Clarify and have a

formula to create movement ideas. In reference to dance notation, student will be able to Clarify a plan and focus attention on key dance movement concepts in order to read, write, and dance using dance notation.

Dance educators who want to explore dance notation in their teaching might consider how basic vocabulary of dance elements, steps/movements, and composition tools can be represented, revealed, and supported by the basic notation symbols. These approaches using notation were explored by Hutchinson Guest in her work with Language of Dance as early as the 1950s, which gradually evolved into a complex and secure approach to dance literacy detailed in her book, *Your Move* (1983).

Table 3. *Cross-referencing Application from Bloom's Cognitive Domain with Factual and Procedural knowledge from the Knowledge Dimension, resulting in Respond and Carry Out, in relation to performing dance, composing dance, and using dance notation*

	Bloom's Cognitive Processes Domain
	3. Application Carry out, use a procedure, solve a problem with a solution that is already known
A. Factual The basic elements students must know to be acquainted with a discipline or solve problems in the discipline or solve problems in the discipline	**3A. Respond** to frequently requested . . . P: skills and physical tasks C: aesthetic requirements or tasks **DN: requirements with reading, writing, or dancing using dance notation**
C. Procedural How to do something, methods of inquiry, and criteria for using skills, techniques, and methods	**3C. Carry out . . .** P: and implement the procedural patterns or constructs in movement C: and implement layers of concepts to achieve a unified whole **DN: and implement concepts during reading/writing/ dancing to explore meaning using dance notation**

P = Performing Dance, C = Composing Dance, DN = Dance Notation

In Table 3, the Cognitive Processes Domain of Application is cross-referenced with Knowledge Dimensions of Factual problem solving and Procedural methods of inquiry resulting in Respond and Carry out. Respond is made up of (A) knowing Factual information and (3) Applying a procedure to solve a problem. Carry out is made up of (3) using a known procedure to solve a problem with (C) Procedural methods for doing so. Hence, at the end of the Turning, Pathway, and Level lesson, in relation to Performing, students will be able to Respond to frequently requested skills and physical tasks and Carry out and implement procedural constructs in movement.

In relation to Composing, students will be able to Respond to aesthetic requirements or tasks and Carry out and implement layers of concepts to achieve a unified whole. In relation to Dance Notation, students will be able to Respond to frequently requested requirements with reading, writing, and dancing using notation and Carry out and implement concepts during reading/writing/dancing to explore meaning using dance notation.

Blocks 3A and 3C are about Applying Facts and Procedures for learning through dancing, dance making, and using dance notation. Dance educators who use dance notation in their teaching might consider approaches in their lesson plans to encourage students to respond to frequently requested requirements with reading, writing, or dancing with dance notation, as well as ways to engage students with carrying out meaning making while implementing reading, writing, and dancing using dance notation.

Table 4. *Cross-referencing Synthesis from Bloom's Cognitive Domain with Conceptual knowledge from the Knowledge Dimension, resulting in Assemble, in relation to performing dance, composing dance, and using dance notation*

		Bloom's Cognitive Processes Domain
		4. Synthesis Solve a problem with combined solutions that are not already known
Knowledge Dimensions	**B. Conceptual** The interrelationships among the basic elements within a larger structure that enable them to function together	**4B. Assemble** and/or . . . P: pull apart experienced steps and performance ideas and string them together in other situations C: by putting movement motifs and phrases together based on knowledge or exploration **DN: organize familiar dance notation symbols into coherent patterns and structures on paper and in dance movement based on prior knowledge**

P = Performing Dance, C = Composing Dance, DN = Dance Notation

In Table 4, the Cognitive Processes Domain of Synthesis is cross-referenced with the Knowledge Dimension of Conceptual, resulting in Assemble. Assemble is made up of both (6) Synthesis, or solve a problem with combined solutions that are not already known and (D) Conceptual, using interrelationships among the basic elements within a larger structure that enable each to function together. Hence, at the end of the lesson on Rotation, Pathway, and Level, in reference to Performing, students will be able to Assemble and/or pull apart experienced steps and performance ideas and string them together in other situations.

In terms of Creating, students will be able to put movement motifs and phrases together based on knowledge or exploration. In terms of notation, students will be able to Assemble and organize familiar dance notation symbols into coherent patterns and structures on paper and in dance movement based on prior knowledge. Dance educators who want to explore dance notation in their teaching might consider how dance notation can help students to synthesize concepts by exploring how concepts function in relationship while solving problems in ways they have never done before.

Table 5. *Cross-referencing Analyze and Evaluate from Bloom's Cognitive Domain with all categories from the Knowledge Dimension, resulting in Integrate and Determine, in relation to performing dance, composing dance, and using dance notation*

Bloom's Cognitive Processes Domain		
	5. Analyze Break material into constituent parts and determine how parts relate to one another and to an overall structure or purpose	**6. Evaluate** Make judgments based on criteria and standards
Knowledge Dimensions A, B, C, D	Integrate . . . P: with awareness of parts of movement and put into action with a procedure C: movement and compositional devices and implement using a procedure **DN: concepts using dance notation in a systematic fashion**	**Determine** relevance of results . . . P: based on standards and ways they were demonstrated in movement C: based on aesthetic criteria and goals based on assignment **DN: based on how the dance notated elements function as a whole and in relation to the salient parts**

P = Performing Dance, C = Composing Dance, DN = Dance Notation

In Table 5, the Cognitive Processes Domains of Analyze and Evaluate can be cross-referenced with any and all of the Knowledge Dimensions. In this lesson on Rotation, Pathway, and Level, Analyze is related to Integration of movements put into action using a Procedure to create performance and with systematic use of

motif notation procedures as compositional devices to create a dance. Evaluate is related to Determining relevance of results based on standards using aesthetic criteria and assigned goals and assessed based on how well they were demonstrated in final dance performances and notation scores.

