Voices in Education

Student Success: A National Focus

Journal of Bermuda College
Volume 2 • August 2016

VOICES IN EDUCATION

A Bermuda College Publication

Volume 2 • August 2016

Student Success: A National Focus

Published by
Bermuda College

Published by Bermuda College
P.O. Box PG 297
Paget PG BX
Bermuda
Tel: 441-236-9000
www.college.bm

ISSN: 2059-0695

Annual Subscription Rates
Individual: US$40.00
Institutional: US$65.00

Co-Editor: Phyllis Curtis-Tweed, PhD
Co-Editor: Lynette Woods, MA
Cover Design: Edwin Smith, PhD

Voices in Education is published once a year.
Printed in Bermuda by Bermuda Press Limited
Set in Perpetua.

Contents

Aims and Scope

Voices in Education is a scholarly journal that serves as a voice and resource for students, researchers, educators, and the community. It contributes to the realisation of Bermuda College's vision by addressing "the diverse needs of the community through research."

The aim of this publication is to heighten awareness of current trends, to encourage discourse and practice, to challenge thinking, and to widen and strengthen the scope of research in education. *Voices in Education* serves local and global audiences in academia by providing peer-reviewed, multidisciplinary articles.

Editorial Board

Bermuda College Publication Committee

Lynette Woods, *Co-Chair*
Former Assistant to the President – Special Projects

Ru-Zelda Severin, *Co-Chair*
Senior Lecturer
Music & Education
Division of Arts & Science

Annette Gilbert
Cataloguing and User Services Librarian
Library

Karmeta Hendrickson
Assistant Director
Information Technology Services

Evelyn James-Barnett
Communications Director

Jennifer Williams
Faculty Tutor, Reading
Academic Resource Centre

Foreword

Phyllis Curtis-Tweed
Lynette Woods
Co-Editors

The overarching perspective of V*oices in Education: Journal of Bermuda College* is Student Success: A National Focus. For this second volume, the theme is "Transforming Education for the Twenty-First Century: New Thinking, New Action." On the island of Bermuda, as in other places, education is an essential pathway to success. Through education, students are equipped with the knowledge and skills that will enable them to complete tertiary education programmes and join the workforce. What skills and knowledge are required for such success in the 21st century, and how are they acquired?

In her editorial, "Transforming Education for the 21st Century: New Thinking, New Action," Marsick refers to several works that have delineated the skills required for success in this century. These skills include global awareness, literacy in multiple forms, critical thinking, communication, problem-solving, the ability to collaborate and work in teams, and creativity. Marsick adds that technological competence, being able to recognise patterns, and being able to extrapolate learning from one context to another are also essential skills. How are these skills acquired?

Our authors propose that such skills be cultivated at the earliest levels of education and are contingent upon pedagogy and educational approaches that encourage engagement, creativity, and critical thinking among our youngest learners.

Speir and Simmons emphasise that inquiry-based learning, which has been adopted as a model in preschool and early elementary education in Bermuda government schools, promotes the development of imagination and critical thinking. They state that such instruction is especially important in colonial and neo-colonial settings where education has historically not encouraged independent thinking. The success of inquiry-based instruction, they stress, is contingent on the use of abductive reasoning and a shift from teacher-centred didactic approaches to student-centred collaboration that fosters the construction of information by the students themselves.

Pedagogy is also significant to outcomes. It should inspire independent learning and critical thinking. Bishop describes an interdisciplinary approach to teaching music. He advocates inquiry-based and cross-curricular teaching approaches that encourage students to use their imaginations and be creative. In a study of students aged 5-6 years, Bishop finds that approaches which encourage independent thinking and creativity require greater interaction with, rather than intervention by, the teacher. He further correlates this approach with human rights education, which emphasises equality, dignity, respect, non-discrimination, and participation.

Paulau-Wolffe stresses that human rights education encourages the participatory creation of knowledge that leads to attitudinal changes and levels of activism in targeted areas. She offers the caveat that the success of human rights education depends on buy-in by school leadership and in teacher training.

Harney's article shifts the focus from teaching models to addressing individual needs. She offers a holistic mind-body approach to improving student success. The self-generation of coherence-patterning in the autonomic nervous system relative to teaching and learning is an important factor in student success. Evidence of the effectiveness of HeartMath exists in populations across age ranges, diverse backgrounds, and educational settings. Harney specifically describes the use of this approach in reducing maths anxiety and improving maths success as a particular example of HeartMath's potential.

Colleges need to use technology to achieve instruction goals and also to prepare students in the appropriate use of such technology. De Shields notes that, in Bermuda, students expect technology to be used in class and prefer classes in which teachers use this forum. They also perceive the use of technology as enhancing learning.

The influence of the digital age is underscored in Hendrickson and Liles's review of *The App Generations: How Today's Youth Navigate Identity, Intimacy, and Imagination*, by Howard Gardner and Katie Davis. According to the reviewers, the book raises important questions about the impact of technology, specifically apps, on the psychosocial development of adolescents. It concludes that parents should provide modelling behaviour to support the appropriate development of youth, and that the use of apps must be incorporated in novel ways to maximise their benefit.

Marsick notes in her editorial that fewer college students are new high school graduates and more of them are mature learners with family and work responsibilities, and may be more dependent on online learning than in-class experience. She emphasises that colleges must strategically determine their structure and offerings in light of their target population and of employer needs in order to remain relevant.

In the same vein, Riley raises important questions about the future of education in Bermuda due to the declining population and the increase in the number of seniors. He admonishes educators to seek solutions to the prospect of school closures, to increase the number of males who seek advanced education, and to be creative in terms of increasing enrolment in tertiary education.

The move towards 21st century skills is rooted in appropriate pedagogy at the earliest levels of education that encourages students to think independently and creatively and to raise critical questions. This, coupled with enhanced use of technology and a grounding in human rights, will lead to student success. Finally, education in Bermuda must be relevant, and changes must be made to meet the needs of the island's population.

Editorial

Transforming Education for the 21st Century: New Thinking, New Action

Victoria J. Marsick

What does the 21st century demand of college graduates? What will the implications be for higher education?

There are several well-regarded 21st century skills frameworks for thriving in today's complex, global, technologically driven world. These include those developed by the Partnership for 21st Century Skills (2006) (P21), the American Association of Colleges and Universities (2007), and the Organisation for Economic Cooperation and Development (2005). P21 content includes, for example, global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; health and wellness awareness. Learning and thinking skills include critical thinking, problem solving, communication, creativity, innovation, collaboration, contextual learning, and information and media literacy.

Twenty-first century skills are needed for "jobs that emphasise expert thinking or complex communication – tasks that computers cannot do" (Levy and Murnane 2004,53-4, cited in Dede 2009,1). People collaborate across media and the world through "teams … with complementary expertise and roles, as opposed to individuals doing isolated work in an industrial setting" (Dede 2009,2). The 21st century thus requires contextual skills such as "filtering data derived from experiences in complex settings to develop skills in sophisticated problem finding" and "group interpretation, negotiation of shared meaning, and co-construction of problem resolutions" (Dede 2009,2-3). Pattern recognition, coupled with critical thinking, can also help determine when contexts call for innovation versus adaptation. Technology, especially social media, opens the door to "new learning" (Cope and Kalantzis 2013) characterised by collaborative intelligence, active knowledge-making, multimodal meaning, recursive feedback, learning that is ubiquitous and situated, and metacognition.

An expert committee struck by the US National Academies (Pellegrino and Hilton 2012,4-5) emphasised "deeper learning" that enables transfer "to support new learning or problem solving in culturally relevant contexts." Readily retrievable "well-organised knowledge" is the key to expertise. Learning calls for "extensive practice, aided by explanatory feedback that helps learners correct errors"; such feedback is best acquired through "multimedia learning environments." Rote learning does not promote deeper understanding (Pellegrino and Hilton 2012,4-12); intrapersonal "teachable" capabilities do. These include intellectual openness; conscientiousness and initiative; self-direction, self-regulation, and self-monitoring; as well as physical, emotional, and psychological health (Pellegrino and Hilton 2012,22-3).

Disruptive technologies – including a preference for "anywhere, anytime" online learning – is one of several key challenges in higher education today. Eighteen to twenty-two-year olds increasingly do not enrol full-time after high school. An infographic created by the Gates Foundation, for example, shows that "if 100 students were chosen to represent the population of America's colleges and universities, 56 [of them] . . . would be female, and 26 would have children. The majority . . . would be working while in school, one-fifth with full-time jobs. Thirty-four . . . would be over 25-years-old" (Setser and Morris 2015,4). Dew (2010) points out that many young people are not able or willing to go into debt for full-time college study, opting instead for part-time study combined with work, often through community colleges or online courses. Exceptions would be professions (e.g., medicine, law, and engineering) and fields requiring intensive laboratory or face-to-face training.

Meanwhile, an increasingly global working environment calls for multicultural competence, outcomes assessment, and alignment of curricula across institutions and countries (Altbach 2009; Dew 2010). More students seek higher education today – reflecting what Altbach (2009) called "massification" – at a time when colleges experience funding shifts, resource constraints, and new space and technology requirements. Global partnerships and international campuses have responded to new demand. Dew (2010, 49) suggested that fewer "full-time faculty will … serve as the guardians of a body of knowledge in their discipline," while larger numbers of teaching and adjunct faculty will be hired to meet student demands for relevant, quality educational experiences.

Mercer (2015) analysed the responses of higher education in the UK to the challenges of globalisation, and concluded that universities need to make strategic choices. "There is not a one-size-fits-all approach when it comes to competing globally. Nor should there be" (Mercer 2015, 5). Universities need to assess their strengths, their student base, and their market needs. International partnerships or campuses could play a role for some institutions, but others might serve regional needs or special audiences such as working adults.

The 21st century is experienced differently, depending on each student – his or her geography, gender, race or ethnicity, religion, socioeconomic status, language, personality, and opportunities, among other things. Diversity of background and interests is increasingly welcome in the global economy, but at the same time, businesses and public institutions are challenged to learn how to create environments that are inclusive and tolerant of different points of view.

A 21st century skill essential for innovation and growth, and at times, simply for survival, but not always considered as a desideratum, is the ability to recognise and work with difference, and to cross and explore boundaries that divide disciplines, subject matter, and peoples. This capability calls for a fundamentally transformed mindset. If we see the world in terms of rules and right vs. wrong, for example, we might define 'the other' as wrong, just because he/she experiences reality differently. In the 21st century, we need to instead see our shared experiences – at work, in families, or in larger social institutions – as suggestive of patterns only seen when we look at whole systems or ecologies of life. Starting with cells, Fritjof Capra (1996) in *The Web of Life* shows how life diversifies and grows through novelty and experimentation.

The 21st century is focused on innovation. This often starts with what the technology world calls 'mashups' – the joining of ideas that do not seem related but, when brought together, break new ground. Higher education is well suited to be the vehicle for opening up minds to new ways of thinking, and for breaking new ground. This calls for what Dorothy Leonard-Barton (1995) described as "creative abrasion" to enable people with radically different ideas to bridge points of view and innovate – a needed 21st century skill that points to changes in the how and not just the what of teaching and learning. The payoff can be the growing ability to solve collaboratively the big challenges in lives and society through teaching and learning that fosters conversation and capabilities for working across what are, in essence, human-made boundaries that hold back our own growth and the growth of others.

References

Altbach, P.G., L. Reisberg and L.E. Rumbley (2009). *Trends in global higher education: Tracking an academic revolution.* Report prepared for the UNESCO World Conference on Higher Education. Paris: UNESCO and SIDA/SAREC.

American Association of Colleges and Universities (2007). *College learning for the new global century.* Washington DC: AACU.

Capra, F. (1997). *The web of life: A new scientific understanding of living systems.* New York: Anchor Books.

Dede, C. (2009). Comparing Frameworks for "21st Century Skills." July. http://sttechnology.pbworks.com/f/Dede_(2010). Downloaded 28 January 2016.

Leonard-Barton, D.A. (1995). *Wellsprings of knowledge: Building and sustaining the sources of innovation*. Boston: Harvard Business School Press.

Mercer, J. (2015). Making the grade 2015: The key issues facing the UK higher education sector. http://www2.deloitte.com/content/dam/Deloitte/uk/Documents/public-sector/deloitte-uk-making-the-grade-2015.pdf. Downloaded 23 February 2016.

Organization for Economic Cooperation and Development (2005). *The definition and selection of key competencies: Executive summary.* Paris: OECD.

Partnership for 21st Century Skills. (2006). *A state leader's action guide to 21st century skills: A new vision for education*. Tucson AZ: Partnership for 21st Century Skills.

Pellegrino, J.W., and M.L. Hilton (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century.* Washington DC: National Academies Press. www.nap.edu. Downloaded 28 January 2016.

Setser, B. and H. Morris (2015). *Building a culture of innovation in higher education: Design and practice for leaders.* 2Revolutions and EDUCAUSE. http://www.2revolutions.net/CultureofInnovation_HigherEd_4.15.15_FINAL.pdf. Downloaded 28 January 2016.

Inquiry: An Emancipatory Pedagogical Strategy for Bermuda Schools

Sharon B. Speir and Llewellyn Simmons

Abstract

This article introduces the inquiry model adopted for Bermuda government preschools and early primary schools, which, because of its emancipatory critical pedagogy, uses abductive reasoning. This model is particularly well suited to government schools, given Bermuda's historical inequities and cultural differences. Abductive reasoning allows for revision with new information, and leads to a broader view of knowledge, innovation, and creativity. It also mimics the way young children learn. Critical emancipatory pedagogy is designed to raise learners' critical consciousness. The article argues that this form of reasoning and critical consciousness is required for Bermuda's children to take their rightful place on the global stage as protagonists rather than as passive recipients. The success of this inquiry model is contingent upon leadership disruption framed within a critical emancipatory pedagogy.

KEY WORDS: *Inquiry, emancipatory, critical pedagogy, abductive, deductive, inductive, leadership, disruption theory, logic of discovery, practical reasoning*

Background

In September 2015, the Bermuda ministry of education officially launched an inquiry framework – a pedagogical framework that will shape how the designated curriculum is delivered in public schools. Traditionally, teaching in Bermuda's schools has focused on didactic methods. In the classroom, the characteristics of teaching and learning are teacher-centred, such as teacher-modelling procedures and techniques, identifying desired learning, and undertaking activities that manage behaviours. The student is to follow what the teacher lays out as a plan, observe, copy, and be directed.

Didactic learning methods focus on the baseline knowledge students possess and seeks to improve upon this by conveying information. It also refers to the foundation in a lesson plan, whose overall goal is knowledge. According to the Galileo Educational Network (2015), "Inquiry is a dynamic process of being open to wonder and of coming to know and understand the world." The introduction in Bermuda of an inquiry model that utilises abductive reasoning because of its critical emancipatory pedagogy calls for a shift from teacher-centred instruction to a collaborative student-centred construction of knowledge. The model acknowledges that a child comes to learning not as an empty vessel but as an active learner, having already acquired informal knowledge and engaged in research processes. It recognises the learner in the process of learning and attends to the learner's questions and process of learning.

Given the race history of Bermuda and the cultural expectations that persist primarily for Black children attending public schools (Christopher 2009), this image of the young Black child as having capacity is an important and fundamental shift, because it will determine the teachers' pedagogical decisions and actions (Malaguzzi 1993). Bermuda's education system is still in transition from 20th century practices. With the 1997 education reform that

brought about structural changes in schooling – with two senior schools and five middle schools – and curricular shifts, the education politics of race, class, and gender were altered, as were modes of interaction such that the role of the teacher as dispenser of knowledge and the student as empty vessel were transformed. The thought processes of students demanded that teachers reposition themselves from the front and centre of the classroom into an interactive circle of learning with students.

The authors contend that Bermuda's children have a natural propensity for inquiry and research. They are open to new experiences and ideas, take in an abundance of information through their senses, and actively construct understanding with their peers by making meaning and creating relationships with ideas and concepts. They are capable of asking questions that matter and carrying on investigations that lead to satisfactory theories. Success in delivering the inquiry framework as an emancipatory pedagogy will lead to a transformative educational experience that creates a shift in teacher leadership and delivery and a shift in how students think, reason, question, and act.

Abductive Reasoning

The emancipatory nature of abductive reasoning is its openness to the future and its capacity to imagine something new. When the goal in education is to create and innovate rather than replicate, abductive reasoning makes sense. Instead of preserving a single truth, abduction is best thought of as evincing multiple truths: single perspectives are not false, they are inadequate (Patokopi 2009). Abductive reasoning stands in contrast to the more familiar deductive and inductive reasoning. Deduction starts with a theory and infers a result, which is certain; induction starts with evidence and produces a rule, which is valid until a contrary instance is found; and abduction starts with a hypothesis based on evidence and produces a case that is always merely plausible (i.e., uncertain) (Patokopi 2009; Stathis 2011).

For Malaguzzi, abductive reasoning is similar to the way young children operate in the world, developing and acting upon their own hypotheses, which are provisional (cited in Hoyuelos and Pisano 2013). Abduction is the search for a general rule from which a specific case would follow. Through the lens of abductive reasoning, learning is a complex and an incomplete process, cannot be fully understood, and is never complete (Patrokopi 2009).

Leadership Disruption Theory

A widely accepted definition of leadership is that it is the activity of influencing people to strive willingly for group objectives (Rost 1993). The application of inquiry and the shift from didactic to critical emancipatory pedagogy engenders new leadership activities and delivery strategies in the teaching and learning process. It is the leader who initiates changes in established structures, procedures, or goals. This leadership is one of abduction, in that it is open to new ways of teacher and student thinking and doing. The leadership action disrupts the existing state of affairs wherein the teacher is the bearer of knowledge, the student an empty vessel. Castle (2012) asserts:

> Disruption theory is a focused look at the psycho-emotional actions and reactions to seemingly chaotic or revolutionary acts. They create enough of a disturbance … enough of a distraction, to permit a pinhole opening for robotic thinkers, ritualists, zombified management, and ardent conventionalists to be receptive to the sound which immediately follows the metaphorical explosion.

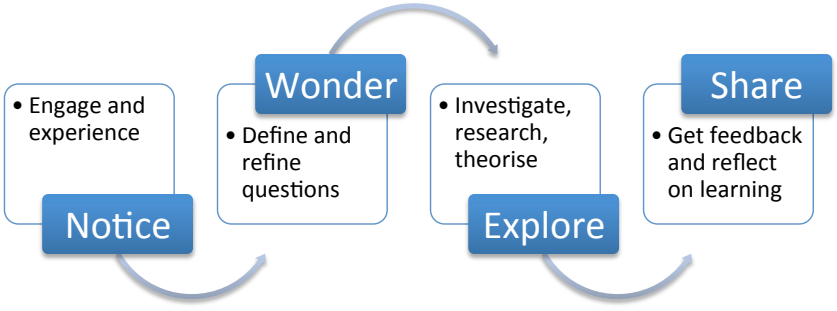
This disruption evokes change in the form of an emancipatory pedagogy for Bermuda's early childhood education that will engage children through abductive reasoning that is innovative and critical. For critical thinking and doing to become reality in the classroom, teachers and students need a teaching and learning inquiry framework.

Inquiry Framework

The inquiry framework sets out a vision and dispositional outcomes, an inquiry model, and implementation strategies. The vision of the inquiry model is that Bermuda's children will ask questions that matter – they will explore, investigate, inquire, develop theories, engage in collaborative conversations, and build collective understandings. Skilled teachers will facilitate learning by designing rich and authentic opportunities that will build on children's informal knowledge and provoke high-level thinking. Bermuda's local landscape, cultures, and traditions will be the subject of their studies. The goal in promoting inquiry for teaching and learning in the preschool and early primary levels is that we want Bermuda's children to be self-directed learners, confident people, concerned citizens, and active contributors in the 21st century.

