

Changing higher education paradigms: Crafting new multidisciplinary educational programmes and policies through the arts

Jorge Luis Morejón

Department of Creative and Festival Arts, The University of the West Indies, St Augustine, Trinidad and Tobago

This study considers the implementation of the arts, particularly dance, across higher education curricula as a way to improve communication between fields of study and professional environments. Thus, the paper suggests the creation of ateliers, dance studios and/or multipurpose activity centres to allow the academic community, lecturers and students alike, to create a space for art, the humanities, science and technology to merge through collaborative projects. The study uses the *art of dance* as a theoretical basis to reflect upon the proposed changes in higher education paradigms in order to improve students' educational experience. The sources referenced allow for the examination of the data available on scientific research in the arts in relation to the Science of Learning. Based on the results of the comparative analysis of brain activation patterns, it might be suggested that a more effective network of cognitive processing takes place in the brain of the artist than in the brain of a regular human being. The study concludes that the arts and dance in particular, enhance learning, since the arts improve thinking ability, development of self-esteem and confidence and higher order skills as well as cognitive, affective, and kinaesthetic domains of learning.

Key words: universitas, interconnectivity, neuroimaging, midway model, beat-based, rhythmicity

Introduction

The implementation of fine and performing arts education, particularly dance, across higher education curricula could improve communication between fields of study. Cross-curricular training in the arts helps remove barriers between fields of study, university departments and professional environments, and aligns with current trends in the increasingly multidisciplinary labour market. This paper proposes a university campus model through which ateliers, dance studios and/or multi-purpose activity centres could allow the academic community, lecturers and students alike, to create a space for the arts, the humanities, science and technology to merge through collaborative projects. These projects could facilitate the transition from the current compartmentalised model to the suggested interconnected model of the future. In order to improve the higher education environment, specifically in the Caribbean, where the arts permeate every layer of popular culture, institutions would do well to recreate the original ideal of universitas. This will require the adaptation of facilities for student-training in the arts-across-curriculum to implement a type of pedagogy that addresses “cultural emptiness at the heart of global modernity” (Brathwaite, 2009, p.166) and situates

the arts at the centre of teaching and learning.

The idea of an integrative pedagogy is not new. Professor Tom Boudreau in his book *Universitas: the Social Restructuring of American Undergraduate Education* examines the need for specific structural and systematic changes in American undergraduate education in order to prevent the American university system from a complete collapse (Boudreau, 1998). The Caribbean university system is not an exception to this crisis and would benefit from an integrative pedagogy committed to the teaching of “the intersubjective imperative, based upon the caring and concerned human encounter” with a focus on “interdisciplinary emphasis, based on a multidimensional approach to education” (Boudreau, 1998, p. 201), which would help facilitate the interrelationships that convey the world’s new and challenging complexities. The implementation of “the intercultural imperative, based upon the necessity of engaging the greatest ideas and insights of humanity throughout history” (Boudreau, 1998, p. 201) has become an urgent matter. These perspectives provide a framework for a pedagogic approach that interconnects the currently disjointed university fields and subjects through interdisciplinarity, interculturality and intersubjectivity. The *art of dance*, as a theoretical basis, could serve as a catalyst for the proposed changes in higher education paradigms to take effect. This, in turn, could facilitate the transition from the current compartmentalised model to the suggested interconnected model.

Changing the paradigm

Transforming the prevalent territorial motif which divides fields of knowledge, into a conversational motif which advocates for the establishment of interconnected departments and faculties, invites all subjects into an otherwise “vacuous marketplace of ideas” (Boudreau, 1998, p.202). To fill the void, it is important to initiate a movement toward an integrative pedagogy. However, the suggested dialogue still falls within the disembodied medium currently in place. For this proposed pedagogic approach to really facilitate interconnectivity, it would be useful to bring into the proposed dialogue the physical bodies of the students. With them, the arts could be a vehicle to nourish the interdisciplinary, intercultural and intersubjective education entailed in the concept of *universitas*.

Embodying the arts in its various forms adds important layers of creativity to a heavy academic curriculum and the intense amount of work required to go through college and university levels of education. Chodorow (1995) discusses how Rudolph Laban, the movement analyst, “pointed out that ‘Dance is stylized play,’ and as we know, play is the dynamic expression of many emotions but specially joy” (p.98). Thus, the study of the arts, particularly dance and/or movement, offers a perspective outside the same academic frames that may hinder creativity, curiosity and excitement when learning. Prioritising creativity through the arts as a compliment to academics could be the missing link for higher education students to get their time, energy and expectations met successfully. Exposing the students to a curriculum in which art, humanities, science and technology

intersect through the production of a play, an art piece, a dance work, a story or a song, means to embrace a comprehensive vision of what Boudreau calls “the language life of learning”. Equally important for this comprehensive vision is the embodied life of learning manifested through the performing arts. For this to happen, it would be beneficial for students, faculty members and administrators to engage in reflecting and discussing the importance of generalisation as opposed to compartmentalisation, through which higher education could meet higher levels of efficient learning.