Dance educators who want to explore dance notation in their teaching might consider how dance notation can help to clarify students' analytical and evaluative skills with reading, writing, and performing using dance notation as a tool.

The combined taxonomy of Cognitive Processes Domain and the Knowledge Dimension can help educators frame the learning outcomes that are possible in dance notation lesson plans. These four examples from an actual lesson plan, which were extracted from the Cognitive Processes and Knowledge Dimension taxonomy chart, show a range of learning outcomes, and, hence, how one might use the taxonomy to better understand how dance notation supports learning in dance education and how dance notation can be used to develop curriculum, lesson plans, and assessment tools in any dance performance or dance composition teaching and learning environment. This taxonomy might also be used to find missing links in a curriculum where one might wish to utilize dance notation in teaching and learning activities to help fill a cognitive cohesion gap in the curriculum.

Exploring use of Dance Notation in the Affective Learning Domain with Conative Factors

The Affective Learning Domain represents a continuum of increasing complexity in affective learning representing the ways in which humans emotionally interpret perceptions, information, and knowledge, resulting in valuing, appreciating, and respecting. This domain represents human knowing that is related to the limbic system (Luria 1973, Cytowic 1996). It begins with how one emotionally receives phenomena and culminates with how one internalizes values. I have coordinated this Affective Learning Domain taxonomy with Conative Factors, a related, but very different, aspect of learning related to the "why" of learning.

The Conative Factors are related to emotions, but they are specifically about student motivations, which are linked to how the teacher teaches and the type of curriculum provided. This factor is much more about the skillful creation and implementation of a curriculum to ensure that students become and remain engaged. Educational psychologists Huitt and Cain (2005) describe conative factors as "the mental process that activates and/or directs behavior and action [, . . .] goal-orientation, self-direction, [energizing, persisting,] and self-regulation. Conation refers to the connection of knowledge and affect to behavior and is associated with the issue of "why." Huitt and Cain state that it is about "the personal, intentional, planful, deliberate, goal-oriented, or striving component of motivation, the

proactive" (1). Psychologist and science journalist Goleman (1995) includes both affective (e.g., empathy, optimism, managing emotions) and conative (e.g., goal setting, self-regulating) components in his description of emotional intelligence. Gollwitzer (1990) and Snow and Swanson (1992) also include volition as part of emotional intelligence.

Together, the Affective Domain captures the increasing complexity of emotional learning and is integrated with the Conative Factors, thus entwining these complex factors to help create a learning environment that supports affective and conative development of dance notation-based dance literacy. My main goal for combining these two taxonomies is to bring attention to the important factor for dance educators of providing education in dance using notation activities in ways that support the affective and conative experiences of dancers, who are less commonly exposed to dance notation in the dance classroom or studio.

The Affective Domain (Anderson & Krathwohl et al. 2001) includes five categories, which are organized from simple to complex (see Table 5), starting with Receiving, and extending through Responding, Valuing, Organizing, and Characterizing. The Conative Factors are not organized from simple to complex. Instead, the categories are Teachers, Students, Tasks, and Text/Dance Notation. Each block within the matrix provides examples of how to engage with, for example, the Text/Dance Notation and focusing student Valuing. While the Cognitive-Knowledge matrix was rich with learning outcomes for students, this Affective-Conative matrix is a support tool for teachers to better track their teaching-learning approaches to support student engagement. Many psychologists have framed versions of the Conative Factors taxonomy (e.g., Atman, 1987; Huitt, 1988; Keirsey, 1998; Myers, 1980). I chose to use the Affective-Conative taxonomy by Fleener, Hager, Morgan, and Childress (2000) because their model is intentionally focused toward literacy with reading and writing, and this model seems to be a good fit for the processes required to support reading, writing, and dancing using dance notation.

Using the Affective and Conative Factors taxonomies to develop curriculum and focus teaching and learning. The Conative Factors taxonomy holds import for teachers who educate with dance notation because it can help ensure that they provide activities to which students will become curious, engaged, and achievement-oriented, so they can find and maintain motivation and self-engagement with the learning. This need exists in all types of teaching in all subjects; however, dance notation can, at first, be perceived as foreign to students' perceived needs in a dance-learning environment. This problem exists for several reasons, one being that many students likely have learned dance without dance

notation and may find it unrelated to their experiences, and, as a result, their goals in dance, thus making dance notation an anomaly and outside their value system.