The inquiry model (Figure 1) includes four recursive phases (noticing, wondering, exploring, and sharing). In the first phase, children engage in interesting and novel experiences that prompt them to take notice and wonder. In the wondering phase, teachers work with children to define and refine their questions and decide on which questions are worth pursuing. In the exploring phase, small groups engage in investigations and hypothesise and theorise based on their findings. In the sharing phase, children discuss what they have learned and pose new questions.

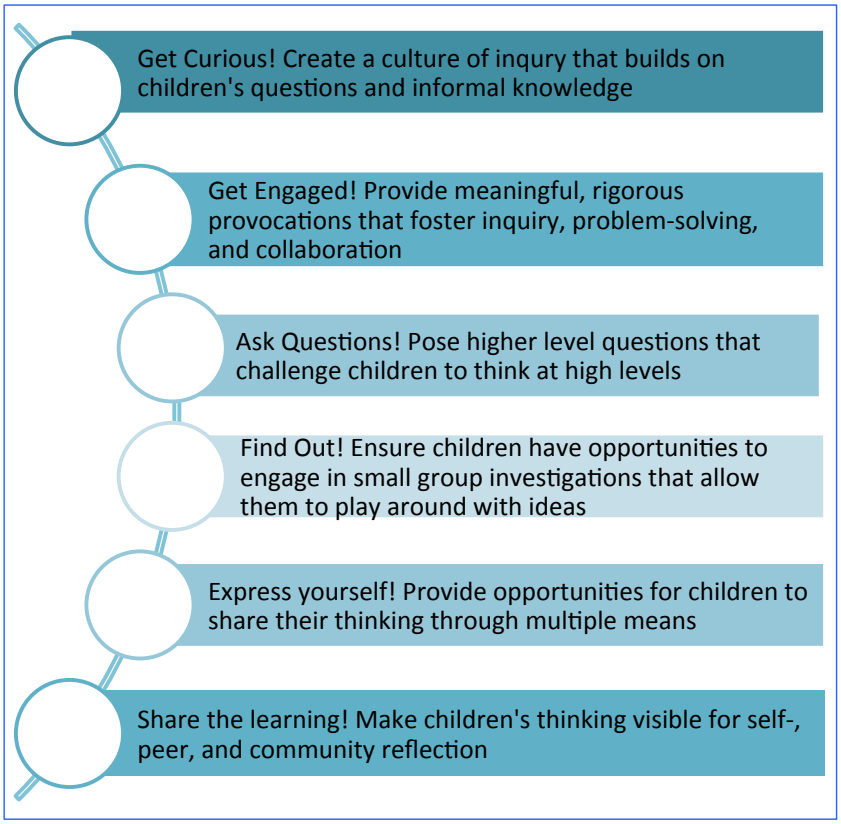
Figure 1: **Inquiry Model**



Source: *Inquiring Minds: Inquiry Framework for Early Childhood Education* (2015) Department of Education, Government of Bermuda

Within the framework, six teaching strategies (Figure 2) have been defined to support implementation. The first is creating a culture of inquiry whereby teachers build on children's questions and informal knowledge by modelling an inquiry stance and creating supportive classroom structures. These structures include establishing protocols for listening and participating, and providing space, resources, and materials for children to do the work of inquiry, while ensuring sufficient time to investigate topics. The second strategy involves designing problems and provocations based on the curriculum that will engage children in real and authentic problems and tasks. The third strategy focuses on developing the questions that support thinking at high levels. This includes engaging children in brainstorming and refining questions, as well as asking high-level questions that advance children's thinking. The fourth strategy refers to developing a plan for investigation, which includes direct observation, collecting data, designing experiments, building prototypes, and talking to experts, as well as having children put their ideas and theories down on paper. The fifth strategy outlines methods for children to talk through their ideas in mini-conferences and expressing their thinking in various ways, including dance, art, music, and drama. The sixth strategy involves documenting the learning by means of photos and texts, and collecting artefacts in order to display the learning for feedback, reflection, and assessment.

Figure 2: **Inquiry implementation strategies**



Source: *Inquiring Minds: Inquiry Framework for Early Childhood Education* (2015) Department of Education, Government of Bermuda

Early evidence from this initiative confirms the capacity of four-year-olds in government preschools to ask complex questions that link to curriculum content, questions that are more typically associated with older students at more advanced levels.

- Does magnetic force pass through water? (physics)
- Do caterpillars get wet in the rain? (biology)
- How many is two tens (holding two hands up with fingers spread)? (mathematics)

These questions demonstrate that young Bermudan children think about complex ideas at very young ages. They are constructing hypotheses and theories based on information they gain through their experiences and apply intellectual standards to assess thinking. In other words, through their questions they seek clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness (Paul and Binker 2012).

Case Discussion

Any educational theory that is critical and emancipatory must generate a discourse that moves beyond the established language of administration and conformity (Giroux 1988). A democratic approach is inclusive, one that listens and responds. Inquiry takes many forms, including formal studies initiated by adults or in response to informal

incidents, such as when a child discovers that light reflects off the sequins on her dress-up clothes. As she swings her arms in front of the window, the light reflects on the wall and moves as she moves. The question of what conditions come into play to create this phenomenon is intriguing. An element of surprise often sparks further exploration and actions to replicate the experience under controlled conditions.

Children are naturally curious about the 'hows' and 'whys' of the world. "Babies and children are like little scientists. They gather evidence by observing and experiencing the world" (cited in Kushnir 2007). Recently we observed a group of four-year-olds watch ice cubes melt on to paper towels. When asked what was happening, one child commented that the paper towel was making the ice cold. Thus, he has a theory about the relationship between ice cube and towel. The tendency in typical didactic classroom settings is to correct this apparent misconception. In an inquiry-based classroom, where the image of the child as inquirer is fostered, the teacher is more interested in exploring the child's thinking. What has the child observed? What relationship has he noticed? What do others think? In this case, the child has observed that the towel is cold and that the ice is melting. He thinks there is a relationship between the two. He hypothesises that the towel is making the ice cold. According to Kushnir (2007), children form theories but revise their beliefs should they get good evidence that contradicts their earlier assumptions.

In a classroom where inquiry is the pedagogical framework, the teacher does not claim to have the ultimate truth. Certainly she brings her own knowledge and experience, but she remains open to exploring the multiple perspectives brought by children and assists them in working towards a plausible theory. She might, for instance, ask children working in small groups to explore melting on different surfaces and their effect on the ice. We can imagine several scenarios: holding the cube in their hands or placing it on tinfoil or in water. The teacher facilitates the exploration by asking open-ended questions and providing resources, materials, and opportunities to test the ideas. She will likely provide the children with the vocabulary necessary to express the concepts they are exploring and will provide them with the means to record what they think is going on. Moreover, she may invite experts in the field to work with the children or to discuss with them what they have learned to date. We expect, given the adaptive and provisional nature of children's thinking, that when small groups of children engage in investigations, their theories will evolve and they will revise their thinking as they adapt to new information and further their understanding.

Notwithstanding the depth of understanding that is possible among preschool children in a study of the change of state of ice and transference of energy, our goal would not be that they understand the molecular structure of ice and water, the energy involved in freezing and melting, nor the transfer of heat. However, they will recognise that something is going on and engage in shared inquiries about it. Young children often surprise us with what they understand when they have the opportunity to work concretely with abstract concepts. Most importantly, they gain a sense of confidence in themselves as learners and their capacity as researchers. Furthermore, children can explore real-life applications relevant to Bermuda, such as weather patterns and systems, energy conservation, and global warming.

Conclusion

Through inquiry, we create a culture of lifelong learning and the skills to advance our understanding today and into the future. Is it too far-fetched to imagine a towel that could keep ice cold? When we do not accept the 'truth' of the day as absolute, we are open to new discoveries, new theories, and the advancement of knowledge. Much has changed in the theories of heat energy and heat exchanges. Much will change over the lives of the children entering preschool. Our goal is that they be thinkers that contribute to new knowledge.

In creating a culture of inquiry where questions matter, children can voice their thinking, adults and children listen to each other, mistakes are learning opportunities, and reflection is essential to planning. This requires that teachers and school leaders have an inquiring mindset.

In the words of Elder and Paul (2005): "An open mind, a spirit of curiosity, and the use of questions rather than certainty can significantly help us be more equipped for this new world and all of its complexities." When leaders ask critical questions for which they have no answers; when they truly engage staff in the process of inquiry and are open to the multiple perspectives brought forward by staff and students, they model the inquiry approach.

One preschool administrator commented as we discussed inquiry examples: "The children are teaching us about inquiry?" This stance bespeaks what we call a beginner's mind – an openness to new possibilities. This shift will lead us to new ways of thinking about teaching and learning in Bermuda's government schools. Such an approach involves a way of thinking about, negotiating, and transforming teaching relationships in the classroom, the production of knowledge, school institutional structures, and the social and material relations of the wider community, society and nation state (McLaren 2000b and 1993; Keesing-Styles 2003). In short, it is an approach requiring invention and innovation!

References

Castle, D.E. (2012). Disruption Forces Innovation – Disruption Theory. http://takingcommand.blogspot.com. Retrieved 5 November 2015.

Christopher, J. (2009). *A random walk through the forest*. Winnipeg: Hignell's Publishing.

Didactic method (n.d.). Definitions.net. http://www.definitions.net/definition/didactic method. Retrieved 22 March 2016.

Elder, L. and R. Paul (2005). *The Miniature Guide to the Art of Asking Essential Questions.* Tomales CA: Foundation for Critical Thinking.

Galileo Educational Network (2004). Focus on Inquiry. http://inquiry.galileo.org. Retrieved 5 November 2015.

Giroux, H. (1988). *Teachers as Intellectuals: Toward a Critical Pedagogy of Learning.* London and Westport CT: Bergin and Garvey.

Keesing-Styles, L. (2003). The relationship between critical pedagogy and assessment in teacher education. *Radical Pedagogy* 5:1-20.

Kiely, L. (2013). Questions are the answer: Building a culture of inquiry. American Society for Public Administration: PA Times. http://patimes.org/questions-answer-building-culture-inquiry/. Retrieved 22 March 2016.

Learning about how young children learn. (n.d.). Outreach and Extension. Department of Human Development, College of Human Ecology, Cornell University. http://www.human.cornell.edu/hd/outreach-extension/upload/Learning-about-how-children-learn-Kushnir.pdf. Retrieved 22 March 2016.

Kushnir, T. (2009). The surprising rationality of young children's learning (video lecture). Human Development Research Update, May, Cornell University.

Kushir, T. and A. Gopnik (2007). Conditional probability versus spatial continuity in casual learning: Preschoolers use new contingency evidence to overcome prior spatial assumptions. *Developmental Psychology* 44:186-96.

Hoyuelos, A and R. Pisano (2013). *The Ethics in Loris Malaguzzi's Philosophy.* Reykjavik: Isalda.

Malaguzzi, L. (1993). Your Image of the Child Where Teaching Begins. Exchange 3/94. http;//reggioalliance.org/downloads/malaguzzi:ccie1999.pdf. Retrieved 22 March 2016.

McLaren, P. (1995). *Critical pedagogy and predatory culture.* New York: Routledge.

McLaren, P. (2000b). *Che Guevara, Paulo Freire and the pedagogy of revolution,* Lanham MD: Rowman and Littlefield.

Nouri, A. and S.M. Sajjadi (2014). Emancipatory Pedagogy in Practice: Aims, Principles and Curriculum Orientation. *International Journal of Critical Pedagogy* 5: 6-87.

Patokopi, E. (2009). What Could Abductive Reasoning Contribute to Human Computer Interaction? A Technology Domestication View. *PsychNology Journal* 7:113-31. http://psychnology.org/File/PNJ7(1)/PSYCHNOLOGY_JOURNAL_7_1_PATOKORPI.pdf. Retrieved 5 November 2015.

Paul, R. and A.J.A. Binker (2012). *Critical thinking handbook: K-3rd grades: A guide for remodelling lesson plans in Language Arts, Social Studies and Science.* Tomales CA: Foundation for Critical Thinking.

Psillos, S. (2011). An Explorer upon Untrodden Ground: Pierce on Abduction. In Dov M. Gabbay, Stephan Hartmann and John Woods (eds) *Handbook of the History of Logic.* Volume 10: *Inductive Logic.* http://users.uoa.gr. Retrieved 22 March 2016.

Rost, J.C. (1993). *Leadership for the twenty-first century.* Westport CT: Praeger.

Using Stories to Support the Musical Development of Children

Davidson R. Bishop

Abstract

This study investigates whether the musical development of children can be enhanced by using children's stories. The musical skills being developed are composing, performing, listening, and appraising. Two stories by well-known author Julie Donaldson and inquiry-based learning were used to engage the pupils' imaginations. The study shows that children aged 5 to 6 were extremely engaged with the story and created interesting elemental rhythmic compositions consisting of basic rhythms with minim, crotchet, and quaver notes and rests that enhanced their experience of the story. During the study, data were gathered from pupils and teachers by means of interviews, behavioural observation, questionnaires, and co-creation activity. The children were divided into five mixed-gender groups across two classes, each group comprising five children of mixed ability. The study indicates that children can be very receptive in creating their own basic music compositions in response to a story they have experienced.

KEY WORDS: *Cross-curricular study, musical development, literacy, composition*

Analysis and Evaluation of Action Research

The intended objective of my action plan for the teaching project under consideration was to have pupils develop a sense of independence in expressing themselves through their musical compositions. I also wished to develop my teaching for creativity. Teaching young children elemental music composition using simple rhythms can be intimidating. "Creativity," according to Tegano et al. (1991, 8) "in dealing with young children … should be … the process (i.e. developing and generating original ideas), which is the basis of creative potential." During my study, I discovered that many of the students expressed their ideas through musical compositions once the opportunity and context were created for them.

Implementing a new focus in music lessons at my school commenced with a meeting among class teachers and the author. We perused the books in the classroom library and agreed on the selection of *Zog* and *The Gruffalo* by Julia Donaldson. These books were chosen because they reinforced the 'Golden Rules,' which are essentially the code of conduct in our primary department. Another influencing factor was the rare opportunity for the Year One class to attend a performance of another work by Donaldson by a renowned children's theatre company based in the UK, which has staged a number of works by this author. After seeing the performance, which our Year One pupils and teachers thoroughly enjoyed, and reviewing the materials from the performers given to me by the local organisers of the festival, I was really inspired by the suggestions of games to dramatise the story. Also, seeing how one could take an element from the story and develop a simple song, embellishing it with body percussion and percussion instruments, was exciting!

Guderian (2012) states: "During collaborations, teachers examine the characteristics of each discipline to determine connections between the disciplines. With that knowledge, they can design learning experiences to make students aware of the connections." (20) In the planning meeting with the Year One teachers, we shared our respective objectives. This allowed us to chart a course that was most beneficial to both teacher and students. Such undertaking is of paramount importance, since classes "must also hold potential for learning experiences that will add to students' understanding of and skills in all disciplines involved" (Guderian 2012, 20). My students had composed elemental music previously, and I sought to extend their experience of composing by using material or elements from *Zog* or *The Gruffalo*. I thought this would not only amplify the meaning of the story, but get children to explore the rhythm of the text, and even add movement to enhance the story if they chose to do so. Thus, students would not only be honing their sense of pulse and their rhythmic skills in music, but would also attend to meter in literature, specifically the iambic pentameter. I hoped that students would use the rhythmic material, as well as other elements in the story, as a basis for their elemental compositions: they delivered with little intervention from me.

After students had completed the opening exercises for the music lesson, which usually consists of singing and sometimes a Dalcroze exercise, they repeated the simplified objective of the lesson: We are learning to create movement in response to a visual stimulus. This exercise took the two classes four lessons to complete, from introduction to plenary to the student surveys. I introduced the lesson on *Zog* by writing the word 'dragon' on the electronic touchboard, and then asked students if they were familiar with the word or had seen it before. Many students recognised the word and in the mind-mapping exercise offered many other words they regarded as associated with it.

The mind-mapping technique, a form of brainstorming, was used to elicit "more focused starting point questions and exemplar activities … to scaffold learning, to begin from children's own experiences and what is familiar" (Terry 2011, 137). After the word approach, a picture of the Zog was used to determine if this would enhance their responses or provide additional ideas to describe the creature. As soon as the picture was on the touchboard, I observed excited faces and a plethora of hands being raised. All in the class recognised the picture as that of a dragon and those who had prior knowledge of the story immediately identified it as the picture of Zog. This approach was adopted to determine whether pupils would get more ideas from a specific word or a picture. They would then use this information to create their own dragon-like movements. Would I have gained more responses if I had drawn the picture first? Probably yes, but I wanted the responses not to be influenced by a colour picture, but to emerge from their imaginations. Also, this helped in teaching me how much they knew about dragons from other stories or other contexts.

With the other Year One class, which was focused on the Gruffalo, I employed a similar mind-mapping approach, following the same sequence of presenting the word first and then the picture. Only four students recognised the word 'Gruffalo,' and two immediately recognised the picture as the Gruffalo, while some students identified it as a wild hog. One very observant student made a connection between the picture on the touchboard and a poster of me in my room holding a book called *Hog Penny* created by our school library to promote reading in the school. I then briefly shared with them that the hog is on the Bermuda one cent piece, and that hogs were present in Bermuda when it was discovered. In this context, it is interesting to note that, according to Greene (2012, 37), in cross-curricular lessons "each lens gives us a unique perspective. Combine them and understanding deepens." Also, "at the interface of different disciplines, new discoveries can occur … Suddenly, a 'discipline' is not a permanent stone structure, but a flexible building with numerous open doors that encourage travel and transitions" (Greene 2012, 37).

After my historical detour, I refocused on *Gruffalo* by having pupils move to a steady drumbeat, using the words on the touchboard from the mind-mapping exercise as a stimulus for movement. The class focusing on Zog did a similar exercise, and the level of engagement was very gratifying. Both classes came up with the movements on their own, using the words they shared as a stimulus. I noted some students from both classes using sounds to enhance their own creations as they fully engaged with their respective characters. Smiles were evident, as were facial contortions in conjunction with some movements and there was some laughter, communicating to me their

obvious delight in the activity (See Appendix Ai).

During my visit to Lincoln in the United Kingdom for the commencement of school placement and teacher seminars, a tutor introduced me to the concept of the teacher interacting more and intervening less. Crabtree et al. (1998, 35) state there is "the need for teachers to interact with and, consequently, teach children by providing intentional as well as spontaneous modelling, demonstrations, feedback, mediation, and explicit instruction as needed." The words on the electronic board plus imagination provided the basis for the movement observed in pupils in both classes. I simply contributed a steady beat, which can be considered a framework for their original and unique expressions in movement in that lesson.

In the second lesson on both *The Gruffalo* and *The Zog*, the behavioural objective was for students to create and perform sounds in response to a visual and aural stimulus (see Appendix Aii). This lesson entailed showing the children the cover of the book and then reading the story to them. I observed at a certain point in my initial read-through that some students were repeating the recurring parts of the story with me. Soon, the whole group was engaged in this activity. I should also note that in my read-through, I used different voices to represent different characters to create and sustain interest. Huffman (2013, 24) encourages teachers to "give students many opportunities to hear you read fluently and with expression. Students love listening to an enthusiastic reader. Read a favorite book aloud." This was confirmed in my reading of the books to both classes. They were attentive and responsive. Huffman (2013, 24-5) further states: "As you read, change your voice for different characters, and/or invite your students to portray different characters when a word or phrase repeats throughout the book."