Arts across curricula

Some professional educators are still trying to enhance learning by bringing liberal education back into the universities through the insertion of the arts in the university curricula. One of them is Christopher W. Tyler, lead organiser of the 2008 National Science Foundation symposium on *Art, Creativity and Learning*. As Tyler (2008) explains, the outcome of this event was to bring together leading thinkers in related fields to determine whether there is a sufficient basis for initiating a new domain of learning enhancement through the arts within the Science of Learning. The aim here was “to identify appropriate directions and methods for research in this arena from neuroscientific, cognitive and educational perspectives” (Tyler, 2008, p.14). Throughout the material documented in the Final Workshop Report, it is evident that the biggest challenge learning institutions face is the great amount of knowledge with which students are confronted. This has caused a greater gap between scientific and technological knowledge, the humanities, and embodied forms of learning such as the arts.

The highly technological development of our day has induced higher education institutions to prioritise scientific instruction while neglecting other subjects that contribute to the learning of complex materials, social skills and overall capabilities in all activities of life (Tyler, 2008). The danger though, is the unintended and unexpected formation of scientists who “lack an aesthetic sense or appreciation of metaphorical expression and/or artists without scientific literacy, opportunities for crosspollination and mutual benefits” (p.14). Thus, the closing of the divide between sciences, technology, the humanities, and the arts seems to depend on the improvement of the existing paradigm with new multidisciplinary educational programmes and policies directed at restructuring a new pedagogic model able to infuse the arts across the curriculum.

Pedagogy

Since I became an educator, I have been an advocate of the performing arts as a vehicle to not only improve learning, but also as an operative concept “whose meanings are inextricably bound up with the problems [they are] being used to discuss” (States, 1976, p.13). I started my theatre training with Prometeo Theatre Group, a bilingual and bicultural group of students from different academic backgrounds, hosted by Miami Dade College under the leadership of former

Theatre Director and educator Teresa Maria Rojas. Although the programmatic purpose of the group was to learn how to perform, the group also fomented the intercultural relations taking place in the city of Miami through theatre and movement production. Therefore, the group made choices in order to develop a justification to exist, at the same time that it grew, borrowing from German theatre scholar Erika Fischer-Lichte, its own range of semantic shades or “*Begriffsabschattungen*” (Fischer-Lichte, 1998, p.9). In this group I saw young, primarily English speaking students learn Spanish and others who primarily spoke Spanish, learn English. It was similar to our Caribbean universities in that a forum for two languages and many cultures found common grounds in the midst of theatrical production, dance and music, while the students were engaged in learning other academic subjects. Similarly, in my ten years of teaching Expressive Movement in the Community Education Program at Miami Dade College, adult theatre students and school-aged children, who also studied expressive movement, became the most capable artistically, compared to those who only studied acting. Movement and dance equipped them with fluidity and playfulness that was intrinsically attached to my own core beliefs about performance training. Although they came from all walks of life, were of different ages, and pursued movement for a variety of reasons they had one thing in common, an “open and multivocal” willingness to express something relevant to themselves (Schechner, 2006, p.19). They were individuals who, although successful in their respective fields of work and study, put time aside, to also learn about the possibilities they had to embody in movement metaphors.

At New World School of the Arts, I taught movement for Theatre and Musical Theatre to students under the leadership of Theatre Directors and Deans Jorge Guerra and Patrice Bailey. This programme combined academics and the arts at the high school and Bachelors in Arts levels. Not surprisingly, often the hardest working students were the most academically successful. However, a distinction should be made; out of the two groups, the Musical Theatre students were more committed to their training. This also had repercussions on their academic performance and I am inclined to think that their success derived from the different disciplinary influences they experienced, namely, the dance component; the rigour of the different dance styles they were exposed to, and the demands placed on their bodies by the technical aspect of the art.

At times, movement comes disguised as play. During my experience as a Special Education teacher at Ruth Owens Kruse Educational Center, Miami, the students and I decided to create a butterfly garden. My middle school-aged students were labelled Severely Emotionally Disturbed (SED), with very limited opportunities for movement in general, let alone creative movement. They were under constant supervision through a point-system that basically rewarded them for being silent and immobile. Although there was no opportunity to develop the butterfly garden as we would have wanted (the school yard had been a Native American burial ground and there was no possibility to plant on it) we still called that section of the yard, The Butterfly Garden, a euphemism for play, freedom and

movement. At the time, the students were about to move on to high school level, but with very little training on how to freely socialise in an unrestricted environment; how to play safely and appropriately; and how to live in their bodies outside the classroom seats. The Butterfly Garden became their reward for good academic and social behaviour, but also, paradoxically, “an unlimited and all-encompassing [...] way to steer around the discontinuities and tensions” (Bala, 2013, p.13), inherent in the American Special Education System. It was at the Butterfly Garden that they started to acquire a “meta-level” of continuity enhanced by new important social skills. If all behaviours can be seen as play or performance, rather than normal versus abnormal behaviour, then, the conceptual basis for their labelling, could be considered unstable. By looking at their behaviours as metaphoric expressions, their otherwise reprimanded body and verbal incongruencies became understandable and acceptable within an individualised system of signification that had no room for the point system. Through play and movement, the students began to exercise a new degree of self-management, spatial boundaries, group dynamics and an overall capability in order to perform socially accepted behaviours.