Five characteristics make up the Affective Learning Domain, and each requires that the student has openness to new information and experiences. Responding requires active participation in interaction with or response to new information or experiences. Valuing requires attaching value or worth to new information or experiences. Organizing requires incorporating new information or new experiences into one's existing value system. Characterizing involves full integration/internalization resulting in new and consistent attitudes, beliefs, and/or behaviors. Each of these represented in the Fleener, Hager, Morgan, and Childress (2000) taxonomy are augmented with examples based on (A) aspects of student engagement that allow this growth to happen, (B) ways the teacher can provide an environment that best supports the Affective Learning, (C) requirements for the learning tasks so that students will be engaged and experience Affective Learning, and finally (D) ways of exploring Dance Notation/Text to aim toward student engagement. Because the chart is rather dense, I will explore only column (5) Characterizing, as that column represents the full integration of dance notation-based dance literacy in the lives of students. The process toward achieving full integration is detailed in columns 1–4. Here, I will summarize the starting point of engaging dancers with dance notation, and then I will provide a detailed description of successful integration of dance notation in dancers' lives. See Table 5.

Category of (D1) Notation/Text and Receiving represents the starting point for student engagement with dance notation. For students to have openness to new information and experiences when experiencing new information and experiences, students must perceive the level of difficulty of dance notation as attainable in order to generate openness, the aesthetics of dance notation to be organized and inviting, and the dance notation materials of high quality (Fleener et al. 2000). Similar experiences are recommended for each subsequent level of Responding, Valuing, Organizing, and Characterizing, or what is known as full integration.

The quality of prior knowledge that the student has about dance notation can affect the integration of new behaviors. The student's readiness to perform can affect task-intrinsic motivation, and student's insight and reflective awareness come with cooperative interchange. Student's perception of self as notation-user can be successful when students are generators of information as they integrate new and consistent attitudes, beliefs, and behaviors. Persistence and internal locus of control help students to have the will to succeed with dance notation (Fleener et al. 2000).

Fleener et al. (2000) suggest that positive attitudes, beliefs, and behaviors are more likely attainable when using a new teaching and learning tool such as dance notation, when the teacher can focus time on task and find ways to guide students to fully integrate notation into their application. If the teacher can model

the value of thought processes to support full integration of the use of dance notation in lessons with performing and making dance, new and consistent attitudes, beliefs, and behaviors about the use of dance notation can result.

Fleener et al. (2000) also suggest that full integration of dance notation in a dancer's life is possible if the teacher fosters curiosity to support it, and engages persistence and the will to succeed. The authors say this is possible if the tasks and activities using notation are interesting, age appropriate, hold cohesive context, provide a challenge, and yet appear to be attainable.

Table 6. *Affective Learning Domain and Conative Factors Taxonomy: Dance and Dance Notation Learning Outcomes.*

		Affective Domain				
		1. Receiving	**2. Responding**	**3. Valuing**	**4. Organizing**	**5. Characterizing**
		Openness to new information and experiences.	**Active participation in interaction with or response to new information or experiences.**	**Attaching value or worth to new information or experiences.**	**Incorporating new information or new experiences into existing value system.**	**Full integration/internalization resulting in new and consistent attitudes, beliefs, and/or behaviors.**
Conative Factors	**A. Student**	• Quality of prior knowledge the **student** has about dance notation affects openness to **receiving** new info and experiences. • The **student's** openness to perform when **receiving** new information and experience supports task-intrinsic motivation. • Reflective awareness and insight comes with cooperative interchange when **student receives** new info and experiences. • Perception of self as a **student** improves when students are open-minded generators of information when they **receive** new learning experiences. • To have a will to succeed, **students** must have persistence and internal locus of control when **receiving** new info and experiences.	• Quality of prior knowledge the **student** has about dance notation affects active participation in interaction with or **responding** to new info and experiences. • The **student's** readiness to perform when **responding** new information or experiences affects task-intrinsic readiness. • Insight and reflective awareness comes with cooperative interchange when **students respond** to new info and experiences. • Perception of self as a dancer works well when **students** are generators of information and **responders** to new info and experiences. • To have a will to succeed, persistence and internal locus of control must be present when **responding** to new info and experiences for **students**.	• Quality of prior knowledge the **student** has about dance notation affects **valuing** new info and experiences. • The **student's** readiness to perform when **valuing** new information or experiences affects task-intrinsic motivation • Insight and reflective awareness comes with cooperative interchange when **students value** new info and experiences. • Perception of self as a dancer works well when **students** are generators of information as they **value** new info and experiences. • To have a will to succeed, persistence and internal locus of control must be present when **students value** new info and experiences.	• Quality of prior knowledge the **student** has about dance notation affects **organizing** new info and experiences. • The **student's** readiness to perform when **organizing** new information experiences affects task-intrinsic motivation. • Insight and reflective awareness comes with cooperative interchange when **organizing** new info**rmation** and experiences • Perception of self as a dancer works well when **students** are generators of information as they **organize** new info**rmation** and experiences • To have the will to succeed, persistence and internal locus of control must be present when **students organize** new info**rmation** and experiences	• Quality of prior knowledge the **student** has about dance notation affects **characterizing** and integrating new/consistent attitudes, beliefs, and/or behaviors • The **student's** readiness to perform when **characterizing** and integrating new/consistent attitudes, beliefs, and/or behaviors affects task-intrinsic motivation. • Insight and reflective awareness comes with cooperative interchange when **students characterize** and integrate new/consistent attitudes, beliefs, and/or behaviors. • Perception of self as a dancer works well when **students** are generators of information as they **characterize** and integrate new/consistent attitudes, beliefs, and/or behaviors. • To have the will to succeed, persistence and internal locus of control must be present when **students characterize** and integrate new/consistent attitudes, beliefs, and/or behaviors.