After I had completed reading the books, with my students joining in for the refrains, I divided the children into groups and gave them rhythm sticks. *The Zog* class was divided into five groups to represent each year the dragons studied and the various activities they engaged in to eventually gain the coveted medal. *The Gruffalo* class was also divided into five groups to reflect the number of characters in the story. My instructions to pupils were to respond with the rhythm sticks after I read a sentence about their character or group. This I did to get them thinking about what they would compose as a group. I also sought to make them familiar with the character or group they were composing about. That exercise went well, again with varied interpretations, reflecting an action or personality of a character or group. Students achieved this using different techniques of playing the rhythm sticks, including tapping, scraping, or just letting the sticks fall to the floor to produce a specific effect. The class was assigned five minutes to discuss ideas and create an initial composition, which they were encouraged to share.

During the next lesson, the students were given ten minutes to meet again about planning their composition. During this time I walked among the groups to offer suggestions through questions rather than instructions. Johnston as cited in Kerry (2011, 52) states: "Learning should be practical and exploratory … learning is enhanced through effective peer interaction … learning requires effective adult support and interaction."

I have adopted this constructivist approach because it gives children ownership of their learning. Tegano et al. (1991, 13) state:

> As adults when we look back on our favorite classroom experiences … we find that these experiences probably were not "lecture and test-type" courses. They often contained elements of divergent thinking, discussion, and debate about the "best way," hands-on experiences, and opportunities to learn rather than to be taught any particular concept.

The next phase in my lesson plan was the feature event, when students would share their rehearsed compositions. I once again observed a variety of playing techniques in both classes, but this time groups included movement in their presentations to represent characters such as the dragons flying in zig-zag formation, or the snake as it spoke to the mouse in *The Gruffalo*. Some groups also carefully arranged their elemental compositions using a tiered approach similar to composing a fugue, where a single subject or theme enters at different points. This was extremely fascinating, gratifying and, most of all, fun!

Following these wonderful expressions, I asked students to critique their own work as a group, stating one thing they liked and one thing they thought they could improve. I then requested that groups critique each other in the same manner. Overall, the groups were able to express opinions constructively, even asking questions about why a particular playing technique was chosen and about other elements of a group's composition. I also observed that groups generally were able to effectively link what they composed to what was happening in their respective stories through their explanations or answers to questions about their compositions.

In developing the student survey, I followed the general principles of organisation guiding our Human Rights Friendly School. These general principles are:

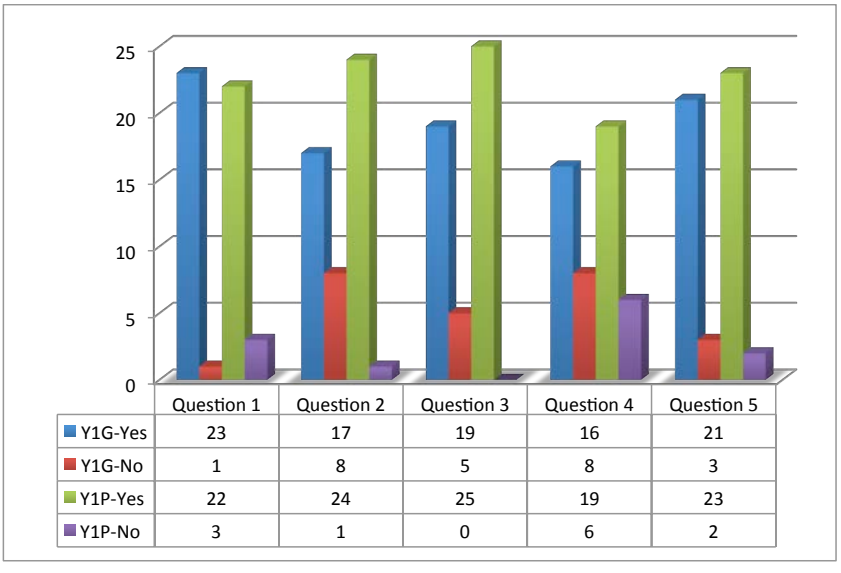
> … equality, dignity, respect, non-discrimination and participation. [A Human Rights Friendly School] is a school community where **human rights are learned, taught, practised, respected, protected and promoted** … [it is also] an approach which goes beyond the classroom and into all aspects of school life, commonly called a "whole-school approach," a "holistic approach" or "rights-based approach," [so that] both schools and young people become powerful catalysts for change in their wider communities. (Amenit 2014, Original emphasis)

I sought permission from the administration and parents to conduct this survey. The parents' letter is in Appendix B. The five questions posed to the Year One pupils are:

1. Did you know the story of the *Zog*/*Gruffalo* before you heard it at school?
2. Did you enjoy the story of the *Zog*/*Gruffalo*?
3. Did you enjoy how we used instruments to help tell the story of the *Zog*/*Gruffalo*?
4. Was the use of instruments helpful in giving you a better understanding of the story?
5. Would you like more activities with stories and instruments in your music lessons?

The questions were in simple language, at the students' level. No personal questions were asked, nor were children harmed during this exercise. All participated willingly. I used the concept of colouring a smiling face if the answer was yes, or colouring a sad face if it was no (See Appendix C). The graph below illustrates the results obtained from the questions.

***Figure 1: Zog* and *Gruffalo* pupil survey results**



	Question 1	Question 2	Question 3	Question 4	Question 5
Y1G-Yes	23	17	19	16	21
Y1G-No	1	8	5	8	3
Y1P-Yes	22	24	25	19	23
Y1P-No	3	1	0	6	2

The survey results indicate that quite a number of students were familiar with both stories before hearing about them in my class. InY1G, in which 24 pupils (n=24) took the survey, about two-thirds enjoyed *The Gruffalo*. ForY1P, which studied *The Zog*, the entire class of 25 pupils (n=25) enjoyed the book. The children in both classes clearly enjoyed the use of instruments to enhance the story and to create their own compositions. This pleasure was also reflected in the response to the final question, asking whether they would wish for more activities like this in future music lessons. A strong 87.5 per cent of Y1G and 95.8 per cent of Y1P answered yes. Inouye and Inouye (2012, 34), in speaking about the benefits of cross-curricular work in the arts, state: "their creative work becomes more personal, voluntary, and involved … As students develop pride in their work, they are eager to share it. They also better appreciate the work of others." I concluded that my pupils were eager to explore new ideas in their work and were confident in sharing them with others.

The interviews with the classroom teachers revealed that we conduct our lesson introductions in similar ways with visuals and questions (see Appendix D). Their introduction to a story is inquiry based, in the case of one classroom teacher by making use of predictions about the story. Art is another subject used by classroom teachers to assist pupils in connecting with a particular character. Also, there is much oral discussion about the story and this prepares students to show their understanding of it and write a response. They do this in an exercise known as Big Writing, which employs different modalities to make writing less intimidating, while teaching pupils key concepts in effective writing. This was the first time my interviewees had collaborated with a music teacher. They were definitely open to the idea of future collaboration, with the following caveats. The teacher of YIG stated in her interview that in order for this to work properly, "teachers need to carve out time to meet so that it's a true collaboration and so we are aware of the overall objectives" (Y1G, 2014). Y1G also cautioned that "we also have to discuss the results of what has gone on so that we can assess the students more accurately" (Y1G, 2014). I certainly concur with Y1G and know that communication is key to keeping track of progress in both disciplines. Y1P very succinctly stated that "planning and communication is the key for this to work" (Y1P, 2014) (see Appendix E).

Crucial to an effective experience of cross-curricular work is first having willing participants and clear objectives that serve to make the experience an enduring one for pupils and teachers. Guderian (2012, 20) states: "The challenge for teachers is to design teaching and learning experiences that help students develop each discipline's necessary understanding and skill proficiency for use in ongoing learning settings and life situations." To meet Guderian's challenge, teachers also need to recognise the advantages and disadvantages of this cross-curricular approach. In many schools, there are children who struggle with creative writing and literacy. Kelly (2012, 7-8) states:

> Many readers will recognise that they are much more prepared to make the effort to learn something that is thought to be "difficult" when they are interested in the topic, and it is more difficult to learn when they are not interested or do not see the point of learning something. Many will also recognise the buzz they get when the children in their class are engaged and show interest and enthusiasm for a particular lesson or topic, whether this is in a discrete subject or as part of a cross-curricular topic.

There are those colleagues not as amenable to the idea of cross-curricular work, arguing that that "basic skills and baseline content information may be lost within the context of integrated studies" (Crabtree et al. 1998, 33). There are also other areas of concern for opponents of cross-curricular approaches:

> An integrated approach may tend to emphasise some content areas to the neglect of others … [and critics have detected in an] integrated curriculum … the absence of instruction or direction and … an overemphasis on affect, process, and children's interests. They prefer clear goals and objectives for the basics (reading, writing, listening, speaking, and computing), as well as for the specific content areas (Crabtree et al. 1998, 33).

In examining the advantages and disadvantages of this cross-curricular approach, I ask the question, whose benefit is more important, the teacher's or the pupil's? Does not the end justify the means? As teachers we hope our pupils are considering and connecting meaningfully with the subject(s) they are studying. As a parent, I observe how my

own children regularly connect drama and history, music and maths, among other subjects. If they learn about their world, which consists of multiple dimensions, through elements of play, discovery, and experimentation, should this not extend into the classroom as well? Perhaps as teachers, we may be able to help them navigate and learn about the world through our interactions and at other times through intervention and instruction. Maybe the classroom should be an extension of this approach, taking into account curriculum expectations, other demands on time and context, among other factors. Mason (1970, 105) states, "We know ourselves in knowing what we do, in the picture we build of our strengths … we need an awareness of the techniques that suit us best and this is what we should be helping children to discover in the course of their enquires."

In attempting to make cross-curricular links, Laurie (2011) as cited in Kerr (2011, 128) mentions "making tenuous links might be described as the 'keyword approach'." Laurie goes on to show the failed attempt at using the 'theme of water' to link the subjects of history, geography, literacy, and music. She does state that some links were possible, but others were suspect: "selecting them merely because they have some relationship with water misses the true meaning of cross-curricular learning. It fails to support coherence in teaching history, geography, literacy, or music, or the development of key skills and concepts" (Laurie 2011, 128).

To achieve this coherence in cross-curricular planning, the challenge of time to develop these ideas properly was mentioned earlier. At our school, where there are specialist teachers, not as much time is needed as would be the case in primary schools where the classroom teacher is required to teach all subjects. As a specialist, I am able to determine what my students need to know in my discipline and, furthermore, as an Orff-Schulwerk-trained music teacher, integration of curriculum and collaboration is an accepted approach or philosophy. I see myself as assisting the classroom teacher in both our ultimate objectives. By using a number of modalities such as visuals, chant using the text, and application of instruments to reinforce rhythmic concepts, I can make a story come alive for a child who is struggling with the traditional approach. For example, in partnership with two Year Five teachers I did cross-curricular work in science and music. I still remember the 'buzz' in the music room as I removed the panel from the upright piano to reveal the integrated network of strings, wood, metal, and felt that makes the piano work. This did not take a huge amount of time to plan. Contacts in the community provide me with added resources. This greatly assists the classroom teacher in surmounting challenges: thus, more time can be devoted to the actual selection of materials and implementation of the plan.

The final challenge is assessment. How do you assess learning in a cross-curricular context? Fortunately, literature abounds on the topic. Assessing this particular approach is different from assessing discrete subjects, because it needs to "take account of how children apply subject-specific knowledge" (Kelly 2012, 10). I use an inordinate amount of oral feedback and dialogue in my teaching to assess where pupils are and what they can do to improve their work. Taylor (2011) states that "dialogue that helps the child reflect will reinforce and consolidate learning as well as extend it" (Taylor cited in Kerry 2011, 146). Therefore, it may be more important to help children achieve understanding of a subject relative to their environment, than for them to know where they are in terms of a grade, which could serve as a barrier, if the teacher is not prepared to help them through their strengths.

Conclusion

This study has documented my journey in the implementation of an action plan. My objectives were achieved, namely empowering students to express themselves independently in their elemental musical compositions, with some interaction with me but little intervention by me. I have seen pupils work with each other and also think on their own to create their own compositions and willingly respond, sometimes at length, about their previous encounters with dragons. Others just confirmed their knowledge of the story being studied. A willingness to learn and experiment to create their own elemental musical compositions was evident. At the conclusion of this action plan, I can confidently guide pupils in creating their own compositions. This means trusting students to create and guiding them in improving and even discovering new ways of self-expression. This journey has also alerted

me to the pitfalls and criticisms of cross-curricular work, knowledge of which is necessary in planning effective integration of disciplines. Finally, work will continue with colleagues open to this collaborative approach and to challenging pupils to achieve a better understanding of their world.

References

Amenit (2014). Amnesty International http://www.amnesty.org/en/human-rights-education/projects-initiatives/rfsp. Accessed 31 May 2014.

Crabtree, K., M. Jones and P. Wishon. (1998). *Curriculum for the Primary Years: An Integrative Approach*. Upper Saddle River NJ, Columbus OH: Merrill, Prentice-Hall.

Greene. J. (2012). Diary of a Compulsive Integrator. *The Orff Echo* 45(1), 36-9.

Guderian, L. (2012). Learning through Collaboration: Using Integrated or Interdisciplinary Approaches for Upper Elementary and Middle School Learning. *The Orff Echo* 45(1), 20-3.

Gutteridge, C. (2014, 21 May). Cross-Curricular work with Year One Music Pupils. [Interview] Warwick Academy.

Huffman, C. (2013). Building Bridges: Using Orff Practices to Increase Reading and Music Literacy. *The Orff Echo* 45(4, 22-5.

Inouye, M. and M. Inouye (2012). Heightening Creative Sensibilities: An Integrated Arts Approach. *The Orff Echo* 45(1), 32-5.

Kelly, L. (2012). Enhancing Primary Science: Developing Effective Cross Curricular Links. http://books.google.com/books?hl=en&lr=&id=pJIev0lJYeUC&oi=fnd&pg=PA1&dq=related:RhpgGUQL_PGf-M:scholar.google.com/&ots=8bf1kG8n8B&sig=hXsfNKQk0mXodrrKT56csnLNVls#v=onepage&q&f=false. Accessed 28 May 2014.

Kerry, T. (ed.) (2011). *Cross-Curricular Teaching in the Primary School Planning and Facilitating Imaginative Lessons.* London and New York: Routledge, Taylor and Francis.

Mason, E. (1970). *Collaborative Learning.* London: Ward Lock Educational.

Perry. L. (2014, 19 May). Cross-Curricular work with Year One Music Pupils. [interview] Warwick Academy.

Tegano, D. J. Moran and J. Sawyers (1991). *Creativity in Early Childhood Classrooms.* Washington DC: National Education Association of the United States.

APPENDICES

Appendix A(i)

Daily Lesson Plan

Action Research Lesson Plan for Bishop Grosseteste University

Name: Davidson Bishop **Date:** 17 and 24 April 2014

Year Group	**Year 1 G**
Learning Objective	**1.** Children should learn to create movement to a story **2.** Children should learn that pitch and rhythm can be used descriptively **3.** Children should learn to create their own compositions in response to a story
We Are Learning To (W.A.L.T.)	**1.** Create movement in response to a visual stimulus **2.** Create and perform sounds in response to a visual and aural stimulus **3.** Create our own compositions from a familiar character
Warm-up Activity	Sing 'International Day' song and 'Golden Rules' song
Main Activity	**Gruffalo Explorations** **1.** Exploration of the movements and actions of a Gruffalo, mouse, owl, snake, and a fox **2.** Exploration of the sounds of a Gruffalo, mouse, owl, snake, and a fox **3.** Creation of short compositions from elements of the story of the *Gruffalo*
Resources	• Piano • Orff binder • Classroom instruments • Visuals • CD player • Music Express CDs • Copy of *Zog* • Touchboard
Plenary	• Review objectives and verify understanding

Appendix A(ii)

Daily Lesson Plan

Action Research Lesson Plan for Bishop Grosseteste University

Name: Davidson Bishop **Date:** 17 and 24 April 2014

Year Group	**Year 1 P**
Learning Objective	**1.** Children should learn to create movement to a story **2.** Children should learn that pitch and rhythm can be used descriptively **3.** Children should learn to create their own compositions in response to a story
W.A.L.T.	**1.** Create movement in response to a visual stimulus **2.** Create and perform sounds in response to a visual and aural stimulus **3.** Create our own compositions from a familiar character
Warm-up Activity	Sing 'Pharaoh, Pharaoh'
Main Activity	**Zog Explorations** **2.** Exploration of the movements and actions of a dragon **3.** Exploration of the sounds of a dragon. **4.** Creation of short compositions from elements in the story of the Zog
Resources	• Piano • Orff binder • Classroom instruments • Visuals • CD player • Music Express CDs • Copy of *Zog* • Touchboard
Plenary	• Review objectives and verify understanding • Survey of student's views on approaches used in the lesson

Appendix B

15 April, 2014

Dear Parents/Guardians,

I am requesting permission, for your child to be part of my action research for my Post Graduate Certificate in Professional Development in Education with Bishop Grosseteste University in the United Kingdom.

I am researching using literacy to enhance the musical development of children. The results of my findings will enhance, improve and inform my teaching practice going forward. Also, the findings of these results will include photographs of children at work in my classroom. The final paper will remain here in the school's library and may also be published in an educational research journal.

Please indicate your intention below.

Regards,

Davidson R. Bishop
Primary Music Teacher

.....

Instructions: Please circle one option. Thank you.

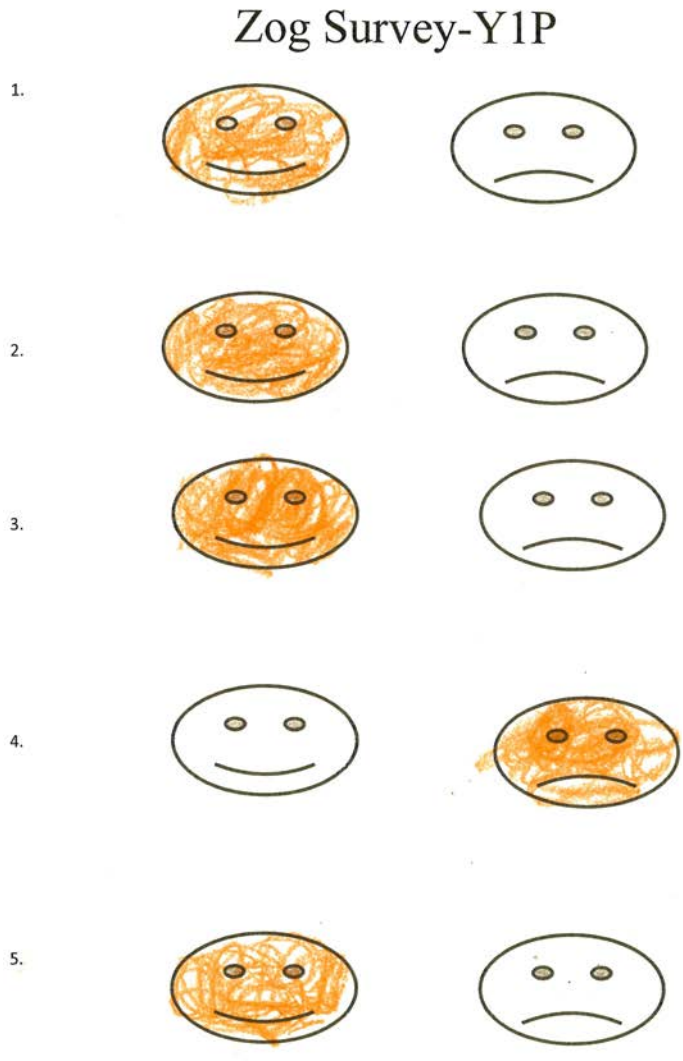
1. I give permission for my child to participate in this research study.
2. I do not wish for my child to participate in this research study.

