Enhancing cognition through children's dance creation

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Abstract

This paper addresses the conference theme of teaching and learning dance, specifically the subheading of cognition studies. It is a report of the findings from three related phenomenographic studies on the role of cognition during dance creation conducted by the author, with children and teens engaged in small group choreographic projects. Each of the three studies looks closely at how group dances are made and seeks to describe the thinking strategies that the participants used in choreographing their dances. The close descriptions of the act of choreographing that result illuminate the cognitive processes involved in dance creation by children. Certain factors come forward in the research as playing a significant part in developing the cognitive side of children's dance-making. These have direct implications for dance pedagogy, particularly for dance educators who want to promote the cognitive benefits of dance. This paper focuses on those aspects of the study that show how the learning environment may be structured to enhance cognitive development. This includes a discussion of the pedagogical assignments, classroom management techniques, structure of the physical space, and student groupings, which come forward in these studies as nurturing intellectual development through dance. Some of these pedagogical recommendations include the use of open-ended choreographic assignments, ways to structure choreographic working time and settings, the articulation of student-generated aesthetic preferences, and peer critique.

Keywords: dance and cognition, choreographic process, children's dance, dance creation, group creative process

There are a myriad of benefits to dancing. If we each thought for a moment about why we dance and what we feel we gain from it, my guess is that we would come up with a variety of answers, including a sense of well-being, a physical challenge, an emotional release, and a chance to connect with others. If you ask children the same question, you will get the same answers in a different language that speaks to the fun, healing, community, and challenge that dance brings to each of us. What you seldom hear children or adults say is that it makes them smarter or that it develops their thinking skills. As dancers and dance educators, we know that this is the reality of the experience, but because it is not the most obvious or touted aspect of dance, it is often not understood for this benefit. In an increasingly product-oriented world in challenging economic times, where collaborative thinking and the ability to be creative within a group environment is critical to success, I believe that global support for children's dance would be strengthened from exposing the cognitive benefits that we receive from this activity.

With this sense of advocacy in mind, I have undertaken a series of investigations in understanding the cognitive mechanisms that are developed by children's engagement in the creative process. In other words, how does dance, specifically dance creation, affect

children's abilities to think and reason? I believe that the answers to this question lie at the heart of helping us to understand the ways in which dance can be used as a tool for enhancing education. What I have discovered along the way, however, is that not all dance experiences are equal in promoting cognitive engagement, and that in addition to advocacy, this kind of information can help to improve the dance education we are providing for our students. There is a specific focus in my research on the creative process in dance: dance-making of all kinds, rather than on the training process itself. While I do personally believe that quality dance technique classes are mentally stimulating, I focused my research on the creative act because it is creativity, not the method of training, that links dance with other art forms and other types of academic subject matter, such as writing or scientific research.

The primary research question under investigation was: What is the nature of children's thinking during the creative process in dance? Research sub questions included: Are there specific thinking strategies or cognitive processes that can be identified from the children's experiences? What are the implications of these connections, if any, for dance in education?

All of the research that I will be discussing is original; I have been conducting it with American public school and university students since 2005. It is certainly not exhaustive on the topic, and this presentation is made in the spirit of on-going findings rather than a review of the literature on this topic. My hope is that it will be useful in suggesting some concrete teaching strategies, and that it will stimulate questions for research in this area.

The studies under discussion were all conducted with a qualitative research methodology known as phenomenography. This method, explained below by one of its chief proponents Ference Marton, like its parent and the more well-known methodology phenomenology, is based on capturing a deep description of the participants' lived experience and then engaging in a recursive analysis of these texts for salient categories of meaning, which begin to describe the phenomenon being studied.

> The research seeks an understanding of the phenomenon, tries actively, as in deep approach to learning, to extract the underlying meaning of human actions. And meaning has to come from the individuals involved – their own perceptions of what they are doing and why they are doing it. (Marton, et al., 1984, p. 224)

In phenomenography, the researcher sets a task in a naturalistic setting, such as a choreographic assignment within the context of dance class. Phenomenography also concerns itself with looking at the range of responses and varied experiences among the participants. To capture multiple aspects from various participants of the phenomenon of cognition during the creative process in dance, I used the following data sources: videotapes of the choreographic sessions, interviews with the participants, daily journal entries, and brainstorming sheets. The data that I based my remarks on is a result of the assistance of 42 participants in 12 different dances in three different schools.