Table 6. *(Cont.)*

B. Teacher	• Quality of time on task is required as a **teacher** guides students to support openness when **receiving** new info and experiences. • **Teacher** must model the value of thought processes to support openness when **receiving** new info and experiences. • **Teacher** must foster curiosity to support openness when **receiving** new info and experiences.	• Quality of time on task is required as a **teacher** guides students to support quality interaction and participation when **responding** to new info and experiences. • **Teacher** must model the value of thought processes to support active participation when **responding** to new info and experiences. • **Teacher** must foster curiosity to support active participation when **responding** to new info and experiences.	• Quality of time on task is required as a **teacher** guides students to attach **value** or worth when exposed to new info and experiences. • **Teacher** must model the worth of thought processes that support the attachment of **value** to new info**rmation** and experiences. • **Teacher** must foster curiosity to support the attachment of **value** to new info**rmation** and experiences.	• Quality of time on task is required as a **teacher** guides students to **organize** and incorporate new information and experiences into existing value system. • **Teacher** must model the value of thought processes to support the **organization** and incorporation of new info and experiences into existing value systems. • **Teacher** must foster curiosity to support **organization** and incorporation of new info and experiences into existing value systems.	• Quality of time on task is required as a **teacher** guides students to **characterize** by full integration/internalization resulting in new attitudes, beliefs, and behaviors. • **Teacher** must model the value of thought processes to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors. • **Teacher** must foster curiosity to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors.

Table 6. *(Cont.)*

C. Task				
• **Task** must be Interesting in order to generate openness, when **receiving** new information and experiences. • **Task** should be age and ability appropriate in order to generate openness, when **receiving** new info and experiences. • **Task** must hold cohesive context in order to generate openness when **receiving** new info and experiences. • The perception of difficulty on **task** must be perceived to be attainable to generate openness when **receiving** new info and experiences. • **Task** must engage desire, persistence, and will to succeed to generate openness when **receiving** new info and experiences.	• **Task** must be Interesting in order to generate active participation, when **responding** to new information and experiences. • **Task** should be age and ability appropriate in order to generate active participation, when **responding** to new info and experiences. • **Task** must hold cohesive context in order to generate active participation when **responding** to new info and experiences. • The perception of difficulty on **task** must be perceived to be attainable to generate active participation when **responding** to new info and experiences. • **Task** must engage desire, persistence, and will to succeed to generate active participation when **responding** new info and experiences.	• **Task** must be Interesting in order to attach worth when **valuing** to new information and experiences. • **Task** should be age and ability appropriate in order to attach worth when **valuing** new information and experiences. • **Task** must hold cohesive context in order to attach worth when **valuing** new information and experiences. • The perception of difficulty on **task** must be perceived to be attainable in order to attach worth when **valuing** new information and experiences. • **Task** must engage desire, persistence, and will to succeed in order to attach worth when **valuing** new information and experiences.	• **Task** must be Interesting in order to **organize** new information and experiences into the existing value system. • **Task** should be age and ability appropriate in order to **organize** new information and experiences into the existing value system. • **Task** must hold cohesive context in order to **organize** new information and experiences into the existing value system. • The perception of difficulty on **task** must be perceived to be attainable in order to **organize** new information and experiences into the existing value system. • **Task** must engage desire, persistence, and will to succeed in order to **organize** new information and experiences into the existing value system.	• **Task** must be Interesting in order to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors. • **Task** should be age and ability appropriate in order to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors. • **Task** must hold cohesive context in order to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors. • The perception of difficulty on **task** must be perceived to be attainable in order to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors. • **Task** must engage desire, persistence, and will to succeed in order to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors.

Table 6. *(Cont.)*

D. Dance Notation				
• Students must perceive the level of difficulty of **notation** as attainable in order to generate openness when **receiving** new information and experiences. • Aesthetics of **dance/notation** must be organized and inviting to users in order to generate openness when **receiving** new information and experiences. • High quality of **dance/notation** materials is necessary for students to generate openness when **receiving** new information and experiences.	• Students must perceive the level of difficulty of **notation** as attainable in order to generate active participation when **responding** to new information and experiences. • Aesthetics of **dance/notation** must be organized and inviting to users in order to generate active participation when **responding** to new information and experiences. • High quality of **dance/notation** materials is necessary for students to generate active participation when **responding** to new information and experiences.	• Students must perceive the level of difficulty of **dance notation** as attainable in order to attach worth when **valuing** new information and experiences. • Aesthetics of **dance/notation** must be organized and inviting to users in order to attach worth when **valuing** new information and experiences. • High quality of **dance notation** materials is necessary for students to attach worth when **valuing** new information and experiences.	• Students must perceive the level of difficulty of **dance notation** as attainable in order to **organize** new information and experiences into the existing value system. • Aesthetics of **dance/notation** must be organized and inviting to users in order to **organize** new information and experiences into the existing value system. • High quality of **dance notation** materials is necessary for students to **organize** new information and experiences into the existing value system.	• Students must perceive the level of difficulty of **dance notation** as attainable in order to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors. • Aesthetics of **dance notation** must be organized and inviting to users in order to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors. • High quality of **dance notation** materials is necessary for students to support **characterization** and full integration resulting in new and consistent attitudes, beliefs, and behaviors.