Name of child: .....

Parent's signature: .....

Date:

Appendix C



Appendix D

Cross-curricular work with Year One Pupils
Class Teacher Interview Questions_Y1G

1. **What process do you follow when introducing stories to students (e.g., *The Zog* or *Gruffalo*)?**

   I introduce books in different ways depending on how I intend to use them. I talk about the cover and title and see if children can make predictions about the story. I may pose a question that I want them to think about as I read. For the Gruffalo I wanted the children to understand that we can describe a character and that the reader gets a picture from our words. I covered the pictures and read the story asking the children to close their eyes and try to picture the Gruffalo. We later drew what we thought it should look like and labelled some of its features.

2. **How do you assess for engagement and/or understanding of the story shared with students?**

   I assess for engagement by watching the children as I read to see if they are fidgeting or distracted. I also see if the children are asking questions or making comments about the story. I can also ask questions to check for understanding.

3. **How much do you assess for engagement and or understanding of the story shared with students?**

   It would be nice to do so with every story, and to some extent I do, but generally I check for comprehension of stories that we are using for writing or circle time or if it is linked with another topic we are studying. I also try to check for understanding when the children are reading the books to the teacher.

4. **Would you as a practitioner be amenable to collaborating in a cross-curricular strategy (e.g., music/science; music literacy) to assist students? Please give reasons for your response.**

   I would be amenable to collaborating but I think that the biggest obstacle to this is time to plan it out. I am happy to share resources and ideas and to take suggestions. I think that the cross-curricular approach is a great way to demonstrate to the year 1s how to make connections and to scaffold their learning. For teachers I think that it always useful to cover the material in a variety of ways and this allows us to move between different teaching styles.

5. **Have you as a practitioner collaborated in this type of cross-curricular work (e.g., music and literacy) before?**

   Not so much with music as previous music teachers have not seemed as interested in collaborative teaching. I think it is a great idea though, especially for the children that have that connection between music and learning, and again its challenges them to view things in a new light while still making connections with previous learning.

6. **What factors (if any) do you perceive that may affect the success of this collaboration?**

   The biggest factors that will affect this collaboration are time and materials. The curriculum is quite full now so we would need to plan carefully so as not to just add more. We need to look at where it is most beneficial to collaborate and be willing to make some changes to allow the collaboration to occur. The teachers will need to carve out time to meet so that it's a true collaboration and so we are aware of what the overall objectives are. We also have to ensure that we discuss the results of what has gone on so that we can assess the students more accurately. If one child is musically inclined and shows a greater understanding of a text through this medium it is important for the classroom teacher to be aware and to make adjustments for styles of learning.

Appendix D

Cross-curricular work with Year One Pupils
Class Teacher Interview Questions_Y1P

7. **What process do you follow when introducing stories to students (e.g., *The Zog* or *Gruffalo*)?**

   It depends on why I am reading it; but most of the time I will give the title, author, and illustrator. We sometimes discuss the cover thinking of what the story may be about or if it is a special author/illustrator (thinking about the style of writing, illustrations, or things that maybe hidden throughout the story. Quite a few children's authors/illustrators do this, so when I am collecting books by a certain author/illustrator I will research them to find out interesting facts to share with the children). A book like *The Gruffalo* I use for Big Writing, so before reading I may ask, have you ever seen a Gruffalo or what do you think it looks like, etc.? I sometimes may have a picture on the board that gives a clue about the story.

8. **How do you assess for engagement and/or understanding of the story shared with students?**

   At the Y1 level it is mostly oral discussion about the story. When used with Big Writing, they will make a diagram, label a picture, draw a picture, create an art piece, or write a response making the story their own. For example, after *The Gruffalo* they discussed what he looked like and then they were given an outline of him and they were to label it giving their own descriptors. After listening to *Owl Moon*, they wrote in their journals about going owling, telling about whom they would go with, and what they would do or see.

9. **How much do you assess for engagement and or understanding of the story shared with students?**

   Since I read to them a few books every day, it is mostly oral discussion, but it is assessed more during Big Writing or when I use stories in the other curriculum areas like math, science, art, etc. I also do guided reading twice a week and a lot of oral discussion about the stories read goes on.

10. **Would you as a practitioner be amenable to collaborating in a cross-curricular strategy (e.g., music/science; music literacy) to assist students? Please give reasons for your response.**

    Yes, I would. I use books in all areas of the curriculum and have a personal collection of read-aloud stories that cover seasons, holidays, authors, numeracy, art, science, etc. At this age, picture books provide the visuals that children need. The books are also very entertaining for the children and teach concepts in a fun way. They love story time and it is a time in the classroom when you can hear a pin drop.

11. **Have you as a practitioner collaborated in this type of cross-curricular work (e.g., music and literacy) before?**

    This is the first time I have worked with the music teacher, but I have used books that are also songs such as "Over the River and Through the Woods." I have in the past used books to enhance all areas of the curriculum.

12. **What factors (if any) do you perceive that may affect the success of this collaboration?**

    I think planning and communication is key for this to work.

Empowering Our Youth Through Human Rights Education: The International and National Promise of Whole-School Approaches

Françoise Palau-Wolffe

Abstract

This article addresses the vital role human rights education can play in formal education not only as a means to reach the standards and objectives of 21st century curricula but also to empower youth. Firstly, I highlight the characteristics of human rights educational programmes and examine how the potential of this approach is embedded in participatory pedagogical methods and the concept of transformative learning. I likewise demonstrate that implementation challenges can be overcome by the adoption of whole-school human rights education models. This discussion, partly based on empirical knowledge, culminates with a recommendation for a more systematic integration of human rights education in Bermudian schools.

KEY WORDS: *: Human rights education, student empowerment, transformative learning*

Introduction

One cannot start exploring human rights education without considering the various interpretations of this multifaceted topic. The term is subject to conflicting perspectives and overlapping definitions, which often "differ in their formulation of goals and principles" (Flowers 2003, 2).

While governmental bodies regard human rights education as a tool to maintain security and prevent anti-social behaviour, this discussion will focus on the values and principles enshrined in the human rights framework (Flowers 2003, 3 and 5) and consider human rights education as an emancipatory tool with the ultimate goal of protecting and defending human rights (Amnesty International n.d.).

Despite the discrepancies in conceptual interpretations, the fundamental role of human rights education in the defence of human rights is endorsed by the international community at large. This endorsement is reflected in the adoption of treaties and conventions such as the 2011 United Nations Declaration of Human Rights Education and Training, under which human rights education became a right in itself (OHCHR 2011). Similarly, at grassroots level, human rights education has acquired strategic importance for international non-governmental organisations such as UNICEF or Amnesty International and for local philanthropic agencies such as the Centre for Justice, CURB (Citizens Uprooting Racism in Bermuda), or the Human Rights Commission, to name but a few. However, if numerous initiatives have proven successful in empowering vulnerable adult groups in non-formal settings, the full potential of school-based human rights education has yet to be unleashed (Lee 2015, 8). Although the promise of human rights education in schools is inherent in such an approach, it often remains untapped because of a lack of vision by states or problems of implementation. A more systematic and consensual integration of human rights education in schools through models that adopt a whole-school approach to it could address these issues and impact our youth positively.

Characteristics of Human Rights Education

Human rights education programmes differ from others not only in their objectives but also in their content and methodology.

Philosophical considerations

One of the prerequisites of a human rights education project is that those responsible for delivering it be acquainted with and adhere to the human rights legal framework, which includes the principal normative instruments such as the Universal Declaration of Human Rights (United Nations 1948), the Convention on the Rights of the Child (United Nations 1989), or international agreements specific to youth rights (Campbell 2012). This acceptance also involves an understanding of the basic principles of universality, indivisibility, participation, accountability, and non-discrimination, all of which are enshrined in the Universal Declaration of Human Rights. These elements must be explicitly and clearly conveyed to learners by the human rights educator. Similarly, learners should be made aware that such principles are not embraced by all. For instance, philosophers from cultural relativist schools criticise the concept of 'universality,' which in their opinion ignores regional belief systems. They regard the Universal Declaration of Human Rights as a form of cultural and political imperialism (Perrin 2005). In his recent publication, *The Endtimes of Human Rights* (2013, 13), Stephen Hopgood goes even further, comparing the human rights movement to a secular religion that has created a "market of suffering" by using liberal capitalist mechanisms.

In addition to discussing adhesion to the human rights legal framework, familiarisation with the main legal instruments, as well as with issues of respect, rights, and obligations should form the starting point of any human rights curriculum. However, the content of any programming will be largely influenced by the methodology used in that field.

Methodology

Traditional education tends to rely on the 'expert model,' whereby the learning starts with the teacher who presents herself as a role model to students. In his *Pedagogy of the Oppressed*, Brazilian educator Paulo Freire (2000, 72) criticised this model, which he described as "narrative education" or as a "banking concept of education," regarding it as an attempt by the "oppressor" to maintain the status quo and keep the "oppressed" under control. Inspired by French existentialists such as Jean-Paul Sartre (Sartre 1948) and feminist Simone de Beauvoir (de Beauvoir 1953), Freire supports the idea that education should, instead, be liberating and based upon problem-solving (Freire 2000). The teacher becomes facilitator and catalyst for dialogue. In this context, individuals "teach each other mediated by the world and their own experience in this world" (Freire 2000, 32). In the field of human rights education, the participatory approaches advocated by Freire and his followers prevail. Everyone teaches and everyone learns in a collective process of creating knowledge. The process that leads to the transformative experience (see Table 1), which was applied to adult education by John Mezirow (1991), was subsequently transferred to the classroom for the teaching of human rights in schools (Cranton 2006).

In the school system, these methodologies require interactive techniques such as brain-storming, role-play, and small group work, which facilitate the discussions (Amnesty International 2011). Additionally, participatory approaches are founded on a deep knowledge of the learner and the parameters which may influence the group dynamic.

Table 1: **Participatory approach in human rights**

Reflection		*Knowledge*	
	Instrumental	*Communicative*	*Emancipatory*
Content	What are the facts?	What do others say about this issue?	What are my assumptions?
Process	How do I know this is true?	How did I integrate other points of view?	How do I know my assumptions are valid?
Premise	Why is the knowledge important to me?	Why should I believe in this conclusion?	Why should I revise or not revise my perspective?

Source: Cranton *(2006):37*

Age, cultural and socioeconomic background, gender, status, or whether the learner is a victim of human rights abuse or a perpetrator are some of the elements which will have to be taken into account in such learning. Equally, the educator will need to confront her own prejudices and attitudes towards her students, and also consider relationships between students and the school environment. This individual is then responsible for providing a human rights atmosphere in the classroom (Claude 2012). In that sense, the involvement of personal identity is unique to human rights education.

Human Rights Education Curricula

In terms of content, one can identify human rights themes that derive directly from the 30 articles of the Universal Declaration of Human Rights (UDHR). For instance, in *Compass* (a manual for human rights education edited by the Council of Europe), the educator will typically find background information about religion and beliefs, discrimination and intolerance, or migration (Council of Europe 2002). The selection of themes will be dictated by traditional development theories and will have to be age-appropriate (see Table 2.) However, and most importantly, the content will have to respond to a problematic situation relevant to the learner. As a result, universal concepts and global issues have to be addressed from a local perspective. In a school scenario, human rights-based approaches have often been utilised to deal with bullying or discrimination (Amnesty International 2012). Because human rights education is embedded in reality, a 'one size fits all' human rights programme would be self-contradictory. Human rights curricula will be as diverse as the learners involved in the process.

Table 2: **Developmental and conceptual framework for human rights education**

LEVELS	GOALS	KEY CONCEPTS	PRACTICES	SPECIFIC HUMAN RIGHTS PROBLEMS	EDUCATION STANDARDS & INSTRUMENTS
Early Childhood • Preschool & lower primary school • Ages 3 to 7	• Respect for self • Respect for parents and teachers • Respect for others	• Self • Community • Responsibility	• Fairness • Self-expression • Listening	• Racism • Sexism • Unfairness • Hurting people (feeling, physically)	• Classroom rules • Family life • Community standards • Convention on the Rights of the Child
Later Childhood • Upper primary school • Ages 8 to 11	• Social Responsibility • Citizenship • Distinguishing wants from needs from rights	• Individual rights • Group rights • Freedom • Equality • Justice • Rule of law • Government • Security • Democracy	• Valuing diversity • Fairness • Distinguishing between fact and opinion • Performing school or community service • Civic participation	• Discrimination/ prejudice • Poverty/hunger • Injustice • Ethnocentrism • Passivity	• UDHR • History of human rights • Local, national legal systems • Local and national history in human rights terms • UNESCO, UNICEF
Adolescence • Lower secondary school • Ages 12 to 14	• Knowledge of specific human rights	• International law • World peace • World development • World political economy • World ecology • Legal rights • Moral rights	• Understanding other points of view • Citing evidence in support of ideas • Doing research/ gathering information • Sharing information • Community service and action	• Ignorance • Apathy • Cynicism • Political repression • Colonialism/ imperialism • Economic globalisation • Environmental degradation	• UN covenants • Elimination of racism • Elimination of sexism • Regional human rights conventions • UNHCR • NGOs
Older Adolescents and Adults • Upper secondary school and adult groups • Ages 15 and up	• Knowledge of human rights standards • Integration of human rights into personal awareness and behaviours	• Moral responsibility/ literacy	• Participation in civic organisations • Fulfilling civic responsibilities • Civil disobedience • Community services and action	• Genocide • Torture	• Geneva Conventions • Specialised conventions • Evolving human rights standards

Source: Table adapted from the United Nations Document, ABC: Teaching Human Rights (2003, 9-10).

Potential of Human Rights Education

The contribution of human rights education to our students' success is felt on two levels.

The participatory and transformative strategies employed in human rights education promote a skill-set sought after in 21st century education: communication, critical thinking, cooperation, and problem-solving. For instance, such education perfectly matches the attributes of the International Baccalaureate Learner profile (International Baccalaureate Organisation 2013). Furthermore, it involves intrinsic motivation, which results in 'deep learning,' the guarantee of better retention of material learned (Marton 1976).

However, where for general education success is measured in terms of skills, for the human rights practitioner it is measured in terms of attitudinal change and level of activism. Consequently, the positive impact of a human rights educational programme can only be felt when students are not only taught *about* human rights but also *through* human rights (by exemplifying human rights values) and *for* human rights (with action as an outcome) (OHCHR 2011: Art. 2, para.2).

Challenges

One of the main challenges is precisely achieving this multidimensional and thorough process within schools and creating a culture of human rights.

Internationally, as well as in Bermuda, human rights education is often delivered in the form of outreach programmes offered by charities or non-governmental organisations. Bermudian organisations such as CURB, Centre Against Abuse, Women's Resource Centre, and Two Words and a Comma, to name a few, have always acknowledged the importance of educating our community about human rights in their respective fields of action. Educational materials and consultative activities by the Bermuda Human Rights Commission (Bermuda Human Rights Commission 2009) and Centre for Justice (Centre for Justice 2013) outline the premise of school-based human rights education. School curricula adopted in Bermudian schools (GCSE, IB programme, or the Canadian Alberta Curriculum) lend themselves to the inclusion of human rights lessons into existing subjects such as history, Personal-Social-Health-Education (PSHE), or global citizenship. However, access to public school programmes is controlled by the Bermuda ministry of education, and if the vision is not apparent in this government department, individual schools have little latitude. The result is a piecemeal approach to human rights education, which often becomes the norm both locally and in the rest of the world (OSCE 2009, 16).

This reluctance to go any deeper may be explained by several factors. In times of economic recession, educational systems are results and exam-driven and dedicate little time to developing and empowering students as individuals (Helsby 1999, 78). Valuable educational projects that deviate from this norm are often discarded as too idealistic or impractical.

When governments or school heads are open to offering human rights education to students, resistance may come from teachers or parents. Teachers may feel uncomfortable teaching issues often considered controversial and which require them to "leave the realm of abstract concepts to become personal, therefore emotional" (Davis in Ellwood 2012, 149). Moreover, as Henry Hepburn notes, teachers avoid 'the hot potato' of human rights because they feel incompetent in this subject, which is not part of their teacher training. Some, overlooking the fact that with rights come responsibilities, consider that "children have already too many rights and that teaching them about human rights would compound this" (Hepburn 2015:14). From a parent's perspective, human rights education may be frowned upon because it may tackle issues they consider taboo.

Overcoming Obstacles through Whole-School Human Rights Education Models

However, human rights educational models such as the Human Rights Friendly School project developed by Amnesty International (2012) or the Rights Respecting Schools (2004) model inspired by UNICEF offer solutions to the obstacles mentioned earlier. Both offer a whole-school approach to human rights education, thus enabling more comprehensive integration of human rights values and practices into the life of the school in place of a piecemeal approach (Tibbits 2002). As the local coordinator of the Human Rights Friendly School pilot project launched in Bermuda in 2012 (Arandjelovic 2012), I witnessed the potential of such a programme and the impact it could have on students when implemented properly. During the introductory phase, schools are invited to gauge the human rights friendliness of their school with reference not only to the curriculum but also the style of school governance, the nature of interpersonal relationships, and the school environment (Amnesty International Education Team 2012). An action plan for the school is developed based on the findings of this preliminary survey in consultation with all stakeholders. The fact that parents, teachers and students are included allows for an open dialogue and creates meaning for the whole school community, thus eliminating the type of resistance described previously. Furthermore, teacher and student training in participatory methodologies is an integral part of this model, empowering all to deliver a tailor-made human rights content. In the context of our pilot programme, for instance, issues related to Bermuda society or the school context were discussed. In a module about socioeconomic and cultural rights and the right to housing in particular, students were invited to draw parallels between the plight of the Romani in Europe and the housing crisis in Bermuda (Palau-Wolffe 2012, 7). At the school level, students drafted their own anti-discrimination policy and conducted tolerance and diversity workshops for their peers. This approach not only created awareness of human rights issues but helped us build a culture of human rights. The transformational impact of this model became evident when students spontaneously removed anti-gay expressions ("It is so gay!") from daily conversations, expressed compassion for victims of human rights abuses when participating in the 'write for rights' campaign, and when school management removed corporal punishment from the school handbook (Palau-Wolffe 2013, 3).

Similarly, the Rights Respecting Schools programme allows for sustained integration of human rights in all areas of school life through the development of an action plan and the creation of a personalised School Charter (UNICEF).

In addition to rigour and thoroughness, these models offer flexibility and can be adapted to various school scenarios. Moreover, institutions that commit to their implementation benefit from the support of expert human rights education practitioners and the organisations behind these programmes. These latter characteristics can help local or international authorities develop a vision for integrating of human rights education much more widely in the world.