The project consisted of 10 sessions and an informal, concluding performance for the classmates. At the elementary schools with 10-12 year-old participants, the sessions were 30-45 minutes each. At the third, which involved college-age students who ranged in age from 17-20, the sessions were 60 minutes. Students in the three schools were asked to divide themselves into small groups and to select a theme or topic for their group's dance. The assignment was deliberately open ended – the only requirements were that everyone in the group be involved as a choreographer and a performer, and that the dance be based on an idea. No time limits or minimums were enacted. During the first session, the students were given large sheets of paper and markers to use for brainstorming while they were deciding on their dance ideas. These papers were brought back to each session so they could reference them or alter them if they chose. Seven of the nine remaining sessions were entirely open choreographic and work time for the students. In Session six, the students videotaped their works in progress and then watched them for self and peer critique. In Session 10, the students performed for each other as a dress rehearsal in preparation for the final peer performance. Students were videotaped in all 10 sessions and interviewed following the project, both as a choreographic group and as individuals.

The findings from these studies are a collection of categories of experience. These seven categories, with dozens of sub categories, describe the experience of creating within a group of dancers. Because the students were observed and interviewed creating dances, the study data reflects the entire choreographic process, not just the cognitive aspects of it. The second phase of analysis involved reexamining the findings for categories and sub categories that related to the phenomenon of cognition during the creative process in dance. I determined that four of the seven categories involved sub categories that could be defined as cognitive, under the standard established by noted educational psychologist Howard Gardner, who defines cognition as "thinking and learning that involves perception and conceptualization, especially that which involves symbolic knowledge and the use of notational systems" (Gardner, 1982, p. *x*).

From this perspective, four categories of *Making Movement, Organizing the Movement*, *Knowing It's Good*, and *The Group* describe the cognitive engagement of students creating dances. More specifically, 27 of their subcategories describe the cognitive behaviors that were observed during the process.

Group and Solo Strategies

| GROUP OR SOLO	SOLO	GROUP
• Play	▪ Spontaneous idea	▪Imitation
▪ Props	▪ Dozing off thinking	▪Dividing
▪ Text	▪ Concentration	▪Active Discussion
▪ Skills	▪ Viewing	▪Contributions from many individuals
▪ Altering Movement by facing and timing	▪ Difference between ideas and execution	▪Outside Opinion
▪ Imagery	▪ Previous Experience	
▪ Improvisation		
▪ Repetition		
▪ Attention to Structure		
▪ Responding to Stimuli		
▪ Dancers Abilities		
▪ Attention to Meaning		
▪ Revision		
▪ Comparison to a cultural ideal		
▪ Convey meaning		
▪ Imagery		

What seemed particularly interesting to me at this point in the research is that of these 27 cognitive subcategories, several required a group to execute. You can see the specific strategies divided by whether they are performed alone, with a group, or either way. What this implies is that for students to use the largest number of strategies, to be maximally engaged cognitively, a group is necessary. In other words, students are more stimulated cognitively by creating in a group rather than creating dance alone. The social nature of the creative process enhanced the cognitive capability of the activity.

Another observation that relates to the social aspects of the creative process are the findings from the "Group" category. Four distinct personalities emerged from the study data: *facilitator/organizer*, *critic*, *loner*, *compliant follower*. What is significant about this discovery in terms of social interactions and their effect on learning is that all four of these roles were necessary for the process to be productive. The idealized image of children working harmoniously in small groups would not be maximally productive from the examples in these studies. Much cognitively stimulating activity took place around the children's discussions of aesthetic preferences and the ability of movement to convey meaning. The role of *critic* was necessary to bring about this articulation in many instances. The presence of a "nay sayer" forced *facilitator/organizers,* and sometimes *compliant followers*, to defend and analyze their choices.