At the Dance Unit of The University of the West Indies, St. Augustine, where I currently teach, the students who volunteer to participate in dance festivals and extracurricular dance performances are also the students who succeed academically. They are those with the highest grades in their theses; those who get scholarships to study in foreign universities; those who occupy positions of leadership in dance, and dance academics within the community. Their level of expressivity when creating their own choreographies parallels their command of the academic subjects, *inter alia*, Dance Injuries and Conditioning, Caribbean Dance History, Dance and Caribbean Festivals, Art and Fundamentals of Choreography. The combination of theoretical and practical training has been essential to their success as artists, but also as individuals in pursuit of academic excellence. Based on my own pedagogic experience, it seems as if there is a correlation between art training, academic learning and academic achievement that calls for a “broadening of teaching epistemologies and standards” (Bala, 2013, p.13), in the field of education . This correlation suggests a need for a change in the higher level of educational pedagogy in order to intersperse the arts throughout academic subjects by including “divergent perspectives on both, how to construct performance as an object of knowledge, as well as how to generate knowledge through performance” (Bala, 2013, p.14). The Final Workshop Report documented by Tyler (2008) is an important initiative which may help educators understand the work of an important number of researchers and their findings in relationship to how the different art disciplines (visual arts, music, theatre and dance) influence learning.

Visual arts’ cross-cognitive transfer

The role of visual arts was underlined as important in the learning process due to its reliance on a complex system of perceptual, cognitive and motor functions.

The existence of such a complex system suggests a shared neural substrate and a strong potential for cross-cognitive transfer in learning and creativity. According to neuroimaging studies, the process of drawing, for instance, shares cortical processes, such as those involved in writing. This opens the access to semantic systems, naming, imagery, constructional abilities, and the ability to estimate precise spatial relations. Through a case study shared in The Final Workshop Report, by drawing in a scanner, it was shown that there are significant processing differences between the brain of a professional artist and that of a novice.

The comparative analysis of the activation patterns documented through this case study suggested a more effective network of cognitive processing for the brain of the artist. Thus, it was concluded that art should be regarded as a cognitive process in which the artist engages the most perplexing issues in present experiences and tries to find a way of symbolising them visually so that they can bring coherence to their own experience. Subsequently, understanding how human beings symbolise experience, use symbolic form to organise thinking processes, and the neuroanatomical corollaries to these processes, have obvious implications on how to design a new theory of knowledge acquisition for higher education.

Musical structure

The results of Tyler's (2008) Final Workshop Report also revealed that musical experience and short term auditory training can enhance subcortical representation of the acoustic elements known to be important for reading and speech encoding. The study described the concept of neuroimaging based on the idea that the frontal brain region processes the general property of structure. This property is common across musical structure, language structure, and the visual organisation of words through, for instance, American Sign Language, arguably a dance of sorts involving mouth, hands and fingers. This is the reason why one can logically assume that training in musical structure enhances language learning structure, verbal and non-verbal alike.

Welsh (n.d., para. 2) advises educators, teachers, and school administrators on how to "use music as a way to reach students and make learning more fun, interactive, and memorable". Welsh suggests that rock music can even be used as a tool in whole brain and multicultural learning. Perhaps the most exciting aspect of using music in the classroom is that it can help teachers and students as both, a teaching/learning tool and a complement to movement and dance instruction. This is, at the same time, a way of using symbolic form, as it is used in visual arts, but through musical experience and short term auditory training, both of which enhance students' subcortical representations of the acoustic elements needed, for instance, in language arts.

Dance neuroimaging

The role of dance in “integrating the rhythmicity of music and the representational capacity of language” is also brought to the forefront in Tyler’s (2008, p.4) Final Workshop Report. The neuroimaging studies of dance examined brain areas involved in the production and perception of dance proving dance arts an important part in developing brain capacity for learning. Based on the evaluation of perception studies, neural expertise effects demonstrate brain activation that occurs preferentially in people who are competent to perform dance movements. Neuroscientific evidence suggests that music and dance activate two parts of the same motor-action-imitation system through mirror neurons, the neurons that fire both when one acts and when one observes the same action performed by another. Thus, each neuron mirrors the behaviour of the other, as though the observer were itself acting; for instance, observing the same action, such as walking across the stage, elicits different levels of mirror neuron activity in one area of the brain.

Furthermore, dance in conjunction with music evokes emotion and stimulates visual images that expand the scope of the material being learned by maintaining attention and allowing a higher level of memory retention. The relationship between the use of symbolic form in dance and movement, as it is used in Laban Notation, for instance, but also in choreography, along with musical experience and rhythm, constitute the union of three sets. These sets: visual arts, music and dance, also overlap with theatre arts, not included in the Final Workshop Report, perhaps because of being a set, in and of itself, that contains the other three. However, if attention and memory retention are important abilities to have for students of any academic subject, for dance and theatre students they are indispensable in memorising movements, lyrics, poetry and texts.