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This Affective and Conative taxonomy places the success of engaged learning on four factors, the student, the teacher, the tasks, and the texts/dance notation. Huitt (2005) states that conation, although often overlooked as a significant factor in an individual's success, has a significant role in the development of one's educational process. Heckhausen and Dweck (1998) state that while specific perceptual, cognitive, affective, and volitional components of goal-oriented motivation have personal style and maturational influences, they can also be impacted via the social environment, hence the need to create an environment that supports curiosity and provides sufficient levels of challenge to drive student engagement.

Exploring Use of Dance Notation in the Psychomotor Learning Domain
To a large degree, dance training is focused on psychomotor learning, in which cognitive information is used to focus toward increased coordination, grace, strength, control, speed, and range in movement qualities. While many factors influence the potential for motor learning, it is widely understood that humans learn by copying others and by applying many types of images provided by movement educators (psychological, metaphorical, anatomical, spatial, and so forth) to affect performance outcomes. Bloom did not create a psychomotor taxonomy, but his colleagues and followers have created a variety of psychomotor taxonomies (Dave 1970, Harrow 1972, Simpson 1972). The taxonomy by Dave (1970), a student of Bloom, starts with the process of copying movement, practicing or manipulating it, becoming precise, more articulate, and finally automated. Harrow's taxonomy is decidedly valuable to dance educators because the highest level of motor learning, called Non-Discursive Communication, is when humans communicate and express by using movements and gestures. While each of these taxonomies is worthy of attention, I chose to explore Simpson's psychomotor taxonomy because it provides two pre-motor categories called Perception and Set, which give import to the initial stimulation of the idea about movement. These two categories provide a frame for the initial experience during which a dancer observes movement or dance notation. Perception and Set take only milliseconds to happen, and, depending on the level of literacy, it is my hunch that Perception and Set may take slightly longer when reading notation because they are essentially written in the reader/s second language. The amount of time that it takes to observe and copy another dancer compared to the amount of time it takes to read the movement from notation and then embody it has not been researched; however, research on children by Warburton (2000) and on adult dancers by Fügedi (2001) reveals improved accuracy of movement and improved understanding of various aspects of the dance when dance notation is used in learning.

In Simpson's Psychomotor taxonomy, there are seven categories. I have outlined these in relationship to how dance notation relates to motor learning (see

Table 6). The first category of Perception represents dancers' awareness of movement or use of sensory cues needed to guide physical activity. Using dance notation, to achieve Perception, dancers will notice, recognize, distinguish, feel, identify, attend, and sense movement and relationships notation has with movement possibility. The second category of Set represents dancers' readiness to act, when learners demonstrate an awareness or knowledge of the behaviors needed to carry out the skill that is sensed or noticed in the dance notation. Using dance notation, to achieve Set, dancers will focus, arrange, get set, compare/contrast, organize, trust, and engage with dance notation to prepare for movement coordination. The third category of Guided response represents the early attempts at learning a complex skill while using dance notation as the guiding impetus. Dancers will imitate, copy, follow, experiment, make connections, and try the movement while using dance notation as the impetus for dance movement. The fourth category of Mechanism represents the stage at which dancers experience a basic proficiency with performing a complex motor skill having used dance notation to process the movement. This is an intermediate stage of learning a complex skill, finding form, making shapes, and completing a phrase or phrases of dance movement. The fifth category of Complex overt response represents a level of expert proficiency with motor learning from dance notation, when dancers perform the complete motor skill correctly. Dancers coordinate use of dance notation to perform with physical proficiency, demonstrate accuracy in movement with clarity of understanding of concepts in movement, and recheck dance notation to assess subtleties in movement execution and qualities needed for accuracy. The sixth category of Adaptation represents dancers' adaptable proficiency, when dancers modify motor skills to adapt to new situations by adjusting to repeated concepts and variations in dance notation, thus meeting challenges and solving complex movement concepts. At this stage, dancers can read more complex dance notation scores and translate into dance (due to combined cognitive and psychomotor recognition of movement motifs or themes in a given score), write dance notation and translate to movement, and adjust performance qualities in the scope of themes and variations in the score. The seventh category of Organization represents dancers' creative proficiency, when they are able to develop an original or modified physical skill that replaces the skill as initially learned. For example, dancers design, formulate, modify, re-design, and trouble-shoot with movement and dance notation to deepen understanding of concepts and possibilities that satisfy what is written in the dance notation score.