Another key social role – that of the *loner* – could have brought about a significant opportunity for teaching children about learning styles. A few children in each school setting preferred to improvise alone and then return to their small group with movement material to contribute. The most productive groups (in terms of student satisfaction with the outcome) tolerated this activity, giving the *loners* leeway to separate from the group. The least productive groups saw the *loner*'s desire to think, observe, or create privately as a defection from the group, and made repeated efforts to bring the "offender" back to the fold. Sometimes the students even used teacher-modeled language, such as "stay on task," to bring the students to the group. In most cases, this meant that the *loner*'s process
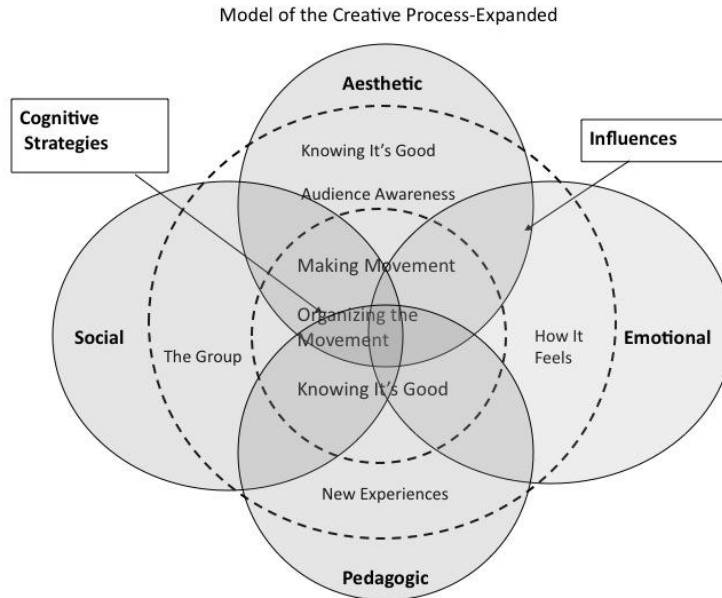
was aborted and their contribution to the group was lost. Because of the nature of the methodology in this study, my role as observer did not allow for intrusion into the process. A skilled teacher in this instance, however, would have had a clear, teachable moment to point out to the participating children the differences in individuals' thinking strategies and creative styles, thereby developing tolerance and perhaps some meta-cognitive awareness concerning working styles.

While it is not normally a function of phenomenographic research, I find clarity in graphic depictions, so I created the following model of the creative process in dance in these studies and its connection to cognition.

Model of the Creative Process in this Study
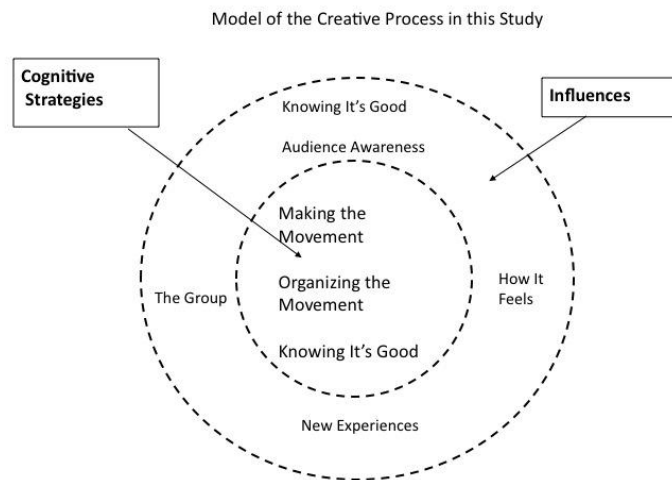
The center portion of the graphic holds the cognitive tasks of creating, organizing, and evaluating the movement, which were at the center of the creative process. These cognitive behaviors were influenced by the five factors in the outside of the figure. You might notice that *Knowing It's Good*, or the aesthetic evaluation component of the process, appears in both the inside and outside circles. This is because some subcategories pertained to the actual selection of the movements that were judged to belong in the dance to communicate meaning, and some of the subcategories in *Knowing It's Good* were aesthetic influences that the students brought to the process from previous experiences.

Taking this model one step further, I reasoned that there appeared to be four spheres of influence on the process itself.

Model of the Creative Process-Expanded

Aesthetic

Cognitive
Strategies

Knowing It's Good

Audience Awareness

Influences

Making Movement

Organizing the
Movement

Social

The Group

How It
Feels

Emotional

Knowing It's Good

New Experiences

Pedagogic

These spheres of influence are Social, Aesthetic, Pedagogic, and Emotional, represented by the colored circles overlapping the figure. All four areas intersect with the cognitive activity at the center of the creative process. I have so far been addressing the social sphere, the findings that the social nature of the process enhances the cognitive experience, but I would like to turn your attention to the pedagogic sphere of influence. What can we as dance educators do to facilitate or enhance the cognitive experiences of our students in dance creation? This research implies three suggestions.