Conclusion and Recommendation

As Kofi Annan has stated: "Human rights education is much more than a lesson in schools or a theme for a day; it is a process to equip people with the tools they need to live lives of security and dignity" (Annan 2004: para. 4). In the context of formal education, equipping students with an adequate human rights toolkit requires maximising the promise of transformative learning by adopting comprehensive and sustainable approaches to human rights education such as the Human Rights Friendly School project or Rights Respecting Schools.

However, although efficient educational models to draw on are available and the efforts of non-governmental organisations in Bermuda are genuine, the success of school-based human rights education cannot be achieved without cohesion or standardisation, especially in teachers training. As the Declaration of Human Rights Education and Training notes, it is the state's obligation to develop long-term national strategies to infuse human rights

education into its educational system (OHCHR 2011). These conditions have to be met if a culture of human rights is to develop and for students to emerge as human rights leaders concerned about social justice and the defence of human rights in their community.

References

Amnesty International (2011). *Facilitation Manual: A guide to using participatory methodologies for human rights education*. https://www.amnesty.org/en/documents/act35/020/2011/en/. Retrieved 1 January 2012.

Amnesty International (2012, 14 September). *Becoming a Human Rights Friendly School: A Guide for Schools Around the World*. https://www.amnesty.org/en/documents/pol32/001/2012/en/. Retrieved 2 October 2015.

Amnesty International (n.d.) *Human Rights Education*. http://www.amnesty.org/en/human-rights-education. Retrieved 3 October 2015.

Amnesty International Education Team (2012). *Becoming a Human Rights Friendly School: A Guide for Schools around the World*. London: Amnesty International.

Annan, K. (2004, 2 December). Message to mark International Human Right's Day. http://www.un.org/press/en/2004/sgsm9632.doc.htm. Retrieved 15 October 2015.

Arandjelovic, N. (2012, 8 October). From Fighting Bullies to Battling Tyrants. Royal Gazette. Hamilton, Bermuda. http://www.royalgazette.com/article/20121008/ISLAND02/710089999. Retrieved 7 January 2016.

Bermuda Human Rights Commission (2009, 6 January). *Primary School Human Rights Education Project*. http://www.gov.bm/portal/server.pt/gateway/PTARGS_0_2_13578_495_1978_43/http%3B/ptpublisher.gov.bm%3B7087/publishedcontent/publish/ministry_of_community_affairs_and_sport/new_hrc/hrc_articles/primary_school_human_rights_education_project.html. Retrieved 18 October 2015.

Campbell, L. (2012). *Youth Rights: A Sourcebook on International Agreements*. New York: International Debate Education Association.

Centre for Justice (2013). *Civic Education for Youth*. http://www.justice.bm/publications-resources/civic-education. Retrieved 18 October 2015.

Claude, R.P. (2012). *Methodologies for Human Rights Education*. http://www.pdhre.org/materials/methodologies.html. Retrieved 4 November 2015.

Council of Europe (2002). *Summary of Themes. Compass: Manual for Human Rights Education with Young People:* http://www.coe.int. Retrieved 11 April 2015.

Cranton, P. (2006) *Understanding and Promoting Transformative Learning: A Guide for Educators of Adults* (2nd ed.) San Francisco: Jossey-Bass.

Davis, M. (2012). *Learning and Teaching about Islam: Essays in Understanding*. ed. C. Ellwood. Woodbridge: John Catt.

de Beauvoir, S. (1953). *The Second Sex*. New York: Knopf.

Flowers, N. (2003) Introduction to Human Rights Education. In Bertelsmann Foundation *A Survey of Human Rights Education*. Gütersloh: Bertelsmann.

Freire, P. (2000). *Pedagogy of the Oppressed*. New York: Continuum International.

Helsby, G. (1999). *Changing Teachers' Work: The Reform of Secondary Schooling.* (Q. School, Compiler) Philadelphia: Open University Press.

Hepburn, H. (2015, 9 January). Teachers are avoiding human rights as too difficult to teach. https://www.tes.com/news/school-news/breaking-news/teachers-are-avoiding-human-rights-too-difficult-teach-expert-says. Retrieved 5 March 2016.

Hopgood, S. (2013). *The Endtimes of Human Rights* (1st ed.). New York: Cornell UP.

Institute for the Development of Gifted Education (2012). *Teacher Compendium for Human Rights Education.* Morgridge College of Education. Denver: University of Denver.

International Baccalaureate Organisation (2013). *IB Learner Profile.* http://www.ibo.org/globalassets/digital-tookit/flyers-and-artworks/learner-profile-en.pdf. Retrieved 4 November 2015.

Lee, J. (2015). *Teaching and Learning about Child Rights.* Belfast: Queen's University .

Marton, F.A. (1976). On Qualitative Differences in Learning – 2: Outcome as a function of the learner's conception of the task. *British Journal of Educational Psychology* 46:115-27.

Mezirow, J. (1991). *Transformation dimension of adult learning.* San Francisco: Jossey-Bass.

Office of the United Nations High Commissioner for Human Rights (2003). *ABC: Teaching Human Rights –Practical activities for primary and secondary*. http://s3.amazonaws.com/inee-assets/resources/ABC_Teaching_Human_Rights.pdf. Retrieved 2 November 2015.

OSCE (2009). Human Rights Education in the School Systems of Europe, Central America and North America: A Compendium of Good Practice. http://www.osce.org/odihr. Retrieved 1 November 2015.

Palau-Wolffe, F. (2012, November). Human Rights Friendly School Project at Warwick Academy, November 2012 update. https://vle.warwickacad.bm/index.phtml?d=240241. Retrieved 28 November 2012.

Palau-Wolffe, F. (2013, June). Human Rights Friendly School Project at Warwick Academy. https://vle.warwickacad.bm/index.phtml?d=240241. Retrieved 30 June 2013.

Perrin, A. (2005). *Human Rights and Cultural Relativism: The Historical Development Argument and Building a Universal Consensus.* https://www.academia.edu/2282438/Human_Rights_and_Cultural_Relativism_The_Historical_Development_Argument_and_Building_a_Universal_Consensus. Retrieved 18 October 2015.

Sartre, J.-P. (1948). *Existentialism and Humanism.* London: Metheun.

Tibbits, F. (2002). Understanding What We do: Emerging Models in Human Rights Education. *International Review of Education* 48, 3-4, 8-10.

United Nations (1948). *The Universal Declaration of Human Rights.* New York.

UN Office of the High Commissioner for Human Rights (OHCHR) (2011, 19 December). *United Nations Declaration on Human Rights Education and Training*. http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N11/467/04/PDF/N1146704.pdf?OpenElement. Retrieved 5 November 2015.

UN Office of the High Commissioner for Human Rights (2009). *Evaluation of the First phase (2005-2009) of the World Programme for Human Rights Education*. http://www.ohchr.org/EN/Issues/Education/Training/WPHRE/FirstPhase/Pages/EvaluationWPHRE.aspx. Retrieved 20 October 2015.

UNICEF (n.d.). *Steps to the Award: How to become a Rights Respecting School.* http://www.unicef.org.uk/rights-respecting-schools/steps-to-award/. Retrieved 21 October 2015.

United Nations (1989). *Convention on the Rights of the Child.* Treaty Series, 1577, 3, New York.

Upstream Optimisation for 21st Century Education: The Potential Impact of Heartmath™ Systems on the Teacher-Learner

Tracey Lynne Harney

Abstract

This paper explores the potentially positive impact of HeartMath coherence training on the current educational environment. This holistic modality may work upstream of the classroom experience by priming individuals to optimally function cognitively, physiologically, and emotionally before they arrive in the formal learning environment and after they leave. Such a sustainable mind-body approach could result in the prevention, minimisation, and/or alleviation of growing 21st century challenges in the classroom

KEY WORDS: *Holistic, HeartMath, coherence, heart-brain, cognitive resilience, emotional self-management*

Introduction

Philosophically, holism is defined as a "theory that parts of a whole are in intimate interconnection, such that they cannot exist independently of the whole, or cannot be understood without reference to the whole, which is thus regarded as greater than the sum of its parts" (Oxford dictionary online, 2nd edition).

At the dawn of the 21st century, the philosophy of holism has become more prevalent in the medical model, giving rise to the rebirth of the traditional practice of medicine which then became relabelled as what many refer to currently as alternative or complementary medicine. Inherent in the philosophy of holism lies the concept of interconnectedness which logically leads to the philosophy of holism being applied in varying degrees to parts of the whole societal construct, education included.

In general, a holistic educational environment is defined as one with a curriculum that "is inquiry-driven, interdisciplinary and integrated, and is based on explicit assumptions of interconnectedness and wholeness …" which deems learning as being "organised around relationships within and between learners and their environment while empowering learners" (Web, Holistic Education Network of Tasmania). Within this perspective, there lies an inextricable connection between teaching and learning and vice versa. For this reason, such a dynamic could be referred to as the teacher-learner and the events within the dynamic as teaching-learning.

Holistic educational practices consistently emphasised collaborative and cooperative learning (Rudge 2008; Forbes and Martin 2004). Also consistent with the interconnectedness principle inherent within holistic philosophy, both collaborative and cooperative learning positively influence the intrinsic motivation of the teacher-learner (Brecke & Jensen 2007).

Although the 21st century educational movement has brought forth many useful pedagogical and learning tools, there have also been tremendous challenges that have arisen concurrently. Twenty-first century children are exposed to more stressors than in the past, such as bullying, the threat of extreme violence, more adult responsibilities, and

the increase in prevalence of psychological challenges such as ADHD and autism Spectrum disorder (Bloomberg 2011). Yet, there is no focus on much needed emotional management within this rapidly changing terrain (McCraty 2015).

Finding viable ways to navigate the new 21st century terrain has become overwhelming due to the emergence of these emotional health challenges outpacing the emergence of the practical application and integration of research-based models to address them, especially during this time of economic instability. For these reasons, I propose that a research-based modality which is primarily focused on psycho-physio self-regulation entrainment be applied to optimise their readiness for teaching-learning. It is my position that combining the instalment of HeartMath coherence entrainment as a foundational aspect of the educational system can optimise the individual's readiness to teach-learn, thus preventing, minimising, and/or alleviating many current challenges whilst improving the potential for successful outcomes.

HeartMath Coherence

Heart-brain connection

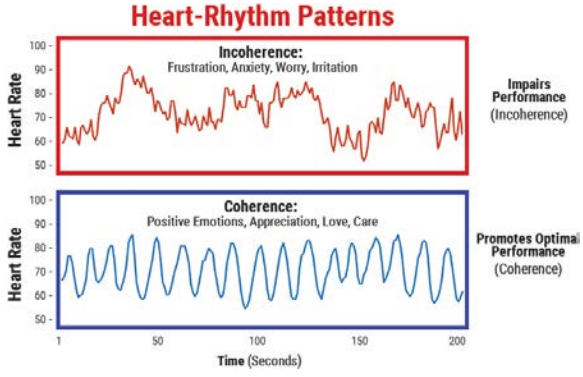
Research has shown that the heart has its own autonomous nervous system, referred to as the heart-brain, which encodes and processes information. What is fascinating about this finding is that the heart-brain actually sends more information to the brain than the brain sends to the heart (McCraty 2003; McCraty et al. 2014). The heart-brain also "makes decisions independent of the cerebral brain." Furthermore, the heart's electromagnetic field has been found to be 5000 times more powerful than the brain's. This is why the heart's state has a tremendous effect on the brain as evidenced by Electroencephalogram (EEG) pattern analysis (McCraty 2004).

Psychophysiological coherence as emotional management tool

Since positive emotions have been found to produce faster learning and improved intellectual performance, educating teacher-learners to practice effective emotional management techniques can play a significant role in optimising the 21st century learning environment (Fredrickson 2002).

A substantial body of evidence supports the view that our emotional state rapidly affects the heart's rhythm. When positive emotions such as appreciation or compassion are experienced, the heart rhythm configuration displays a smooth sine curve-like pattern which is distinctly different from relaxation; whereas, negative emotional states such as anger and frustration result in an erratic heart rhythm pattern upon analysis (Figure 1).

Figure 1: **Heart rhythm patterns of coherence and incoherence**



Notes: The coherent state has been correlated with a general sense of well-being and improvements in cognitive, social, and physical performance. We have observed this association between emotions and heart-rhythm patterns in studies conducted in both laboratory and natural settings and for both spontaneous and intentionally generated emotions (McCraty 2015).

Sources: Tiller, W.A., R. McCraty and M. Atkinson (1996) Cardiac coherence: A new, noninvasive measure of autonomic nervous system order. *Alternative Therapies in Health and Medicine* 2(1):52-65.
McCraty, R., W.A. Tiller and M. Atkinson (1995) The effects of emotions on short-term power spectrum analysis of heart rate variability. *American Journal of Cardiology* 76(14):1089-93.

Chaotic heart rhythm patterns indicate emotional incoherence, energy drainage, decrease in higher cognitive functions, and eventual erosion of the body. Conversely, smooth heart rhythm patterns are an indication of physiological coherence which is a state of optimal cognitive, physical, and emotional balance. The results from coherence patterning overtime is a symphony of resonance of all the combined body systems synchronously matching with the heart rhythm coherence pattern, resulting in their optimal functioning as well (McCraty and Zayas 2014).

Coherence-building tools

After over 20 years of scientific research, several heart-based tools and technologies for teaching and learning have been designed and employed by the Institute of HeartMath (Atkinson et al. 2009). These teaching-learning tools and technologies are geared at enabling students to systematically increase physiological coherence and emotional stability, thus optimising both academic performance and social-emotional well-being (Atkinson et al. 2009).

The whole collection of these tools and technologies are referred to as the 'HeartMath System'. Examples of HeartMath tools and techniques include the Neutral Tool™, Freeze-Frame Technique™, Heart Lock-In Technique™, TestEdge™ and Early HeartSmart™. A commonality amongst them is they use the heart to access the emotions. In this way, emotions can be self-regulated rapidly, profoundly, and constructively (McCrady 2004).

Thus, the EM-Wave™ biofeedback software has proven to be extremely effective in teaching emotional self-regulation required to achieve a physiologically coherent state. Heart rhythm feedback training is accomplished effectively using this software which also analyses the heart rhythm patterns for coherence level, which is instantly fed back to the trainee in real time. There are also video games as well as computer games designed to reinforce emotion-refocusing skills. The software also includes a user-friendly database to store results and track the progress of multiple trainees over time (McCrady 2004).

Endurance and re-patterning

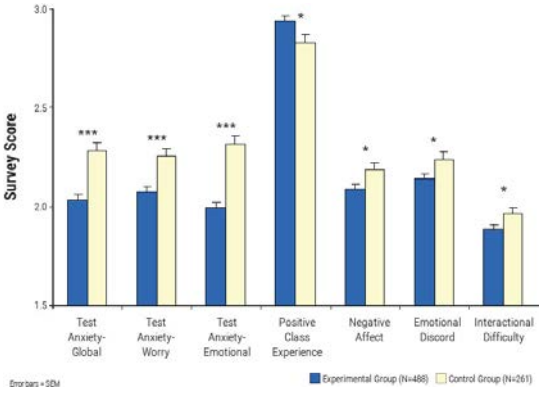
Once people learn to self-generate a physiological coherent state on a regular basis, a re-patterning occurs multi-systemically reforming the neurological terrain to match a coherent baseline. In this way physiological coherence becomes the new 'normal' state for individuals, and they spend more and more time in a coherent state without consciously needing to self-regulate (Atkinson et al. 2009). So, essentially baseline stress which acts as a 'silent killer' can be transformed over time into baseline coherence which acts as a 'silent vitaliser'

HeartMath Interventions

TestEdge National Demonstration Study (TENDS)

The purpose of the TENDS was to test the efficacy of TestEdge™ in reducing stress and test anxiety which increases emotional well-being and academic performance in public school students. The results showed a significant reduction in test anxiety accompanied by a significant improvement in emotional wellbeing. (Figure 2) Moreover, the test scores showed significant improvement compared to those of control groups (Arguelles et al. 2007; McCraty 2014).

Figure 2: **Results of an ANCOVA of pre- and post-intervention changes**



Notes: Results of an ANCOVA of pre- and post-intervention changes in measures of test anxiety (global scale, worry component, and emotionality component) and social and emotional scales (positive class experience, negative affect, emotional discord, and interactional difficulty) showing significant differences between the intervention and control schools. *p < 0.05, ***p < 0.001. (McCraty 2015)

Source: Arguelles, R.T.L., M. Atkinson, R.T. Bradley, A. Daugherty, R. McCraty and D. Tomasino (2010) Emotion self-regulation, psychophysiological coherence, and test anxiety: Results from an experiment using electrophysiological measures. *Appl Psychophysiol Biofeedback* 35(4):261-83.

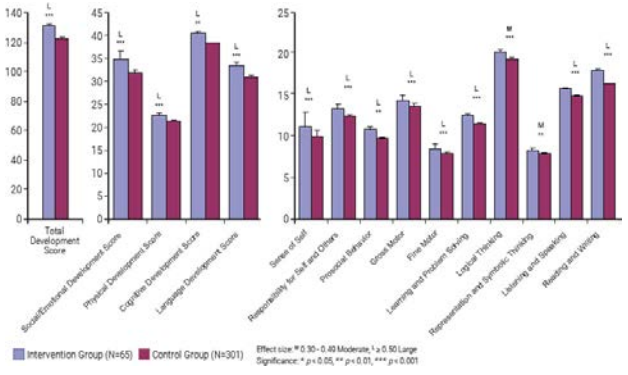
HeartMath benefits a wide range of demographics

A myriad of studies have shown improvement in well-being, behaviour and academic performance with the implementation of HeartMath tools in schools ranging from early school age to College (Atkinson et al. 2012). Moreover, HeartMath tools and technologies are created as basic, user-friendly, and cost-effective interventions that can be adjusted to virtually any cultural demographic, age group, or educational setting (Hayashino et al. 2010).

Preschool study

A programme Early HeartSmarts® (EHS) was specifically intended to help equip children aged 3 to 6 with the foundational emotion self-regulation and social competencies for learning. Classes in the intervention group were selected by the district to target children of lower socioeconomic and ethnic minority backgrounds (McCraty 2015). The findings showed large significance in developmental parameters compared to control as well as a developmental vigour which sometimes surpassed the control groups (Figure 3).

Figure 3: **Early HeartSmart (EHS) adjusted means**



Notes: Early HeartSmart (EHS) adjusted means showing results of ANCOVA of intervention effects on development measures of 3-6 year olds, comparing intervention and control groups

Source: McCraty (2015)

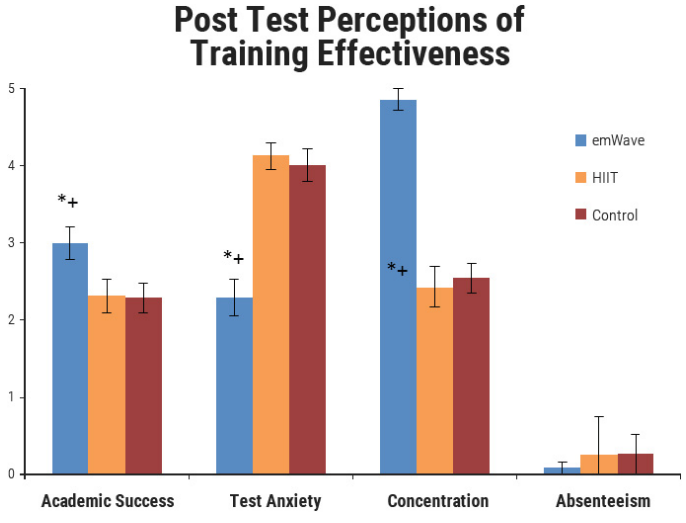
Critical interventions

Many successful HeartMath interventions for educational facilities have taken place in schools with prevalent, critical, academic, and/or socio-behavioural crises which needed to be immediately addressed. For example, a HeartMath intervention carried out at a Preparatory College resulted in a steady increase from 12 to 75 per cent improvement in standardised math scores over a three year period (Leslie and Vislocky 2005). Most of these schools are located in critically stressful and violent communities (Arguilles et al. 2007).