While the cognitive work with dance notation is important to address, the psychomotor taxonomy brings attention to the levels of physical learning that dance notation could incite. Qualitative research by Heiland revealed that notation engages dancers differently, related, hypothetically, to preferred learning styles (Heiland 2015). Fügedi (2001), Gingrasso (2011), and Warburton (2000) have

researched the use of notation to support dance technique. These examples are not comprehensive of the breadth and depth of what occurs in the artistic practice of dance or with dance notation, but rather are selected examples that illustrate ways that dance notation can foster depth of knowledge and additional creative strategies for Performing and Creating. Much of the way that dancers observe their teachers and subsequently use their senses to find ways to imitate, dance notation may well serve as a tool to present concepts that require dancers to bring their senses to find ways to produce with physical intention. Research mapping areas of the brain with an electroencephalogram while dancers learn using dance notation—much the way musicians were studied while learning with music notation (Roy et al. 2013; Stewart et al. 2004; Stewart et al, Turner, R., & Frith, U. 2003)—could reveal which parts of the brain fire when dance notation is used, thus lending deeper understanding about how dance notation relates to psychomotor learning.

Table 7. *Psychomotor Domain Taxonomy: Dance and Dance Notation Learning Outcomes.*

		Psychomotor Domain		
Level	Category and Description	Example of activity and evidence to be measured	Key words or verbs that describe the physical activity to be trained or measured	Key words or verbs depicting physical activity to be trained or measured when using dance notation
1	**Perception:** awareness or use of sensory cues to guide physical activity	Sensory cues guide motor activity	Recognize, distinguish, notice, touch, hear, feel, etc. relating to the movement	Notice, recognize, distinguish, feel, identify, attend, sense, etc. to dance notation and its relationships with movement possibility
2	**Set:** readiness to act requires the learner to demonstrate an awareness or knowledge of the behaviors needed to carry out the skill	Mental, physical, or emotional preparation before experience or task	Arrange, prepare, get set to move	Focus, arrange, get set, compare/contrast, organize, trust, engage with dance notation to prepare for movement coordination
3	**Guided response:** The early attempts at learning a complex skill	First attempts at a physical skill, Imitate or follow instruction, trial and error, practice	Imitate, copy, follow, try the movement	Imitate, copy, follow, experiment, make connections, and try the movement using dance notation as the impetus for dance movement
4	**Mechanism:** basic proficiency with performing a complex motor skill. The intermediate stage of learning a complex skill	Intermediate stage in learning a physical skill, responses are habitual with a medium level of assurance and proficiency.	Make, perform, shape, complete the movement	Form, make, shape, complete a phrase or phrases of dance movement from having explored dance notation
5	**Complex overt response:** expert proficiency—perform the complete psychomotor skill correctly	Complex movements are possible with a minimum of wasted effort, assurance of being successful	Carry out, coordinate, fix, demonstrate the movement	Coordinate use of dance notation to perform with physical proficiency, demonstrate accuracy in movement with clarity of understanding of concepts in movement, recheck the notation score to assess subtleties in movement execution and qualities needed for accuracy
6	**Adaptation:** adaptable proficiency, can modify motor skills to adapt to a new situation	Movements can be modified to for special situations, alter response to reliably meet varying challenges	Adjust, integrate, solve	Adapt and adjust to repeated concepts and variations in concepts in dance notation meeting challenges and solving complex movement concepts, read more complex dance notation scores and translate to dance, write dance notation symbols and translate to movement, adjust performance qualities in scope of themes and variations in the dance notation score
7	**Origination:** creative proficiency, able to develop an original skill that replaces the skill as initially learned	Develop and execute new integrated responses and activities for special situations	Design, formulate, modify, re-design, trouble-shoot	Design, formulate, modify, re-design, trouble-shoot with movement and dance notation to deepen understanding of concepts and possibilities that satisfy what is written in a dance notation score

Discussion

The three dance notation-based dance learning taxonomies shared in this article may be useful for dance educators who would like to better understand the potential

learning outcomes that can be gained when using dance notation. The taxonomies provide multi-dimensional learning outcomes inherent in the use of dance notation in educational settings. The Cognitive challenges provided by notation are quite diverse and, when appropriate, are detailed in a scaffolded format. The taxonomy of Affective Learning Domain and Conative Factors may be useful for teachers to understand how the environment, materials, and activities can best be prepared to raise the level of engagement among students. For example, students may need to be prepared for the new affective experiences that dance notation will present and that some aspects of motor learning with dance notation will speed up and some will slow down. Just knowing the learning will change may help students to trust that the learning still holds value to their growth as dancers. The Psychomotor taxonomy discussed here provides motor learning outcomes showing how the physical skills improve, as the reading skills become more challenging.

Conclusion

Dance Notation is about embodiment. Embodiment, according to Braidotti, is also not simply biological or sociological, but rather a point between the physical, symbolic, and sociological (1994, 4). These taxonomies, which are based on years of careful analysis among educators and theorists found outside the discipline of dance, bridge the cognitive, affective, conative, psychomotor taxonomies, and knowledge dimension with the symbol systems of dance notation and, hence, situate dance notation within learning taxonomies to assist teachers who use notation to focus curriculum planning, teaching, and assessment. These taxonomies serve to make transparent the myriad of possibilities for learning outcomes through dance notation as applied in varied settings and teaching approaches, and they highlight how dance notation as a teaching and learning tool might be utilized more diversely or more strategically. These classifications within these established taxonomies may also engender discourse about learning in dance with non-dance communities and within the dance community itself.

References

Anderson, L. W. and Krathwohl, D., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., . . . Wittrock, M. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Anderson, L. W. & Krathwohl (Eds.). New York: Longman.

Atman, K. (1987). The role of conation (striving) in the distance education enterprise. *The American Journal of Distance Education*, *1*(1), 14–24.