Outside the report: Theatre arts

Although theatre is not mentioned in the Final Workshop Report, theatre, as a dramatic art also influences brain activation at the level of language production, language retention, language structuring, memorisation and the visual organisation of words. In the classic sense, theatre is inclusive of drama, dance, music and visual arts. The ideal situation for an educator may be when they find the opportunity to use all these elements in a theatre production. For instance, *Maria Antonia*, a play by Cuban playwright Eugenio Hernandez, was directed in 2013 for the Production class of the Theatre Unit in the Department of Creative and Festival Arts at The University of the West Indies, St. Augustine. The play needed the participation of 25 acting students who were required to dance, sing, act, paint sets, build costumes, do lights and make-up, at the same time that they integrated cultural patterns that were intrinsic to the story they were set to tell. The production process included the full translation of the play, written in Cuban Spanish, to Trinidadian English. As a director/educator, I would have never been

able to accomplish such a task if during my early years as a student, I had not acquired the flexibility to see myself as someone capable of embracing other languages and other cultures as a way of living in the world.

My students, in embracing the characters of *Maria Antonia*, had to act like Cubans by modifying their typical way of being, as people from Trinidad and Tobago, to the ways Cubans act, talk, move and gesture. They had to metaphorically speaking, dance the play Cuban style. At times we were told, “There was a lot of shouting” and I would respond, “In conventional theatre actors do not shout, but the Cubans in the story shout.” Thus, the students’ English was inflected in the way they understood Cubanness even if it was expressed in Trinidadian English, with the out-loudness characteristic of Cubans from the marginal areas of Havana where the story takes place. However, the most important aspect of embracing a different identity was their body language, their gesturing, their dancing and the way these elements affected the expression of their characters.

This level of complex behavioural flexibility describes a degree of intelligence enhanced precisely by the same subcortical representations of the acoustic elements known to be important for reading and speech encoding. It also describes the ability for symbolic representation of experience through action, movement and/or dance stimulated by the emotions and visual images triggered by the artistic process. The adaptations the students made for the telling of *Maria Antonia* were part of a cognitive process in which they were able to engage with the play’s issues according to their own experience by finding ways of symbolising their experiences in a character. Dance, music and drama in an educational setting depend on the capacity dance and acting students develop to engage in neuroimaging and structure, both of which are qualities described as functions of the frontal brain region.

Dance as science

Beat-based synchrony

Neuroimaging is common to movement structure, musical structure, language structure and the visual organisation of words, but most significantly, it is important to the *art of dance*. Steven Brown, director of the NeuroArts Lab in the Department of Psychology, Neuroscience and Behaviour at McMaster University, views dance as “a marriage of the representational capacity of language and the rhythmicity of music” (Brown & Parsons, 2008, p.97). This interaction, he admits, “allows people not only to tell stories using their bodies but to do so while synchronizing their movements with others in a way that fosters social cohesion” (Brown & Parsons, 2008, p.97). Scientific beat-based studies deal with how humans synchronise self-produced movements in combination with other people’s movements to a beat by using a metronome. This is an important clue for educators in the Caribbean, since in Caribbean culture the equivalent to a metronome in actual music is the rhythmic drumming marked by percussion

during events such as religious gatherings, carnivals and festivals. Drums are always at the very root of the melodic line of Caribbean rhythms because they are the backbone of the culture. Thus, rhythmicity in the Caribbean is an ingrained aspect of the culture that should not be taken for granted, particularly now that science and dance have found a common path.

Dance science

An example of the relationship between dance and science is the MSc. Dance Science programme at Trinity Laban in the United Kingdom. As expressed by Emma Redding, Head of Dance Science, the programme “produces graduates who contribute significantly to the growing field of dance science through their research, practice and teaching, both nationally and internationally” (Trinity Laban Conservatoire of Music and Dance (n.d., video segment). The programme uses dance to examine qualitative and quantitative aspects of dance practice. It also uses a range of scientific disciplines within the context of a dance studio, involving practical and hands-on experience with testing equipment in the laboratory. This, benefits the students in the programme because it equips them with the ability to work in a wide range of applied and research settings. By familiarising themselves with professional dance companies the students contribute to their own professional growth as well as that of the field.

Dance health

The Harkness Center for Dance Injuries (HCDI) and the International Association for Dance Medicine and Science (IADMS) are also examples of how science and dance become useful to each other’s field of study at a very practical level. The HCDI provides the dance community it serves with up-to-date medical information through ground-breaking studies in the areas of epidemiology, metabolism, dance injuries, biomechanics, and rehabilitation. Proof of a successful collaboration between dance and science has been the fact that members of the HCDI staff have served on the Editorial Board of the *Journal of Dance Medicine and Science* and on the Research Committees of the International Association for Dance Medicine and Science, the Performing Arts Medical Association, the American Physical Therapy Association and Dance/USA. Equally important has been the International Association for Dance Medicine and Science. Formed by an international group of dance medicine practitioners, dance educators, dance scientists, and dancers, IADMS’ mission is the enhancement of “the health, well-being, training and performance of dancers by cultivating educational, medical, and scientific excellence” (IADMS, n.d., mission statement). These two organisations are important examples of how scientists and dancers cross-pollinate through a type of partnership one could assume allows scientists to gain in aesthetic sensibility at the same time that dancers acquire scientific literacy in the field of medical science.