The students in these studies were given very little structure in the assignment. The task was narrowed down to the essential effort of meaning-making: find an idea and express it with movement. This gave the students maximum freedom in being able to find a topic that had personal significance for them so that engagement in the activity was high. Students felt empowered by the fact that they could choose what to make a dance about, and that there were no parameters put on the process. The students in these projects learned a great deal about the creative process, but not because someone came in and taught it to them. They learned about the process because they were given the opportunity to discover it for themselves, through a process in which they were personally invested. As a constructivist, I believe that this student-centered approach allows for attentive teachers to find teachable moments in the process, and had I been a teaching artist and not a researcher in these situations, I would undoubtedly have pointed out to the students, features of their creative process and suggested the next challenge to take on. I was initially reluctant to give so little structure in my assignments because I felt that I was neglecting my duties as an instructor to be "teaching" each moment in the session, but in each of the 12 dances I watched in creation, the students were learning and engaged, developing physical, mental, social, and creative skills: all of my goals for their lessons. My further structuring of the project was unnecessary.

The social and open-ended assignments in choreography may provide opportunities for cognitive development because it is collaborative. According to creativity researchers Moran and John-Steiner, collaboration is:

> Shared creation and discovery of two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have known on their own. (Moran & John-Steiner, 2003, p. 82)

Admittedly, not all group projects are collaborative. According to Moran and John-Steiner (2003), the hallmarks of collaboration are long-term engagement, voluntary connection, trust, negotiation, and a jointly-chosen project. This also has implications for curriculum design; not all group projects in dance would fit the above requirements. Students placed into groups by the instructor (without voluntary connection) and given specific required assignments (without a jointly chosen project) may not become collaborative. For maximum cognitive benefit, the learning environment should include an open-ended creative assignment, which allows for the elements of true collaboration to develop, including a length of time to work on the project, self-selected groups, and student-chosen topics.

As you can see from the category of *Knowing It's Good*, each choreographic group developed its own personal aesthetic as the project went on. Some groups were influenced by how they thought the audience would respond, some by how the movement felt, others by comparing what they had created with an imagined ideal. A lot of cognitive activity surrounded the discussions of aesthetics. This was broadened by the aspect of the project that encouraged peer critique. Throughout the sessions, students exchanged ideas about aesthetics within their choreographic groups, but on day six, students had a chance to obtain broader peer feedback when the videotapes of their dances were shared with the wider group. Feedback was given not in the form of suggestions to the choreographers, but in the form of "I see" statements: "I see a lot of unison," or "I see birds flying around." The student choreographers could then decide whether or not what their peers were seeing was positive or negative. Rather than follow instructions, the choreographers considered information about the communication of meaning. This could be seen as increasing their cognitive engagement with the project, following the assertion that reasoning and solving problems is a higher order thinking skill than following directions.

In conclusion, if a teacher values the cognitive aspects of dance creation, then four pedagogical recommendations are suggested. Structure your dance-making opportunities to allow for small group settings. Give students open-ended assignments that encourage personal investment in the project, set the stage for true collaboration by encouraging self-selection of groups and topics, and include peer critique into the project structure.

Cognitive enhancement is certainly not the only goal of creative activity in dance, but allowing the dance opportunities that our students have to be optimally beneficial, particularly when many children have limited opportunities to dance, seems desirable. If we want to advocate for the value of dance in learning to work in groups and in

increasing intellectual capability, two clear goals of 21st century education, then we need to pay attention to these aspects in our pedagogy and continue to support and expand research that explores the cognitive value of dance for children.

References

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York, NY: Basic Books.

Marton, F., Hounsell, D., & Entwistle, N. (Eds.). (1984). *The experience of learning*. Edinburgh, UK: Scottish Academic Press.

Moran, S., & John-Steiner, V. (2003). Creativity in the making: Vygotsky's contemporary contribution to the dialectic of development and creativity. In M. Marshark (Ed.), *Creativity and development* (61-90). New York, NY: Oxford University Press.

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