Barbour, Karen Nicole. *Dancing Across the Page: Narrative and Embodied Ways of Knowing*. Chicago: Intellect.

Baumeister, R., Bratslavsky, E., Muraven, M., & Tice, D. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, *74*(5), 1252–1265.

Bloom, B. S., Englehart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. New York: Longmans.

Bloom, B. S. (1956). *Taxonomy of Educational Objectives*. Boston: Allyn and Bacon.

Braidotti, R. (1994). *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*. New York: Columbia University Press.

Bucek, L. (2004). Motif notation and dance making: Educational partners in an urban middle school. *Journal of Dance Education*, *4*(2), 62–65.

Cohen, L., Dehaene, S., Naccache, L., Lehéricy, S., Dehaene-Lambertz, G., Hénaff, M.A., Michel, F. (2000). The visual word form area: Spatial and temporal characterization of an initial stage of reading in normal subjects and posterior split-brain patients, *Brain: A Journal of Neurology.* 123, 291–307

Cope, B., & Kalantzis, M. (Eds.). (2000). *Multiliteracies: Literacy learning and the design of social futures*. Routledge: London

Costa, A. L. (2001). *Developing minds: A Resource book for teaching thinking*. (3rd ed.). Alexandria, VA: Association for Supervision & Curriculum.

Curran, T. (2011). Perspectives on Literacy and Dance Literacy, in *Focus on Dance Education Collaborations: Different Identities, Mutual Paths*, Elkins, L. (Ed.). Proceedings of National Dance Education Association 2011.

Cytowic, R. E. (1996). *Neurological side of neuropsychology*. Cambridge: MIT Press.

92nd Street Young Men's and Young Women's Hebrew Association. (2014). Retrieved from http://danceeducationlaboratory.com/about/92y.

Dahaene, Stanislas. (2009). *Reading in the brain: The new science of how we read*. New York: Penguin.

Dave, R. H. (1970). Psychomotor levels. In R. J. Armstrong, (Ed.), *Developing and Writing Behavioral Objectives* (20–21). Tucson, Arizona: Educational Innovators Press.

Dubac, B. (2002). *The Brain from top to bottom*. Retrieved from http://thebrain.mcgill.ca/flash/pop/pop_cred/pop_cred_d.html.

Emmons, R. (1986). Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology*, *51*(5), 1058–1068.

Fink, D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco: Jossey-Bass.

Fleener, C., Hager, J., Morgan, R. F., & Childress, M. (2000). The integration of conation, cognition, affect, and social environment in literacy development, in *Literacy at the New Horizon: 22nd Yearbook of the College Reading Association*, P. Linder, W. M. Linek, E. G. Sturtevant, & J. Dugan (Eds.). Proceedings of the 2000 College Reading Association Conference.

Fügedi, J. (2001). Dance notation as a cognitive aid: Experimental Labanotation research for dance education. Proceedings of the International Council of Kinetography Laban 2001.

Gingrasso, S. (2011). Functional literacy applied to dance literacy. In *Forging Mutual Paths: Defining Dance Literacy in the 21st Century*. Proceedings of the National Dance Education Organization 2011.

Goleman, D. (1995). *Emotional Intelligence: Why It Can Matter More Than IQ*. New York: Bantam Books.

Goodman, N. (1978). *Ways of worldmaking*. Indianapolis, IN: Hackett.

Gray, W. S. (1961). The teaching of reading and writing. Glenview, IL: Scott/Foresman.

Harrow, A. (1972). *A taxonomy of the psychomotor domain: A guide for developing behavioral objectives.* New York: David McKay.

Heckhausen, J., & Dweck, C. (Eds.). (1998). *Motivation and self-regulation across the life span*. New York: Cambridge University Press.

Heiland, T. (2009). Constructionist dance literacy: Unleashing the potential of motif notation. In L. Overby and B. Lepczyk (Eds.), *Dance: Current Selected Research* (Vol. 7). 27–58. Brooklyn, NY: AMS Press.

Heiland, T. (February 11, 2015). "Pedagogy of Notation: Learning Styles Using a Constructivist, Second-Language Acquisition Approach to Dance Notation Pedagogy." *Journal of Dance Education*. 15 (1) 12-24.

Huitt, W. (1988). Personality differences between Navajo and non-Indian college students: Implications for instruction. *Equity & Excellence*, *24*(1), 71–74.

Huitt, W. (2007). Success in the Conceptual Age: Another paradigm shift. Paper delivered at the 32nd Annual Meeting of the Georgia Educational Research Association, Savannah, GA, October 26. Retrieved March 27, 2016, from http://www.edpsycinteractive.org/papers/conceptual-age.pdf.

Huitt, W. G., & Cain, S. C. (2005). An overview of the conative domain. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University. Retrieved March 27, 2016 from http:/www.edpsycinteractive.org/brilstar/chapters/conative.pdf

Hutchinson Guest, A. (1983). *Your move: A new approach to the study of movement and dance*. London: Routledge.

Kaan, E., & Swaab, T. Y. (2002). The brain circuitry of syntactic comprehension, *Trends in Cognitive Science.* Volume 6, Issue 8, p350–356, 1 August 2002.