Embodied culture

Crosspollination between art and science, at an individual level, is common in the Caribbean. The great majority of Caribbean people start dancing at a very early age – perhaps through exposure to the many festive events celebrated in the region. As explained by researcher Terrence Wendell Brathwaite, all the live arts of the Trinidad Camboulay Street Dance-Play, for instance, are interrelated. As he adds, “when studied in depth, they reveal how a holarchy of natural processes, biochemical and psychosocial, come into play and interact” (Brathwaite, 2009, p.166). Live arts produce and nurture an environment where “cross-fertilising of the scientific (symptomatic) with the folkloric or metaphysical (symbolic), through the mind and emotions, can have a “neuro-immuno-modulatory (NIM) healing impact on the human body” (p.166). This is an element of Caribbean culture that at the educational level can potentialise knowledge acquisition, social interaction, social fluency, and body/mind integration at all levels, from primary to tertiary. Professor Mia Leijssen explains how “the richness of the bodily source can be used in a more conscious way by paying attention to different aspects of the body” (Leijssen, 2006, p.126). Leijssen adds that the body, as sensed or experienced, is one source of information “which allows for greater awareness, engagement in the present, deepening of experience, opening of body memory and cathartic release, at the same time that it resolves blocks and explores new possibilities” (Leijssen, 2006, p.126). If provided with proper facilities, all of the above aspects of the body can be used by students as a recipe in maintaining cognitive, emotional and psychological health. As they accomplish their academic requirements in a “transnational era,” their need of “neuro-theological remedies” for “bodily disorders and bio-psycho-social-spiritual-affects” becomes critical in keeping their health (Brathwaite, 2009, p.165).

Human rhythmicity

Aniruddh D. Patel, an Associate Professor of Psychology at Tufts University, Massachusetts, states that “humans entrain rhythmic movements to the beat of music, and in social settings (e.g., dancing or marching), this can lead to synchronized rhythmic actions within groups of people” (Patel, 2014, p.1). Furthermore, studies on synchronisation to a beat have driven most productive research on sensory motor processing to consider three key features of human rhythmicity: prediction, tempo flexibility and cross modality. Prediction in dance is guided by a mental model of time, rather than simply being a reaction to music stimulus. Tempo flexibility means that synchronisation to music in adult humans is very flexible; which means that, as long as the interval between beats is reasonably paced, humans can achieve synchronisation quickly and accurately. Cross modality, on the other hand, means that humans can synchronise to a beat in a cross-modal fashion by moving silently rather than by making their own sound.

Deliberate control of motor behaviours

As revealed by the Final Workshop Report, music and dance evoke emotions and stimulate visual images that expand the scope of the material being learned by maintaining attention and allowing a higher level of memory retention. A large body of brain imaging research highlights a set of specific regions in the limbic, insular and prefrontal cortex as sensitive to sound and dance, which in turn evoke visual images of high emotional content. Given the established role of dorsal stream visual areas in action-related functions, these results support the long held hypothesis associating emotion with preparation for action, and in this case, by extension, dance. According to neuroscientist/neurobiologist Antonio Damasio's *somatic marker hypothesis* (SMH), emotions are generated by "conveying the current state of the body to the brain through interceptive and proprioceptive afferent input" (Shafir, Taylor, Atkinson, Langenecker & Zubieta, 2013, p.219). In opposition to what has been established in the past, that body language is the external manifestation of internal emotions through postures and movements, the SMH suggests that "the resulting brain activation patterns represent unconscious emotions and correlate with subjective feelings" (Shafir et al, 2013, p.219). This is an important proposition because "it implies a corollary; that the deliberate control of motor behaviour could regulate feelings" (Shafir et al, 2013, p.219).. This seems to explain why in dance or theatre the planned behaviour of a character by an actor engaged, for instance, in a concave body posture, versus the graceful upright and open motion of another character, may elicit in the dancer/actor different emotional responses, which in turn produce different reactions in the audience.

According to Shafir et al, researchers in the fields of psychiatry, creative arts therapies and psychology, "motor imagery and observation are thought to activate the same mirror-neuron network engaged during motor execution, they might also activate the same emotional processing circuits, leading to similar emotional effects" (2013, p. 219). The SMH proposed by Damasio is based on the assumption that human reasoning and decision-making depend on many levels of neural operation, some of which are conscious and overtly cognitive, some of which are not. However, conscious, overtly cognitive operations depend on sensory images based on the activity of early sensory cortices. The hypothesis also assumes that cognitive operations, regardless of their content, depend on support processes such as attention, working memory and emotion, whereas reasoning and decision-making depend on the availability of knowledge about situations, actors, options for action and outcomes.

Thus, if the results of motor responses, including those that are not generated consciously, can be represented as images, then, an image, a thought or a movement, as represented in dance through one's own body's expressive engine, stimulates higher-order cortical activity, an area that remains largely unexplored in the field of neuroscience (Okun et al, 2012). This is not new to the dance; it

has been a creative method used often in contemporary choreography and the spontaneous production of movement that occurs during improvisational dance and physical theatre. For instance, dance teachers, dancers and choreographers use free association, a method based on the expression of the content of consciousness without censorship, as an aid in gaining access to unconscious processes. Furthermore, motor responses affect the acquisition of knowledge since innate and acquired knowledge concerning bioregulatory processes, body states and actions; include knowledge made explicit as emotions. Knowledge is also acquired through entities, facts such as relations and rules, actions and action-complexes such as stories, which are usually made explicit as images. This semiotic linkage is also the reflection of individual experience, the specialised domain of artists and in particular dance makers. Subsequently, the work of a dancer or a choreographer constitutes a phenomenological statement, an embodied philosophical study of individual structures of experience and consciousness manifested through the emotions and the images they inhabit. Here, the emotions and images channelled through the dance become enhancers of a higher level of complex behavioural flexibility and intelligence.