College studies

Culturally diverse groups of college students showed significant reduction in anxiety when HeartMath biofeedback tools were combined with counselling compared to counselling alone (Hayashino et al. 2012). A study at Florida State University demonstrated a significant reduction in test anxiety and absenteeism combined with significant increases in concentration and academic scores (McCraty 2014). Dr. Ross May et al. (2014) from Florida State University found that the psychophysiological functioning underlying school burnout is of particular importance and is associated with increased markers of cardiovascular risk and poor academic performance using the Grade Point Average (GPA) as an index. They also demonstrated that school burnout is a stronger predictor of GPA than it is a predictor for anxiety and depression (McCraty 2015). Figure 4 shows the impact of HeartMath training on College Student 'Burnout' compared to alternate self-management techniques such as a High Intensity Interval Training (HIIT) exercise programme.

***Figure 4:* Data for three groups for academic success, test anxiety, concentration, and absenteeism**



Notes: Data for three groups for academic success, test anxiety, concentration, and absenteeism from classes over the semester. Data are mean and 95% CI. * = $p < .05$ HeartMath vs. HIIT post-test, + = $p < .05$ HeartMath vs. Control, a = $p < .05$ HeartMath pre-test vs. HeartMath post-test, b = $p < .05$ HIIT pretest vs. HIIT post-test, c = $p < .05$ Control pre-test vs. Control post-test.

Source: McCraty (2015)

Professional school study

In the professional school setting, recent studies assessing nursing students as they entered the most demanding portion of their curriculum showed that HeartMath training significantly reduced their anxiety levels compared to control groups (Kathalae et al. 2012).

In 2003, Oklahoma University nursing school introduced HeartMath into their nursing program in order to address the high attrition rates of Native American nursing students. After five years of implementing HeartMath self-management, the attrition rate of Native American nursing students decreased by 40 per cent and the overall attrition decreased by 63 per cent (McCraty 2014).

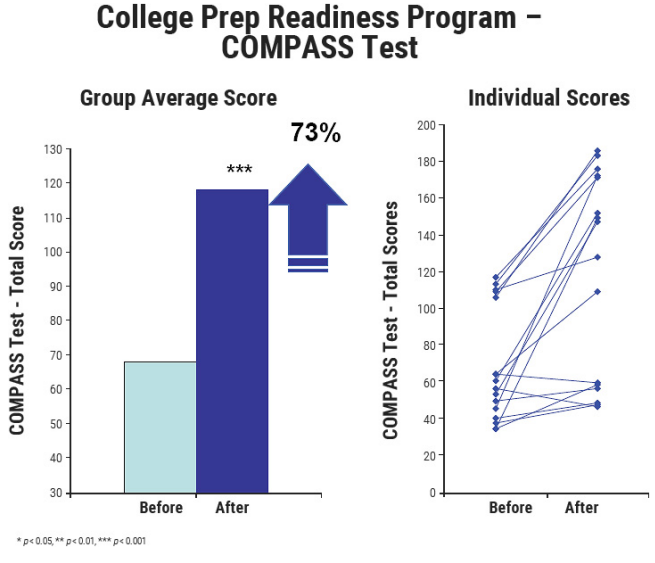
Special needs study

Scientific Investigations evaluating the impact of HeartMath coherence training on children with ADHD also found a "significant improvement in various aspects of cognitive functioning such as delayed word recall, immediate word recall, word recognition, and episodic secondary memory. Significant improvements in behaviour were also found" (Bret et al. 2010).

College readiness

At the University of Cincinnati Clermont College (UCCC) as many as 92 per cent of incoming first-year college students were scoring below standard for college-level mathematics (McCraty 2015). After integrating HeartMath's self-regulation techniques and heart-rhythm coherence feedback technology into their college readiness programmes in math, a reduction was found in high school students' anxiety related to learning maths and taking high-stakes tests as well as improve students' learning, comprehension, and retention. Figure 5 shows the 73 per cent improvement in maths test scores after only seven weeks of HeartMath coherence training.

Figure 5: **Average and individual student improvements in scores on the Compass college placement test**



Notes: Average and individual student improvements in scores on the Compass college placement test in algebra before and seven weeks after learning and using the HeartMath self-regulation skills and HRV coherence technology as an integral part of maths instruction. Results show a statistically significant ($p < 0.001$) average increase of 73% in student scores on the college placement test.

Source: McCraty (2015)

Resilient Educator

Effective implementation of HeartMath coherence training in educational settings has always involved HeartMath Coherence training of the educator and HeartMath Resilient Educator™ certification (Arguilles et al. 2003; McCraty 2004) by observing coherence patterns with more than one person present, researchers have demonstrated that a coherent heart pattern can influence the EEG of other people who are in close proximity (McCraty 2004; Atkinson et al. 2009). This is significant in terms of the subtler elements of the educational environment and classroom management. It makes sense that resilient and coherent teachers influence the coherence and resilience of learners, and vice versa. Resilient educators can also act as facilitators for the implementation of HeartMath coherence training.

Is HeartMath Feasible in Bermuda's Schools?

Need and cost

The study on college readiness demonstrated that the need for remedial maths diminished and the college placement maths score increased by 73 per cent after seven weeks of HeartMath intervention is a feasible pilot study for Bermuda. The study found that scores increased as time went on and that the school in question had fully implemented HeartMath Systems in four years. Bermuda College has a College Placement Test (CPT) which places students in specific Math, English, and Reading courses. Like community and state colleges in the United States, Bermuda College also has over 85 per cent of entry level students scoring below college level standards so the need for intervention is clear. The educational division of HeartMath is non-profit, so that the hardware, software, and other materials of the HeartMath system are available at low cost.

Versatility

There is a very large body of evidence demonstrating that HeartMath tools can be applied to any context requiring stress management. HeartMath has been successfully applied to professional sports, corporations, and healthcare.

Cultural empathy

No concerns of cultural bias have been reported, but cultural empathy was noted as a pleasant side effect by high-risk study participants.

Logistics

Researchers have identified several key influences on the success of HeartMath implementation in school systems. These include teacher/facilitator commitment, high expectations, in-class emotional management, continuous feedback on progress, and commencing at the beginning of term. It was also found that students benefitted most when given ample opportunities to apply HeartMath tools inside and outside the classroom.

Vislocky and Leslie (2005) has published the first work showing that the application of the HeartMath System of self-regulation tools directly to the mathematics learning environment may be effective in enhancing student learning and academic performance whilst better preparing secondary students for tertiary education.

Conclusion

The HeartMath Institute offers a versatile, cost-effective, user-friendly, and empowering system for optimising readiness for teaching-learning environments. What makes the system particularly viable for upstream optimisation of classroom readiness is that its style of emotional self-regulation can be consistently and effectively learned in a short time by people as young as three years old. Furthermore, successful application of these tools can lead

to improved physical health and well-being whilst potentially preventing, managing, and/or minimising modern emotional stresses and psychological challenges. Better still, the applications of this system do not end in the classroom but rather are structured to bring about a lifestyle change. Coherent heart states held by some propagate coherent brain and heart states in others in the vicinity. In fact, The Institute of Heart Math is working on a Global Coherence Project with the goal of global harmonisation (McCraty 2015).

The implementation of HeartMath Systems in Bermuda's educational system is a viable option worthy of investigation. Moreover, if the effect of such introduction in Bermuda is consistent with the 20-plus years of research elsewhere, the country could experience a rapid and positive transformation not only in the educational system, but also in the community at large.

References

Arguelles, L., R. McCraty and R. Rees (2003). The heart in holistic education. *Encounter: Education for Meaning and Social Justice* 16(3):13-21.

Arguelles, L., M. Atkinson, R.T. Bradley, A. Daugherty, R. McCraty and D. Tomasino (2010). Emotion self -regulation, psychophysiological coherence, and test anxiety: Results from an experiment using electrophysiological measures. *Applied Psychophysiology and Biofeedback* 35(4):261-83.

Arguelles, L., M. Atkinson, R.T. Bradley, R. McCraty, R.A. Rees and D. Tomasino (2007). Reducing test anxiety and improving test performance in America's schools: Summary of results from the TestEdge national demonstration study. *HeartMath Research Center, Institute of HeartMath*, Publication No. 00-010. Boulder Creek CA.

Atkinson, M., R.T. Bradley, P. Gavin and D. Tomasino (2012). Efficacy of an emotional self-regulation program for promoting development in preschool children. *Global Advances in Health and Medicine* 1(1):36-50.

Atkinson, M., R.T. Bradley, R. McCraty and D. Tomasino (2009). The coherent heart, heart–brain interactions, psychophysiological coherence, and the emergence of system-wide order. *Integral Review* 5(2):10-115.

Atkinson, M., J. Goelitz, H.N. Mayrovitz, R. McCraty and D. Tomasino (1999). The impact of an emotional self-management skills course on psychosocial functioning and autonomic recovery to stress in middle school children. *Integrative Physiological and Behavioral Science* 34(4):246-68.

Backhed, F. and F. Sommer (2013). The gut microbiota-masters of host development and physiology. *Nature Reviews Microbiology* 11:227-38.

Bercick, O. and S.M. Collins (2009). The relationship between intestinal microbiota and the central nervous system in normal gastrointestinal function and disease. *Gastroenterology* 136(6): 2003-14.

Bloomberg, S.J., S. Boulet, S. C. Boyle, R.A. Cohen, M.D. Kogan, L.A. Schieve, S. Visser and M. Yeargin-Allsopp (2011). Trends in the prevalence of developmental disabilities in US children, 1997-2008. *Pediatrics* 127(6):1034-42.

Borre, Y.E., G. Clarke, J.F. Cryan, T.G. Dinan, G.W. O'Keeffe and C. Stanton (2014). Microbiota and neurodevelopmental windows: Implications for brain disorders. *Trends in Molecular Medicine* 20(9):509-18.

Brett, D., A. Lloyd and K. Wesnes (2010). Coherence training in children with attention deficit hyperactivity disorder: Cognitive functions and behavioral changes. *Alternative Therapies in Health and Medicine* 15(4):34-42.

Brecke, R., and J. Jensen (2007). Cooperative learning, responsibility, ambiguity, controversy and support in motivating students. *Insight: A collection of faculty scholarship* 2:57-63.

Burkholder, P.R. and I. McVeigh (1942). Synthesis of vitamins by intestinal bacteria. *Botany* 28: 285-89.

Campbell-McBride, N., (2010). *Gut and psychology syndrome: Natural treatment for dyspraxia, autism, dyslexia, ADD, ADHD, depression, schizophrenia*. UK: Medinform.

Cani, P.D. and N.M. Delzenne. (2009). *The role of the gut microbiota in energy metabolism and metabolic disease. Current Pharmaceutical Design* 15(13):1546-58.

Cryan, J.F. and T.G. Dinan (2012). Mind-altering microorganisms: The impact of the gut microbiota on brain and behavior. *Nature Reviews Neuroscience* 13:701-12.

Forbes, S.H. and R.A. Martin (2004). What holistic education claims about itself: An analysis of holistic schools' literature. *American Education Research Association Annual Conference.*

Foster, J.A. and K. McVey Neufield (2013). Gut-brain axis: How the microbiome influences anxiety and depression. *Trends in Neuroscience* 36(5):305-12.

Fredrickson, B.L. (2002). Positive emotions. In C.R. Snyder and S.J. Lopez (eds), *Handbook of Positive Psychology.* New York: Oxford University Press, pp.120-34.

Garner, T. and J.R. Malagalada (2003). Gut flora in health and disease. *The Lancet* 935(361):512-19.

Hayashino, D., J. Prince, P. Ratanasirpong and K. Sverduk (2012). Biofeedback and counseling for stress and anxiety among college students. *Journal of College Student Development* 53(5):742-49.

Hayashino, D., J. Prince, P. Ratanasiripong and K. Sverduk (2010). Setting up the next generation biofeedback program for stress and anxiety management for college students: A simple and cost-effective approach. *College Student Journal* 44:97-100.

Kathalae, D., N. Ratanasiripon and P. Ratanasiripong (2012). Biofeedback intervention for stress and anxiety among nursing students: A randomized controlled trial. *International Scholarly Research Network* 2012:1-5.

Lee, A. (2009). Health-promoting schools: Evidence for a holistic approach to promoting health and improving health literacy. *Applied Health Economics and Health Policy* 7(1):7-11.

Leslie, R.P. and M. Vislocky (2005). Efficacy and implementation of HeartMath instruction in college readiness program: Improving students' mathematics performance and learning. University of Cincinati Clearmont College. http://mathematics.clc.uc.edu/Vislocky/CPR%20Project.htm. Consulted on 4 November 2015.

May, R.W., M.A. Sanchez-Gonzalez, and F.D. Fincham (2014). School burnout: Increased sympathetic vasomotor tone and attenuated ambulatory diurnal blood pressure variability in young adult women. *Stress* (0):1-9.

May, R.W., K.N. Bauer, and F.D. Fincham (under review). School Burnout: Diminished Academic and Cognitive Performance. Learning and Individual Differences.

Mazmanian, S.K. and J. Round (2009). The gut microbiota shapes intestinal immune responses during health and disease. *Nature Reviews Immunology* 9:313-23.

McCraty, R. (2003). Heart-brain neurodynamics: The making of emotions. *In Issues of the Heart: The Neuropsychotherapist special issue,* 76-110.

McCraty, R., (2004). The energetic heart: Bioelectromagnetic communication within and between people. *Clinical Applications of Bioelectromagnetic Medicine*, pp.541-62.

McCraty, R. (2015). Science of the heart: Exploring the role of the heart in human performance: An Overview of Research Conducted by the HeartMath Institute. Volume 2. https://www.heartmath.org/research/science-of-the-heart/outcome-studies-in-education/ Consulted on 15 April 2016.

McCraty, R., and M.A. Zayas (2014). Cardiac coherence, self-regulation, autonomic stability, and psychosocial well-being. *Frontiers in Psychology* 1090(5):1-13.

McCraty, R, F. Shaffer and C. Zerr (2014). A healthy heart is not a metronome: An integrative review of the heart's anatomy and heart rate variability. *Frontiers in Psychology* 1040 (5):1-19.

Rudge, L.T. (2008). Holistic education: An analysis of its pedagogical application. (PhD diss., Ohio State University). https://etd.ohiolink.edu/!etd.send_file?accession=osu1213289333&disposition=inline. Consulted on 1 November 2015.

Watts, M.K. (2011). Nutritional therapy in practice for learning, behavioural and mood disorders. *Nutrition and Health* 20:239-59.

Web. Holistic Education Network of Tasmania, Australia taken from http://www.hent.org/intro2.htm. Consulted on 1 November 2015.

Impacts of Technology on Learning Experiences at Bermuda College: Student Perceptions

Shawn De Shields

Abstract

Over the last two decades, technology has profoundly transformed how we function in the world. Conversely, ascertaining how the teaching and learning process will be transformed over the next two decades remains a formidable challenge. The pace of adaptation to this 'new normal' will determine if higher learning institutions are capable of offering curricula that will appeal to the learning styles of 'digital natives,' people born into a world saturated with modern technology. Already, the proliferation of new technologies being adopted by academia and the increased sophistication of educators in leveraging technology has created a rich tapestry of engaging learning experiences. This article examines the perceptions of Bermuda College students on the role of technology in their educational experience. It also ascertains the extent to which Bermuda College lecturers incorporate different technologies into their teaching. Finally, it examines student preferences for more or less technology in delivering course content and whether this technology enhances the student learning experience at Bermuda College.

KEY WORDS: *Technology, Bermuda College, student perceptions, teaching and learning methods*

Introduction

The integration of technology into teaching and learning remains a top-of-mind and much debated topic among educators. It can be argued that applying yesterday's teaching methods without integrating the most appropriate forms of technology is a disservice to students born and raised in the current technological era. Without question, technology is forever transforming the way we live and has significantly impacted teaching and learning. Brown (2015, 58) noted in the inaugural volume of this journal that "today's learners need 21st century skills." Thus, it is incumbent on educators to stay current with technology and possess the necessary skill sets to meet the needs of 21st century learners.

We live in an era saturated with social media options, course management systems, predictive analytics, virtual educational labs, asynchronous discussion forums, fully online courses, avatars, and other virtual learning tools designed to meet the needs of digital natives. There is a school of thought that "faculty scholars need to familiarise themselves with, utilise, and integrate technology into … teaching, and realign … teaching and learning outcomes with the technology" (Zellweger 2007, 66). Conversely, others argue that technology "is not a homogeneous intervention but a broad variety of modalities, tools, and strategies for learning. Its effectiveness, therefore, depends on how well it helps teachers and students achieve the desired instructional goals" (Ross et al. 2010, 19) One fact that remains absolutely clear is that continuing to practise the proverbial 'chalk and talk' methods of the past will most certainly not prepare students to cope in the future.

Review of Literature

The exponential growth of digital literacy has affected not only Bermuda College, but has also confronted other higher learning institutions with the urgent need to adapt. "The undeniable truth is that the world we live in outside of the classroom has drastically changed. It begs the question: how can our classrooms change and evolve as well?" (Rudi 2011,1). Consequently, a proactive strategy necessarily involves aggressively adopting technology-focused repositioning, which takes into account the learning needs of 'technology junkie' millennials.

A study by Fitzgerald cited by Rudi (2011) underscores how the brains of digital natives are "physiologically different than those who didn't grow up with technology and require a fuller range of representational modes to achieve literacy" (Rudi 2011, 4). Digital natives grow up with technology as a normal part of their environment and view it as a regular extension of their lives. Moreover, this 'Net-generation' cohort is totally oblivious to a time when there was no such technology. Research by Gu, Zhu, and Guo (2012, 392) suggests that "these students have been raised in a digital environment that has shaped how they think, behave, and act." Adopting creative technology-based teaching strategies and platforms more likely to appeal to the needs of digital natives should not be considered an optional strategic goal by educators wishing to remain relevant.

Findings delivered at a July 2013 pre-conference workshop entitled Foundations of Effective Technology Integration: Best Practices in Teaching and presented by Dr Donna Quadri of New York University, outlined several pertinent reasons technology should be used more in the classroom. They include:

- Extending the walls of the classroom and fostering better collaboration
- Strengthening analytical skills and enlivening student interest in content, and
- Generating stronger recall through greater sensory engagement.

Professor Quadri went on to say: "If you are not using technology to teach you should be, and technology should be used as an attraction not a distraction" (Quadri 2013, 3).

Chickering and Ehrmann (1996:3), in a study discussing the implementation of seven best technology practices endorse this notion by concluding that "technologies can help students learn in ways they find most effective and broaden their repertoires for learning." These authors are convinced that technology used in the classroom "can strengthen faculty interaction with all students, but especially with shy students who are reluctant to ask questions or challenge the teacher directly" (Chickering and Ehrmann 1996, 3).