Kagan, S. *Rethinking Thinking: Does Bloom's Taxonomy Align with Brain Science?* San Clemente, CA: Kagan Publishing. Fall 2005. Retrieved from http://www.kaganonline.com/free_articles/dr_spencer_kagan/289/Rethinking-Thinking-Does-Bloom-s-Taxonomy-Align-with-Brain-Science.

Keirsey, D. (1998). *Please understand me II: Temperament, character, intelligence*. Del Mar, CA: Prometheus Nemesis Books.

Krathwohl, D., Bloom, B., & Masia, B. (1964). *Taxonomy of educational objectives: The classification of educational goals. Handbook II: The affective domain*. New York: David McKay.

Lakoff, G. (1990). *Women, fire, and dangerous things: What categories reveal about the mind*. Chicago: University of Chicago Press.

LODC USA. (n.d.). Retrieved from http://www.lodcusa.org/index.php?option=com_content&view=article&id=47&Itemid=98.

Riggs Leyva, R. (2015). Dance literacy in the studio: Partnering movement texts and residual texts (Doctoral dissertation). Retrieved from https://etd.ohiolink.edu/!etd.send_file?accession=osu1420672347&disposition=inline.

Luria, A. R. (1973*). The working brain: An introduction to neuropsychology*. New York: Basic Books.

Merleau-Ponty, M. (1965). *Phenomenology of perception*, (C. Smith, Trans.) London: Routledge and Kegan Paul. (Original work published 1945)

Myers, I. (1980). *Gifts differing*. Palo Alto, CA: Consulting Psychologists Press.

National Coalition for Core Arts Standards. (2014). A Conceptual Framework for Arts Learning. Last modified February 18, 2014. http://nccas.wikispaces.com.

National Council of Teachers of English. (2008/2013). NCTE Definition of 21st Century Literacies. Urbana, IL http://www.ncte.org/positions/statements/21stcentdefinition.

Preston-Dunlop, V. (1966). Readers in Kinetography Laban, Series A [Labanotation], Book 1: Stepping. London: MacDonald & Evans.

Preston-Dunlop, V. (1966). Readers in Kinetography Laban, Series A [Labanotation], Book 2: Turning. London: MacDonald & Evans.

Preston-Dunlop, V. (1966). Readers in Kinetography Laban, Series A [Labanotation], Book 3: Jumping. London: MacDonald & Evans.

Preston-Dunlop, V. (1967). Readers in Kinetography Laban, Series B [Motif Notation], Book 1: Introducing the symbols. London: MacDonald & Evans.

Preston-Dunlop, V. (1967). Readers in Kinetography Laban, Series B [Motif Notation], Book 2: More about the symbols. London: MacDonald & Evans.

Preston-Dunlop, V. (1967). Readers in Kinetography Laban, Series B [Motif Notation], Book 3: Moving with a partner. London: MacDonald & Evans.

Preston-Dunlop, V. (1967). Readers in Kinetography Laban, Series B [Motif Notation], Book 4: Effort graphs. London: MacDonald & Evans.

Pulvermüller, F. (2005). Brain mechanisms linking language and action, *Nature Reviews Neuroscience*, 6, 576–582, Published online 15 June 2005.

Roy, J., Landry, S., Levesque, J., & Champoux, F. (2013). Musical training shapes brain anatomy and affects function. An unpublished study presented at Fred Kavli Public Symposium on Creativity. Society for Neuroscience, San Diego 2013. Retrieved March 27, 2016 from https://www.sfn.org/~/media/SfN/Documents/Press%20Releases/2013/Neuroscience%202013/Music.ashx.

Simpson, E. J. (1972). *The classification of educational objectives in the psychomotor domain: The psychomotor domain* (Vol. 3). Washington, DC: Gryphon House.

Snow, R., & Swanson, J. (1992). Instructional psychology: Aptitude, adaptation, and assessment. *Annual Review of Psychology, 43*, 583–626.

Stewart, L., Walsh, V., & Frith, U., (2004). Reading music modifies spatial mapping in pianists. *Perception & Psychophysics*, *66*(2), 183–95.

Stewart, L, Henson, R., Kampe, K., Walsh, V., Turner, R., & Frith, U. (2003). Brain changes after learning to read and play music. *Neuroimage, 20*(1), 71–83, M.

Topaz, M., (1975). *A Radial Approach to the Teaching of Labanotation*. SPEC_TRI_DNB_TM_42_1, The Dance Notation Bureau, The Jerome Lawrence and Robert E. Lee Theatre Research Institute, The Ohio State University, December, 12–13.

United Nations Educational, Scientific and Cultural Organization [UNESCO]. (2004). *Education for all: The Quality Imperative. EFA Global Report*. Paris: UNESCO. Retrieved March 27, 2016 from http://unesdoc.unesco.org/images/0013/001373/137333e.pdf.

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

Wagner, R. (n. d.). *Creativity or Synthesis: Bloom Revisited*. Retrieved from http://www.rogerwagner.com/hs/Creativity/Creativity_Revisited.html.

Warburton, E. (2000). The dance on paper: Effect of notation-use on learning and development in dance. *Research in Dance Education 1*(2), 193–213.

Wink, J. (2004). *Critical Pedagogy: Notes from the Real World* (3rd ed.). New York: Pearson.