The new science of learning: Praxis

The *art of dance* as a theoretical basis, although not new, is still useful to reflect upon the proposed changes in higher education paradigms. The *art of dance* educational theory derives from Rudolph Laban's ideas about dance education in the 1940s. The essential characteristic of his educational model was its emphasis on the process of dancing and its affective/experiential contribution to the participant's overall development as a moving/feeling being. Laban's theory focused on the benefits of feeling and expressing through movement outcomes derived from various stimuli. Jacqueline Smith-Autard, a world-leading exponent in dance education expresses how Laban's theory has been viewed as an "important contribution to the all-round development of the personality" (2002, p.4). It is also the model that primary school teachers still use as a framework in the teaching of dance. However, Smith-Autard favours the Midway Model she proposed in 1976, which "amalgamates some of the elements of the educational and professional models, yet includes new ideas, too" (p.5). Smith-Autard explains that the distinctiveness of the *art of dance*, specifically the Midway Model, lies in its contribution to artistic, aesthetic and cultural education. The model identifies the three strands of creating, performing and appreciating dances as the conceptual basis underlying dance experiences for higher education students. Smith-Autard calls attention to the needed balance between creating, performing and viewing dances, and the overall concern of students who come to appreciate dances, "their own and those produced professionally" (p.5), as art works. This has become the central organising principle of dance education since the 1990s. Thus, there is an important assumption to be made in reference to the *art of dance* theory and its potential contribution to academics; at the same time that it enhances dance

appreciation, it stimulates cognitive reasoning and decision making processes via subcortical nuclei dispositional knowledge. This proposed interrelation between art training and academia justifies the suggested change in higher education pedagogy by merging art training with academic subjects. The availability of this information to educational institutions could stimulate a radical change in educational paradigms, policies and pedagogies.

National Dance Education Organization

Bonbright, Bradley and Dooling's (2013) report for the National Dance Education Organization provided scientific support for the need of dance education within every high school. Educators, who call for the implementation of dance within their schools or district, as well as students and scholars studying the impact of dance in education, may find Bonbright, Bradley and Dooling's work useful in supporting dance education within primary and secondary schools. The report paid specific attention to areas such as Creative Process, Neuroscience/Brain Research, Student Achievement, Affective Domain, Student Performance, Equity, Cultural and World Dance, and Children-at-Risk. The overwhelming evidence acquired through these areas proves how dance education influences student achievement and test scores in subjects such as language arts, math, and science.

According to Bonbright, Bradley and Dooling (2013) an arts programme in the Jefferson County School Board in Monticello, Florida, 2005-2007, outperformed other districts in reading and math scores. This is an important point since, as opposed to many programmes that aim at integrating the arts into the academic curriculum, students in Jefferson County increased their test scores on a programme that took time away from instruction in writing and language arts and increased teaching/learning time for visual, dance, and dramatic arts. While it will be important to analyse if the non-integration variable was determinant in the increase of test scores in Monticello, the report shows how incorporating dance into the curriculum can improve student test scores, lower drop-out rates, improve learning in other subjects, increase teacher and student morale, and support the learning of under-served populations. Bonbright, Bradley and Dooling (2013, p.56) conclude that "In schools where dance programs flourish, students' attendance rises, teachers are more satisfied, and the overall sense of community grows".

The National Dance Institute

Since 1976, the National Dance Institute (NDI), hosted by the Centre for Learning & the Arts, in New York City and founded by former New York City Ballet dancer, Jacques d'Amboise, is one of those institutions that has proven that the arts are an important part of acquiring academic knowledge. Keynote Speaker of the Final Workshop Report, d'Amboise has spent his post-dance life developing formats in

which engagement with the *art of dance* can promote enhancement of learning in other academic fields. The goal of the NDI, as stated in the Institute's website, is to use dance as a catalyst to engage children and motivate them to achieve excellence in the areas of improved thinking ability, development of self-esteem, confidence, and higher order skills tied to cognitive, affective, and kinaesthetic domains of learning. The Institute's approach has put into practice the value of integrating human rhythmicity and the deliberate control of motor behaviours, motor imagery and motor responses through dance.

As explained in the NDI's website, the Institute's In-School programme reaches thousands of children each week. NDI's pedagogy has been "codified" evolving from being "a pull-out program in which children auditioned to participate, to an in-depth sustained program throughout the school year for an entire grade, culminating in Mid-Year Assemblies and End-of-Year Performances for the entire school community" (National Dance Institute, n.d., para. 2). In addition, NDI's teacher training programme, established in 1998, ensures the continued training of the teaching staff, as well as the NDI's availability to meet the demands for this kind of programme in New York City and across the United States.