Research by Zellweger cited by Aldunate and Nussbaum (2012, 519) establishes that "faculties who commit to more time integrating educational technology into their teaching have a greater chance of adopting new technologies." Rolin Moe, a creative writing teacher and Pepperdine University doctoral student, concludes that "the most successful teachers are putting lessons into a context that ensures students their real value in the real world, and that often requires additional effort to learn technologies that [students] have already mastered" (Rudi 2011, 2). This author is also convinced that "purpose-driven learning has much more promise with today's 'what's in it for me?' students, who typically don't respond to the concept of learning for its own sake" (Rudi 2011, 2). In investigating how technology supports learning, Martinez (2014) concluded that student learning can be enhanced by the use of programmes and applications in a number of different ways. However, she also cautioned against making technology the "servant not the master" (Martinez 2014, 10).

> The 2015 New Media Consortium Horizon Report on Higher Education concluded:
>
> Bring Your Own Device (BYOD) and the flipped classroom are expected to be increasingly adopted by institutions in one year's time or less. Also, make use of mobile and online learning. The time-to-adoption for makerspaces and wearable technology are estimated within two to three years, while adaptive learning

> technologies and the Internet of Things is expected to be mainstream in universities and colleges within four to five years. (New Media Consortium 2015, 46)

Recently, virtual and augmented reality learning technologies have become available on the educational and commercial scenes. Even 3-D printing teaching platforms and customised institutional apps have enhanced the academic experience.

One of the findings in the 2014/15 State of Information Computer Technology in Bermuda is that:

> … 99% of businesses have Internet access, 89% of households have access to the Internet, 85% of households own a smartphone, and 98% of residents use the Internet from any location at least once a week. Moreover, 90% of residents agree that having a strong knowledge of technology was essential in getting ahead today, while 85% believed that technology helped them to be more creative or innovative. (Government of Bermuda 2014/15, 5)

The report goes on to discuss how "technology is an essential tool in our day to day lives," and that mobile technologies are very popular among Bermuda's residents, who consistently use them to access the Internet.

Given this technology-driven paradigm shift, should the longstanding, non-technology teaching and delivery platforms employed by some lecturers at Bermuda College be amended in response? More importantly, to what extent are Bermuda College lecturers integrating technology into their teaching and learning methods in order to satisfy the needs of a First World, technology-driven society? Also, is there evidence that Bermuda College students believe technology plays an important role in improving their learning experience?

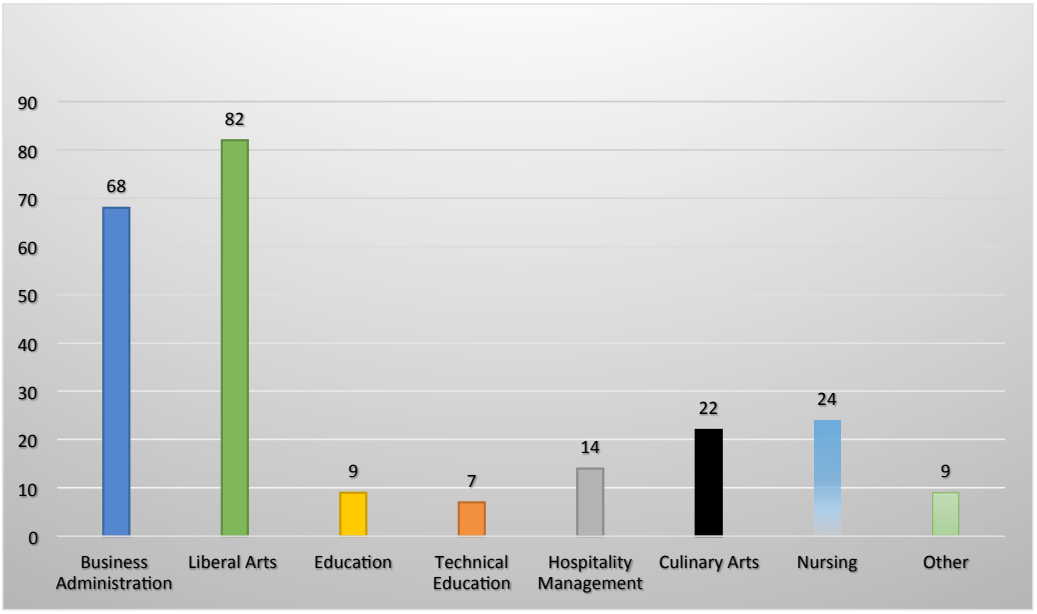
Methodology

A two-pronged data collection process was used to elicit input for this study. Permission was sought in advance from a random sample of fellow lecturers to assist with collecting data. Dates and times were established for the author to attend classes during the weeks of 12-30 October 2015. At the start of each lesson, students in computer labs were asked to participate in the study and were provided with instructions to locate the survey tool's link, which was embedded in the respective lecturer's area in Moodle, the course management system used by Bermuda College. Then students completed an electronic version of the questionnaire. Data were also collected using an identical paper version of the questionnaire. Students were instructed to complete the paper version only if they had not already completed the online version. Also, both data-collection procedures were closely monitored by the lecturers and this author. Data collected from the paper surveys were input into the Survey Monkey created by the author.

Findings and Discussion

A total of 237 respondents completed the survey, representing 24.5 per cent of students registered for the Fall 2015 semester. Of this number, 75.9 per cent were full-time students and 22.4 per cent part-time. As expected, a clear majority (71.5 per cent) were female and 28.5 per cent male. Also, 85.9 per cent were 16 to 24 years old, with only 5.9 per cent and 5.5 per cent of the respondents falling respectively into the 25 to 34 and 35 to 44 year brackets. A total of 47 per cent were first year students, 33 per cent second year, 15.2 per cent third year and the balance fourth year and above. Seven Business Administration and Hospitality Division lecturers were randomly asked to participate in the study, while eight lecturers were randomly selected from the Liberal Arts Division. Chart 1 below displays the students' areas of study.

Chart 1: **Areas of study**



Source: Data collected from 237 Bermuda College students for this paper.

Numerous technology-based learning options were identified by students as having been used during their learning experience. Table 1 details the vast range of technologies employed by faculty at Bermuda College. From the plethora of technology-based plaforms utilised by faculty, the Moodle grade-book was the most widely used (by 84 per cent of respondents). This option meets the students' desire to know their grades in real time. Bermuda College faculty should thus be aware that students wish to know what their grades are at any given time in a virtual format. Online exams and assignments were the next two technology formats most commonly used by students. My Math Lab, Smarthinking, Snap Training and Assignment, and Google docs were other technolgy platforms popular with students.

A majority of respondents noted how Moodle was used to deliver homework assignments that contain You Tube videos and other media formats. Moreover, students confirmed how the various forms of technology used by lecturers helped improve their learning experience. This sentiment speaks volumes, and should encourage faculty to embrace technolgy and find additional ways of integrating it as a tool to further enhance the student learning experience.

Table 1: **Technologies used by lecturers**

Answer Choices	Responses	
The Moodle Grade-book	84.81%	201
Completing exams using Moodle	45.15%	107
Completing assignments using Moodle	73.42%	174
Moodle chat rooms	20.25%	48
Smartboards used by teachers	33.76%	80
My Math Lab	30.38%	72
My English Lab	7.59%	18
My Science Lab	7.59%	18
My Spanish Lab	5.49%	13
Smarthinking	19.83%	47
Blogs	4.64%	11
Wikis	6.33%	15
Podcast	0.42%	1
Clickers	0.84%	2
Turn it in.com	5.06%	12
Google docs	19.83%	47
Facebook	8.44%	20
Twitter	2.53%	6
Instagram	4.64%	11
What's App	19.41%	46
SNAP Training & Assessment Software	34.60%	82
Alternative virtual labs and interactive games	10.13%	24
Weebly	6.33%	15
None of the above	1.27%	3
Other (please specify) Responses	10.55%	25

Source: Data collected from 237 Bermuda College students for this paper.

Table 2 indicates student perceptions about the extent to which faculty required students to use Bermuda College's learning management system, Moodle, to complete homework assignments and discussion posting exercises and about whether technology played a role in improving the overall learning experience.

Table 2: **Technology's role in the learning experience**

	Never	Rarely	Sometimes	Often	Very often	Total
Moodle is used in this class to deliver homework assignments, which contain YouTube videos, audio clips, and/or other media format.	15.19% 36	8.02% 19	20.25% 48	27.43% 65	29.11% 69	237
Technology used in this class has played a role in improving my learning experience.	5.49% 13	6.75% 16	20.25% 48	33.76% 80	33.76% 80	237
I am required to engage in online discussion posting exercises for this class.	34.18% 81	16.46% 39	18.57% 44	13.92% 33	16.88% 40	237
Moodle is used in this class to deliver home assignments, which require me to upload them on Moodle or where my answers can be directly inserted into the provided locations on Moodle.	15.61% 37	8.44% 20	21.52% 51	22.78% 54	31.65% 75	237

Source: Data collected from 237 Bermuda College students for this paper.

The final set of questions was designed to explore student preferences for using technology throughout the teaching and learning process. Just less than half (46.6 per cent) of respondents preferred using Moodle or another technology platform to submit assignments and exams electronically, versus having to write or print them on paper. A total of 29 per cent strongly agreed with using technology in this fashion.

Just over one-third of students confirmed that they strongly agreed with receiving electronic feedback from lecturers on their assignments in real time. Thirty-eight per cent agreed with this procedure.

Students expressed mixed preferences regarding faculty using more or less technology to deliver course content: 20.9 per cent strongly agreed, 38.9 per cent agreed, and 25.2 per cent students were uncertain about increasing or reducing the technology used in the learning process.

A majority of students confirmed that the technology used in the specific class in which they completed the survey played an important role in improving their learning experience: 46.1 per cent agreed and 29.5 per cent strongly agreed. On the other hand, only 2.1 per cent of students noted this was not the case. Moreover, most students either agreed or strongly agreed with the notion that using more technology in the classroom in general would most likely play a pivotal role in transforming education in future.

Another important finding is that a majority of students (just over 60 per cent) were familiar with the technology being used in the classroom as they had previously been exposed to educational technology formats similar to Moodle, Smarthinking, and other virtual learning platforms prior to attending Bermuda College. This insight should encourage Bermuda College lecturers to seriously consider the technology-driven learning expectations of potential students in preparing their lesson plans.

Conclusion

This study's findings confirm not only that the integration of technology into teaching and learning is expected, but also that it is perceived by students as improving their overall learning experience. Furthermore, a majority of Bermuda College students indicated their preference for attending classes that incorporate more technology to deliver the content. Likewise, most respondents agreed they preferred to submit assignments and complete exams electronically rather than in paper format.

Technology has become woven into the fabric of learning. Consequently, it is in the best interests of institutions of higher learning and other learning organisations to recognise the significant role technology plays and will continue to play in teaching and learning. Such institutions must be proactive and develop curricula designed to cater to rapidly changing learning styles and trends. Digital natives seek more lasting and memorable learning experiences. They not only make up the majority of students on college campuses, but also wish to learn in non-traditional learning spaces and require engaging and inspiring technology-driven teaching platforms.

Student retention and graduation rates are critical and often attract significant attention from college administrators. Failing to adapt to the 'new normal' will most likely result in declining enrolment figures, dissatisfied students, and low retention rates. Consequently, higher learning institutions must move towards adapting innovative technology-driven teaching techniques to sustain and improve the overall student learning experience.

This study did not quantify the proportion of Bermuda College faculty who use Moodle and other technology platforms to enhance learning or to deliver virtual exams and assignments, since data were not collected from faculty. However, a follow-up study will determine if there are significant differences between the perceptions of faculty and students regarding the role of technology in the teaching and learning process. The aim is to determine what is required to narrow the apparent technology gap between digital natives and digital immigrants or seasoned educators.

References

Aldunate, R. and M. Nussbaum (2012). *Teacher Adoption of Technology, Computers in Human Behavior.* Available at http://www.elsevier.com/locate/comphumbeh. Retrieved 21 September 2015.

Brown, B. (2015). Twenty First Century Skills: A Bermuda College Perspective. *Voices in Education* (1), 58-64.

Chickering. W. and C. Ehrmann (1996). Implementing the Seven Principles: Technology as a Lever. American Association for Higher Education, October, pp. 3-6.

Government of Bermuda (2014-15.) State of ICT in Bermuda. Report. Ministry of Economic Development Department of E-Commerce.

Gu. X., Y. Zhu and X. Guo (2012). Meeting the 'Digital Natives': Understanding the Acceptance of Technology in Classrooms. *Educational Technology and Society,* 16, 392-402.

Martinez, M. (2014). *Deeper Learning: The New Normal.* Available at http:// www.advanc-ed.org/source/deeper-learning-new-normal. Retrieved 28 September 2015.

New Media Consortium (2015). Horizon Report: 2015 Education Edition. Available at http://cdn.nmc.org/media/2015-nmc-horizon-report-HE-EN.pdf. Retrieved 15 October 2015.

Quadri, D. (2013). *Foundations of Effective Technology Integration: Best Practices in Teaching.* Career Advancement Academy Teaching Consortium pre-conference session. International Council of Hotel, Restaurant and Institutional Education Conference, St Louis, Missouri, 24-27 July.

Ross, S. M., G. R. Morrison and D. L. Lowther (2010). Educational Technology Research Past and Present: Balancing Rigor and Relevance to Impact School Learning. *Contemporary Educational Technology* (1), 17-35.

Rudi, A. (2011). The Digital Natives are Restless. Available at http://www.eschoolnews.com/2011/08/22/the-digital-natives-are-restless/ (eSchool News). Retrieved 15 October 2015.

Zellweger, F. (2007). Faculty Adoption of Educational Technology. *Educase Quarterly* (1), 66-9.

Adjusting to the Challenges of Changing Demographics: A National and Educational Priority

Cordell W. Riley

Abstract

Many Western countries have ageing populations, and major policy shifts will be necessary to deal with them. Bermuda is no different in this regard and is likely to reach a major milestone in 2017, when the population of seniors is expected to overtake the youth population. The island is likely to experience school closures and increases in taxation. Further, the ageing and decreasing population will also affect college recruitment. Colleges will have to find creative ways to attract and retain students. This is especially true for male students, who tend to be under-represented on college campuses. The article also explores some of the other challenges associated with changing population trends.

KEY WORDS: *Ageing, Bermuda College, dependency ratio, gender relations, tertiary education*

Introduction

The ageing population is not a new phenomenon. Many Western countries have been dealing with this challenge for years. Improved medical technology and a greater emphasis on living healthier lifestyles have, among other things, contributed to people living longer. And these changes have begun to have an impact on the largest age cohort in recent times – the baby boomers. This cohort comprises those born between 1946 and 1964 (Pew Research Centre 2015) after the Second World War (1939-1945). In 2015, that cohort ranged from the ages of 51 to 69 and accounted for 17,100 or 28 per cent of Bermuda's population. By 2020 this number will have increased to an anticipated 17,800 in 2020 and will account for 29 per cent of the population. If one were to add the remainder of the senior population, one would get a very clear picture of the demographic shifts that are rapidly taking place.

What is indeed clear about this phenomenon is that by 2030, all of the baby boomers will be eligible for official retirement, unless the retirement age is raised, as they will be over 65. Just as sobering is the fact that as we get closer and closer to 2030, more and more workers will be leaving the workforce, and, due to the declining birth rate, they will not be easily replaced. The implications are far-reaching. In a public forum hosted by the college in April 2015, the author outlined those implications as follows:

- Declining school enrolment, leading to school closures
- A need to increase services for seniors
- A reduced working population, necessitating a need to increase taxes or find new ones
- A need to increase jobs, from newer industries
- Inability of pension funds to meet obligations (SAGE Commission 2013)
- Increasing healthcare costs

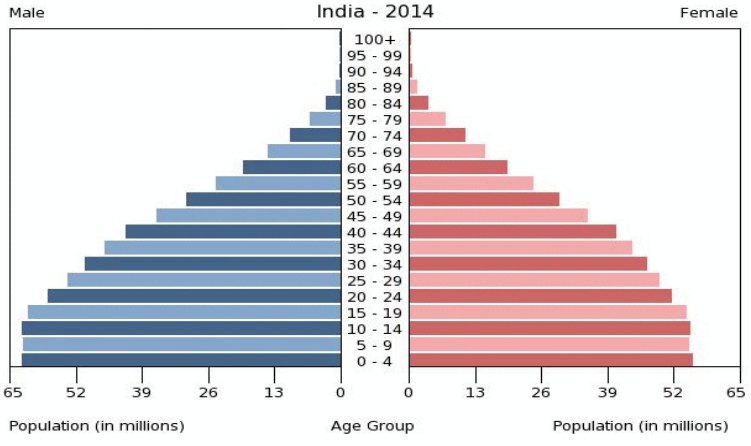
Bloom et al. (2011) expanded on the list above. They took a more macro perspective and included decreasing saving rates and the possibility of reduced or slow economic growth. While some of these effects will be mitigated by immigration, such as the influx into the United States of millennials (those born between 1981 and 1997 and who, in 2015, were between the ages of 18 and 34), the implications are severe enough to warrant national strategies. For instance, in 2014 the Czech Republic approved its Five Year National Action Plan for Positive Ageing (Czech Republic 2014). That plan included strategies for protecting the rights of seniors, employment of seniors, and healthy living, among others.

Population Trends

In an ideal world, countries will have many young people, a strong working population and fewer 'old' people. Demographers call this combination of factors the dependency ratio. This ratio is a measure of the portion of a population composed of dependents – people too young (under 15) or too old to work, or restricted from doing so (65 and over). It is equal to the number of individuals aged below 15 or above 64 divided by the number of individuals aged 15 to 64, the working population, and expressed as a percentage. There is also a youth dependency ratio, which focuses on the ability of the working population to support the youth population, and a senior dependency ratio, which measures the working population's ability to support the senior population. Generally, a lower dependency ratio, particularly a lower senior dependency ratio, is better for countries, as the working population is in a much better position to support them economically.

India and Southern Africa are the only major regions in the world where the population is not ageing (Chakravarty 2014). The World Bank (2016) estimates that India's total dependency ratio fell from 56 per cent in 2011 to 53 per cent in 2014, but India's dependency ratio has been falling for decades. In 1965 it was estimated at 81 per cent. As India's high youth population moves into the workforce, its dependency ratio will fall further and this is likely to spur economic growth. Figure 1 shows that India has a near perfect population pyramid. Comparing India to Bermuda, where Bermuda's dependency ratio was much lower in 2014 at 46 per cent, India is in a much better position to grow economically since it does not have such a high proportion of seniors.