The Tanner Dance Program

In September 1996, the Utah State Office of Education provided funding for a three-year cycle of the Side-by-Side Teacher Training Residency, an initiative which "provides a framework for educators to engage in teaching and learning activities that support the needs of their students" (The University of Utah, n.d., para. 1). The residency was intended to increase classroom teacher confidence in the use of creative movement techniques and methodology. The programme aimed at demonstrating how the integrated use of dance core curriculum for teaching traditional academic concepts and ideas such as language arts, maths and science, provided a laboratory for students and teachers to enhance learning through dance.

Under this programme, dance faculty provided up to an hour of creative modern dance instruction for students and teachers each week. Designed to model the use of the Utah State Dance Core Curriculum and its integration into other subject areas, this first phase allowed dance specialists to lead in teaching the class, while the classroom teacher observed and participated in teaching methodology and technique. The core content of the class included moving, stretching, making shapes, and processing. Teachers and dance specialists also shared planning time through which they created lesson plans and assessments together.

The second phase of the residency made it possible for the dance faculty to continue meeting classroom teachers to collaborate on the development of integrated lesson plans. Through this phase, they demonstrated the use of the integrated curriculum in meeting educational goals during weekly movement classes. This allowed the dance specialists and the classroom teachers to co-teach,

as the classroom teachers continued leading the learning process to the degree that it felt comfortable to them. During this time, the dance specialists worked with the classroom teachers to support their dance skill level. In the third and final phase of the residency, classroom teachers took the initiative in developing the integrated lesson plans and teaching the class. The dance specialists continued to be present at each class, participating, as needed, to ensure a positive learning outcome. By the end of the third phase, the classroom teachers had developed the skills and abilities needed to design an integrated curriculum.

Ministry of Education, Trinidad and Tobago

Trinidad and Tobago's Ministry of Education (MOE) has also adapted the country's primary curriculum by placing emphasis on learning experiences that are developmentally appropriate and reflect new understandings about effective delivery and assessment. Even when the MOE reports that the attempts that have been made to establish greater articulation between the primary and secondary levels of the curriculum are limited, what is exciting is that, besides regular academic subjects, one of the components of the existing curriculum comprises Creative Arts and its subjects: Dance, Drama, Music, Art and Craft. As stated in the Ministry's website, co-curricular activities provide students with opportunities to practice further what they learn in the classroom (MOE, n.d.). This is why the Ministry partners with various organisations to facilitate activities which include: debating, public speaking and mental mathematics, as well as participation in the arts festivals, the Music Festival, the annual calypso, soca steelpan, and parang competitions, environmental pursuits, and a range of sporting and religious events.

The MOE (2009) proposed the Integrated Arts Programme, as part of the Secondary Education Modernisation Programme, a document that synthesises important criteria governing the integrative curriculum. The programme has put emphasis on establishing connections not only between the arts and the rest of the secondary curriculum, but between art fields. Dance, for instance, has been integrated throughout the general curriculum in Foreign Languages, Language Arts, Mathematics, Physical Education, Science, Social Studies, and Technology Education. According to the Ministry, the rationale for this integration is that students should recognise that there are similarities in the way that artists work whatever their particular discipline, and that discovering these similarities helps students learn about the role the arts play in their communities. In addition, "the expressive potential of combining art forms constitutes a powerful tool for generating and sustaining community," at the same time that it establishes, both, "personal and group identity" (MOE, 2008, p.24).

Caribbean educational institutions could benefit from educational exchanges in terms of paradigm and policy changes to start creating similar alternative solutions to academic apathy, incompetence and failure. Integrating the arts throughout the curriculum may stimulate new ideas and concepts. These

four examples illustrate the potential for change in the educational paradigms at the institutional, county, state and country levels. The steps taken by the National Dance Institute in New York City, the Jefferson County School Board in Monticello, Florida, Utah's State Office of Education in the States and Trinidad and Tobago's MOE towards arts and academic integration show what is possible if there is a clear understanding of the importance of the arts in curriculum development. Academic, personal and social skills not only affect the way future citizens could behave in their future communities, but the degree to which they could be able to impact society from an artistic, scientific and technological point of view. If these efforts have taken place at the primary and secondary educational levels, it only makes sense to implement them at the tertiary or higher education level, the last phase of academic education that students benefit from, before they go out to trade their skills in the labour market.

Conclusion

The emphasis of the *art of dance* theory has been placed on the physical, emotional and social dimensions of the personality through dance movement situations. To these dimensions it is important to add the academic, which as suggested in the proposed paradigm change, could provide a space for spontaneous movement creation of individual students as well as groups. If facilitated, it would find its completeness in the embodied knowledge and experiential models already available to the arts in some education programmes, individual initiatives and alternative learning centres. Since Howard Gardner's theory of Multiple Intelligences in 1983, at least pedagogically, most teaching programmes have recognised "a pluralistic view of mind, recognizing many different and discrete facets of cognition" (Gardner, 2006, p.5). However, the opportunities to access such a varied spectrum of intelligences in the regular classroom are not readily available. Yet, the evidence offered regarding students' exposure to different verbal, body, emotional, psychological, aesthetic and academic processes, through the arts, suggests that academic integration could be beneficial in improving students' academic progress.

Higher education programmes could consider a paradigm shift through which the arts could become a required subject for all fields of study. Improving the ability future professionals would have to explore who they are, where they come from, where they are going, what their priorities are and how that information is reflected on their own artistic creation could also inform their professional choices. Improving interdepartmental communication in the higher education sector could translate into the bridging of purely academic subjects and embodied forms of knowledge production. Visual arts, music, theatre and dance are ideal creative forms of embodied knowledge to crystallise the merging of cross-curricular performance and academic practices. The dialogues that could emerge as a result of this innovation: verbal, written and embodied are equivalent to "interlocking systems" (Bergman, 2008) that could inform how academic curricula

could interconnect the arts, the humanities, science and technology. This requires a shift in higher education's programmes and policies in order to allow the new curriculum, as imagined here, to include multipurpose activity centres where the community: lecturers, students, entrepreneurs and other community members, could collaborate in multidisciplinary works. By bringing back to the curriculum the original ideal of *universitas*; universities could initiate a conversation around the effectiveness of the departmentalised faculty model, as opposed to the proposed cross-curricular one. This could result in the emergence of an interesting pedagogical approach which, at the same time that it expands the knowledge base of higher education students, could place the arts and the community in which they exist, at the centre of a new multidisciplinary educational paradigm.

References

- Bala, S. (2013). The entangled vocabulary of performance. *The Rupkatha Journal of Interdisciplinary Studies*, 5(2), pp.12-21.
- Brathwaite, T. W. (2009). Trinidad's Camboulay street-dance play and the carnivalesque placebo: A neurotheological interface between social theatre and post-traumatic slave syndrome. In S. Jennings (Ed.), *Dramatherapy and social theatre: Necessary dialogues*. New York: Routledge.
- Bergman, S. (2008). Matikor, Chutney, Odissi and Bollywood: Gender negotiations in Indo-Trinidadian dance. *Caribbean Review of Gender Studies*, 2, 1-28.
- Bonbright, J., Bradley, K. & Dooling, S. (2013, July). Evidence: A report on the impact of dance in the K-12 Setting. National Dance Education Organization.
- Boudreau, T. (1998). *Universitas: the social restructuring of American undergraduate education*. Westport CT: Greenwood Publishing Group.
- Brown, S. & Parsons, L. M. (2008, July). The neuroscience of dance. *Scientific American*, 78-83.
- Chodorow, J. (1995). Body, psyche and the emotions. *American Journal of Dance Therapy*, 17(2), 97-114.
- Fischer-Lichte, E. (1998). Foreword. *Paragrana: Intentionale zeitschrift fur historische anthropologie*, 7(1), 1-9.
- Gardner, H. (2006). *Multiple Intelligences*. New York: Basic Books.
- International Association for Dance Medicine and Science (IADMS) (n.d.). Hospital for joint disease, research. Retrieved from <http://hjd.med.nyu.edu/harkness/research>
- Leijssen, M. (2006). Validation of the body in psychotherapy. *Journal of Humanistic Psychology*, 46(2), 126-146.
- Ministry of Education (MOE) (2008). *The secondary school curriculum*. Government of the Republic of Trinidad and Tobago.
- Ministry of Education (MOE) (2009). *Secondary education modernization programme: Visual and performing arts*. Government of the Republic of Trinidad and Tobago.
- Ministry of Education (MOE) (n.d.). The primary school curriculum. Government of the Republic of Trinidad and Tobago.. Retrieved from http://www.moe.gov.tt/pri_curriculum.html
- National Dance Institute (n.d). Retrieved from http://www.nationaldance.org/about_history.htm
- Okun, M., Yger, P., Marguet, S., Gerard-Mercier, F., Benucci, A., Katzner, S., Busse, L., Carandini, M. & Harris, K.D. (2012) Population rate dynamics and multi-neuron firing patterns in sensory cortex. *Journal of Neuroscience*, 32 (48), 17108-17119.
- Patel, A.D. (2014). The evolutionary biology of musical rhythm: Was Darwin wrong? *PLoS Biol* 12(5), doi: 10.1371/journal.pbio.1001873.
- Schechner, R. (2006). *Performance Studies: An Introduction*. 2nd Edition. New York: Routledge.

- Shafir, T., Taylor, S.F., Atkinson, A.P., Langenecker, S.A. & Zubieta, J.K. (2013). Emotion regulation through execution, observation, and imagery of emotional movements. *Brain and Cognition*, 82(2), 219-27.
- Smith-Autard, J. M. (2002). *The art of dance in education: A theoretical basis*. London: A&C Black Publishers Limited.
- States, B. O. (1996). Performance as Metaphor. *Theatre Journal*, 48(1), 1-26
- The University of Utah (n.d.). About the Tanner Dance Program's Professional Development for Educators programs. Retrieved from http://www.tannerdance.utah.edu/?page_id=133
- Trinity Laban Conservatoire of Music and Dance (n.d.). Retrieved from <http://www.trinitylaban.ac.uk/study/dance/postgraduate/msc-dance-science>
- Tyler, C.W. (2008). Final Workshop Report: Art, creativity and learning. Retrieved from http://www.nsf.gov/sbe/slc/ACL_Report_Final.pdf
- Welsh, V. (n.d.). Using rap, rock & pop music as a teaching & learning tool. Retrieved from <http://www.teachhub.com/using-rap-rock-pop-music-teach>