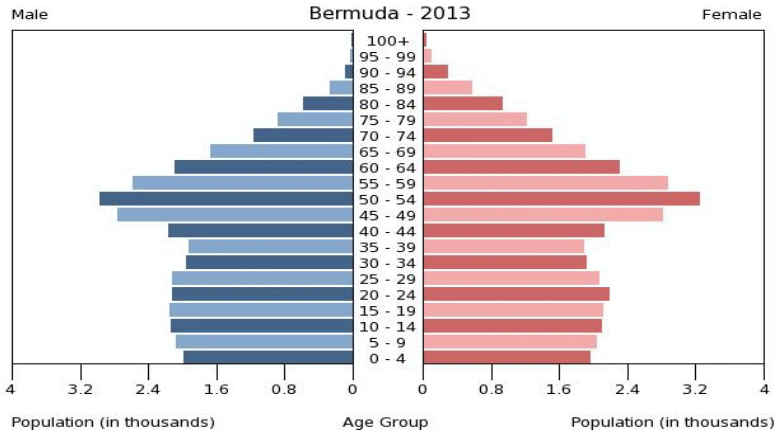
Figure 1: **India's population (estimated at 1.3 billion)**



Source: World Bank (2016)

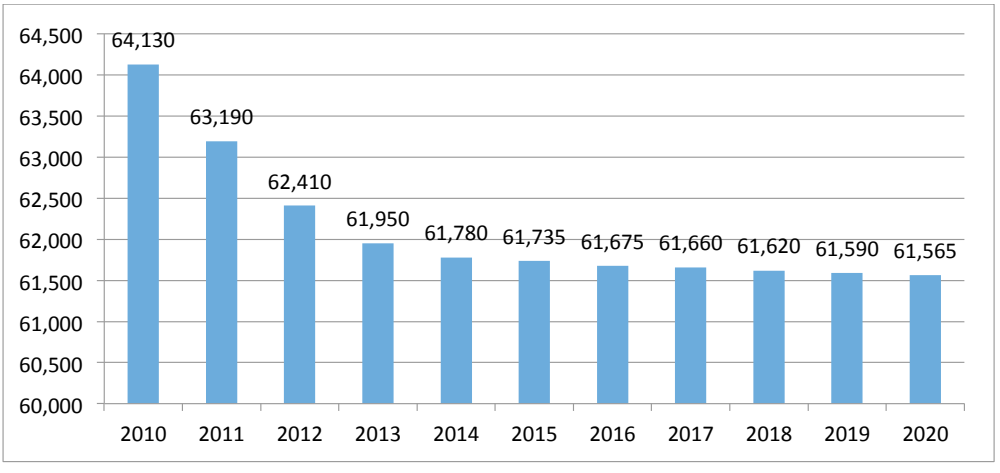
The reverse is true of Bermuda. Its dependency ratio is expected to reach 51 per cent by 2020, largely fuelled by the fast-growing senior population. And while Bermuda, like most economies around the world, suffered from the financial collapse in 2008, the island's recovery has been mediocre at best. To complicate matters further, for the first time in Bermuda's history, its population is expected to decline, albeit slowly, from 64,000 in 2010 to 61,600 in 2020, a 4 per cent drop (see Figure 2 and Figure 3.)

Figure 2: **Bermuda's population pyramid (estimated at 62,000)**



Source: Bermuda Government (2014)

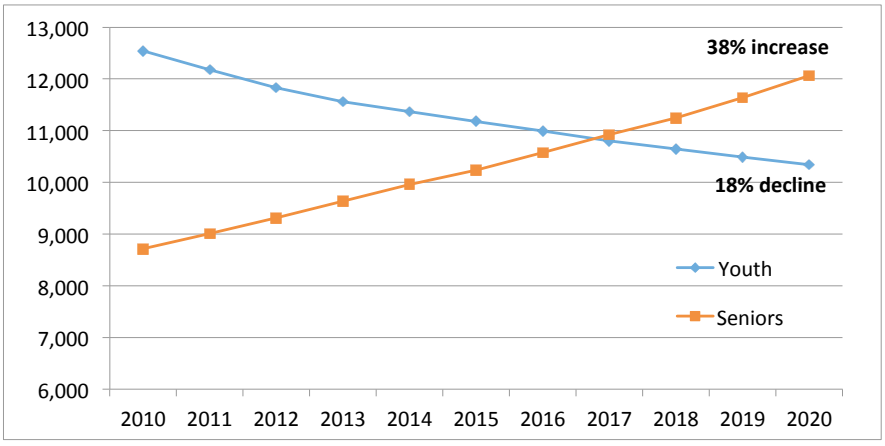
Figure 3: **Bermuda's population projections, 2010 to 2020**



Source: Bermuda Government (2014)

One key milestone that policy-makers need to be aware of is likely to be passed in 2017. With all eyes possibly focused on Bermuda's hosting of the America's Cup, the prestigious AC35 yacht races, or perhaps national elections, policy-makers should not lose sight of a major demographic shift. According to official government projections (Bermuda Government 2014), the senior population may overtake the youth population in 2017 (see Figure 4). Moreover, from 2010 to 2020, the senior population is expected to increase nearly 40 per cent, while in the same period the youth population is slated to decline by about 20 per cent.

Figure 4: **The changing dynamics of the senior and youth populations, 2010-2020**



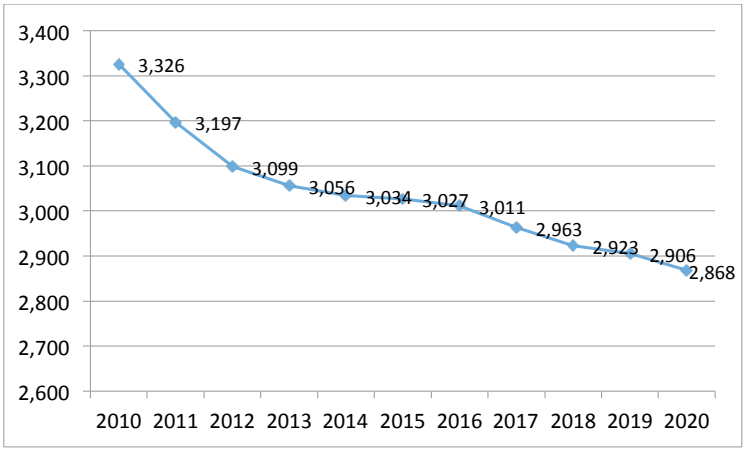
Source: Bermuda Government (2014)

In this situation, if a national plan for dealing with this phenomenon is not currently in place, it is rather late to develop one. Several countries, such as the Czech Republic previously mentioned, already have a plan in place to deal with the challenges faced by an ageing population. Without such a plan, the approach is likely to be reactive and chaotic. For instance, having to raise taxes, shoulder increased healthcare costs, and maintain current government services, at a time when the population is ageing and the workforce shrinking, is not something a government would want to deal with all at once, let alone present to a voting public.

Educational Impacts

Just as nations are challenged by changing population trends, so too is education. One such challenge, highlighted earlier, is the need to close schools at all levels, due to declining enrolments However, at the tertiary level, where there is only one institution, closing is not an option. For Bermuda College, and many tertiary institutions elsewhere, more creative ways will have to be found to attract and retain students. Figure 5 lays out quite clearly the population challenge that lies ahead for the college.

Figure 5: **Population projections for the 20-24 cohort, 2010-2020**



Source: Bermuda Government (2014)

The major college cohort is the 20-24 year-old group and, for Bermuda, that cohort is expected to decline from 3,300 in 2010 to 2,900 in 2020, a 14 per cent drop. This decline reflects the national trend of a declining youth population, even though this cohort is over the age of 17. Moreover, the decline is likely to negatively affect the gender balance, particularly as regards Black males, who for various reasons do not view a college education as a viable option. This topic will be discussed in more detail later.

In theory, higher educational institutions, and Bermuda College in particular, should be able to weather the population shifts. The college currently has about 1,000 students, so even with a cap of 2,900 on that cohort in 2020, there is much room to keep its levels at or above 1,000 students (Bermuda College 2015). It is true that the college's numbers are down from their peak in 2008, when there were nearly 1,400 enrolled. However, that was the year the Bermuda government made it free for most to attend. In fact, in Fall 2008 enrolment jumped 25 per cent over Fall 2007. And while there were various discounts on tuition after 2008, all were removed in 2015, with the exception of discounts for staff with dependents attending the college. With a full credit load of 24 for a year, tuition for local students is approximately $3,200. If books and other incidentals are added, each student represents about $5,000. While this figure is low by North American and European standards, a continued decline in student enrolment will have obvious negative impacts on the college's revenues.

Apart from the challenge of declining enrolments, there is also the challenge of the male/female divide, and in particular the enrolment of Black males. While in the 20-24 cohort, the ratio between males and females has consistently been 47 per cent males to 53 per cent females, at the college the ratio is 35 per cent to 65 per cent. This is no different from what is happening in the United States. Cuyjet (2006, 7) wrote that "it is quite evident in these enrollment figures that African American men in 2002 not only attended college in a proportion lower than their percentage in the U.S. African American population, but they also still represented the most skewed male/female ratio of any racial/ethnic group – they were outnumbered in colleges by African American women by almost two to one." Why is this so?

In 2008, when there was free tuition at the college, Fall-to-Fall enrolment for males jumped 20 per cent. But for females, it leapfrogged by 40 per cent, giving rise to the widest gender disparities in recent years – 72 per cent female and 28 per cent male enrolment that year. A *New York Times* article (Lewin 2006) explored why women were "leaving men in the dust." One major reason was finance-related. A college spokesperson posited that "at Greensboro, where more than two-thirds of the students are female, and about one in five is black, many young men say that they are torn between wanting quick money and seeking the long-term rewards of education." In that same article, a female student offered the following: "I think that women feel more pressure to achieve."

Both of those arguments are believable, perhaps since it is only a fairly recently that women have outnumbered males in college attendance in North America (Birger 2015). For males, jobs used to be abundant and paid well, particularly in the blue collar sector. As that is no longer the case, this could signal greater challenges for males in the future. And for females, gender discrimination was once widespread. While that, too, is no longer the case, a good education is still seen as a way to improve academic and general equality.

Conclusion

Just as the Western world faces demographic challenges, so too does Bermuda find itself in a similar position. With every throne speech, the government sets out plans for the coming fiscal year, including provisions to increase taxes. Indeed, with falling housing rates, the government has sought to recover lost land tax revenue by increasing that tax. Ironically, those in the lower tax bands faced the largest percentage increases (Bell 2015). However, raising taxes is par for the course when the workforce is shrinking, unless new revenue streams can be found. Bermuda should brace for more tremors before the demographic tectonic shift occurs around 2017.

Institutes of higher learning must become more creative in stemming the enrolment decline. Reaching out to schools further down the feeder chain, such as middle schools, may not pay immediate dividends but could pay

off in the long run. Bermuda College has embarked on a dual-enrolment programme that permits talented high school students to take college-level courses, with some students going on to complete an associate degree. That programme is expected to attract even more students in the future.

There is a clear and present need to conduct further research into the motivation of local males about going to college. The finding that free tuition met with a less enthusiastic response from males than females indicates that factors other than cost are responsible for the dearth of males in tertiary education. Having more males on campus has it benefits, as diversity is almost always seen as positive. And increasing the number of males on campus is similar to the call for more females when that gender was under-represented. There may also be unintended, positive consequences of having more males on campus. In the *New York Times* article cited above (Lewin 2006), one administrator observed that "when there were fewer men, the environment was not as safe for women … when men were so highly prized that they could get away with things, some of them became sexual predators."

While it may be late to develop a plan, one that is clearly thoughtful could mitigate a number of the disadvantages associated with an ageing population, both for the nation and for educational institutions.

References

Bell, J. (2015, 17 December). *Land taxes increased to avert revenue loss.* The Royal Gazette. http://www.royalgazette.com/article/20151216/NEWS01/151219754. Retrieved 2 February 2016.

Bermuda College (2015). Census Day Report, Fall (unpublished).

Bermuda Government Department of Statistics (2014). Bermuda's Population Projections, 2010-2020.

Birger, J. (2015, 15 October). Unequal Gender Ratios at Colleges are Driving Hookup Culture. *Money Magazine.* http://time.com/money/4072951/college-gender-ratios-dating-hook-up-culture/. Retrieved 10 February 2016.

Bloom, D., D. Canning and G Fink (2011). *Implications of Population Aging for Economic Growth.* Working Paper 16705. National Bureau of Economic Research, Cambridge MA,

Chakravarty, M. (2014, 10 October). *Making India's demography its destiny.* http://www.livemint.com/Opinion/3aGTvnsOvqfu22cfQbS4KN/Making-Indias-demography-its-destiny.html. Retrieved 25 November 2015

Cuyjet, M. (2006). *African American Men in College* (1st ed.). San Francisco: Josey-Bass.

Czech Republic (2014). National Plan for the Positive Ageing of Seniors for the Period 2013-2017. Ministry of Labour and Social Affairs.

Lewin, T. (2006, 9 July). At Colleges, Women are Leaving Men in the Dust. *New York Times.* http://www.nytimes.com/2006/07/09/education/09college.html?pagewanted=all&_r=0. Retrieved 13 November 2015.

Pew Research Center (2015, 15 January). This year, Millennials will overtake Baby Boomers. Fact Tank, News in Numbers. http://www.pewresearch.org/fact-tank/2015/05/21/for-fact-tanks-anniversary-a-look-back-at-the-news-in-the-numbers/. Retrieved 14 December 2015.

Riley, C. (2015). The 2015/16 Budget: Facing the Brutal Facts, Bermuda College (unpublished)

SAGE Commission (2013). Spending and Government Efficiency Final Report. Bermuda Government.

World Bank (2016). Age dependency ratio. data.worldbank.org/indicator/SP.POP.DPND. Retrieved 9 March 2016.

Book Review

The App Generation: How Today's Youth Navigate Identity, Intimacy, and the Imagination in a Digital World. Howard Gardner and Katie Davis. New Haven: Yale University Press, 2013. 244 pp. ISBN: 0300196210.

Karmeta Hendrickson and Lee-Ann Liles

Howard Gardner is a Hobbs professor of Cognition and Education at Harvard Graduate School of Education and Katie Davis is assistant professor at the University of Washington's Information School. In this work, they provide a fascinating and provocative account of a key area of information technology and youth with major implications for education and understanding ourselves as technology 'buffs.'

The App Generation: How Today's Youth Navigate Identity, Intimacy, and Imagination in a Digital World explores the impact of new technologies on three vital areas of adolescent life: identity, intimacy, and imagination. Applications, or 'apps' as they are commonly known, are computer programs typically run on mobile devices and designed to serve a particular purpose. They are not only desired by today's youth – they are expected.

This book examines the ways in which apps provide new forms of self-exploration and new methods of connecting to other people, and how they furnish new means for exercising the imagination. According to Gardner and Davis: "Young people … are not only immersed in apps: they've come to think of the world as an ensemble of apps, to see their lives as a string of ordered apps, or perhaps, in many cases, a single, extended, cradle-to-grave app (or super-app)" (p.7).

Gardner and Davis contend that identity, intimacy, and imagination are three of the stages of psychosocial development proposed by the psychoanalyst Erik Erikson. Through their research, the authors have discovered that these stages have been reconfigured significantly over generations. The researchers investigated these three stages primarily through interviews with adolescents and through focus groups involving adults who work with teens. To illustrate the generational divide, the authors share their perceptions of technology during their own respective lifetimes and also interviewed Katie's younger sister. There is also the insightful perspective of Oscar, Howard's six-year-old grandson.

The authors' research provides compelling answers to the following questions: Who are youth in relation to technology? How do youth relate to others via technology? How creative are teens in regard to the available technology?

Apps readily allow the 'Me Generation' to address the issues of youth. Antisocial personality traits such as Narcissism, and the effects of Helicopter Parenting, whereby parents feel the need to protect their children from their own life experiences, have resulted in an 'app mentality,' based on a rapid approach to information. Thus, the ubiquitous app can be viewed as a metaphor for this study and remain the focal point in the hopes of answering the pointed question, "Can youth take advantage of Apps without being programmed by them?"

This is a comprehensive study and further research should address these pointed questions. "Where do we go from here?" and "How can we use what we now know to involve educators, parents, and stakeholders?" After reading the book, we acknowledge that society has not understood even a fraction of the effect of technology on youth.

Logically then, the next phase of this research should probably focus on curriculum development in education and on addressing gaps in communication, creativity, and critical thinking, as well as the antisocial personality traits produced by contemporary technology on the App Generation.

App designers are responsible for whether the app tips the balance towards enablement or dependence. It is the authors' view that the balance can be tilted towards an app-enabled society among youths by parental modelling of the use of apps around their children. However, they must also help young people to find new ways to incorporate the technology into unexpected and distinct paths. Developing computational skills to help students have a more meaningful role in the app world would be an advantage. Additionally, students would be empowered if they gained experience of modifying existing apps and designing their own rather than just being consumers of technology.

About the Authors

Davidson Bishop is a music specialist in the primary department at Warwick Academy in Bermuda. He gained his bachelor's degree in music education from Atlantic Union College in South Lancaster Massachusetts and his master's in music education from Boston University's College of Fine Arts.

Phyllis Curtis-Tweed, PhD, graduated from Emory University and then pursued postdoctoral training in psychology in the clinical research training programme in social psychiatry at Harvard. She was a psychology instructor at Harvard Medical School and taught at the Harvard Graduate School of Education, Simmons College and at Harvard-affiliated hospitals. She is a referee for the *Journal of Moral Education* and executive board member and treasurer of the Association for Moral Education. She has published and presented at national and international conferences on psychology and education. Dr Curtis-Tweed joined the faculty at Medgar Evers College of the City University of New York and served as director of the freshman year programmes, assistant provost for assessment, and associate provost. She then joined the staff at Oakland Community Colleges as academic dean. In January 2014, Dr Curtis-Tweed returned to Bermuda and became the seventh principal of the Berkeley Institute.

Shawn De Shields, MBA, is a senior lecturer at Bermuda College in hospitality management and computer science and is currently president of the Bermuda College faculty association. As a certified hotel educator, he is an active member of the International Council on Hotel, Restaurant, and Institutional Education. Articles to his credit are "From Instability to Volatility: Bermuda's Shift from Tourism to Economic Dependency" and "Examining the Economic and Social Impacts of Bermuda Hosting the 35th America's Cup: Perceptions of Residents." Under consideration for publication is "Cruising to Bermuda: A Comparative Analysis of Passenger Brand Satisfaction Levels of Cruise Ships to Bermuda."

Tracey Lynne Harney, ND, is a full-time biology lecturer at Bermuda College. As a licensed naturopathic physician, she continues to pursue research into the health benefits of nutrition and emotional management. Her latest certifications are as a HeartMath Resilience Educator™.

Karmeta Hendrickson, MBA, is the assistant director of information technology services at Bermuda College. With a primary focus on academic computing, she has worked and managed the helpdesk for over 15 years. After launching the Project Unwired initiative in 2001, which provided laptops to full-time students at Bermuda College, she has gained a wealth of knowledge and experience from her extensive dealings with youth in the Bring Your Own Device (BYOD) era.

Lee-Ann Liles is Bermudian and gained her BA in English from Notre Dame University in Maryland, with a concentration on creative nonfiction writing, and her MLIS from San Jose State University. Acknowledged in the 1993 Bermuda throne speech for her writing and publishing achievements at the age of 19, her work has appeared or is forthcoming in *Poetry Motel, Crack the Spine! The Bermuda Anthology of Poetry, The Bermuda Anthology of Poetry II, Caketrain Journal, Talking River Review, Damozel, Conte, Nashwaak Review, Bottom of the World Magazine, Call Number, BC Journal, PRECIPICe* and *NANNY FANNY.* Her book, *Aerie: Short Stories*, was released in January 2016.

Victoria Marsick is professor of adult learning and leadership at Columbia University Teachers College. She holds a PhD in adult education from the University of California, Berkeley, and an MPA in international public administration from Syracuse University.

Francoise Palau-Wolffe holds an MA in applied linguistics (Kent, UK) and an MSc in Information and Library Studies (Aberystwyth, Wales). She has been a librarian at Warwick Academy since 2003. Passionate about human rights, she joined Amnesty International (AI) Bermuda 20 years ago. As chairperson of the section, she appointed the first youth representative to the AI Bermuda board and developed a five-year strategic plan that focused on

human rights education. She introduced AI's Human Rights Friendly School programme to the island.

Cordell W. Riley, BSc, MSc, JP, is the institutional and research coordinator for Bermuda College. Previously, he was the managing director of Profiles of Bermuda, a business-consulting company he founded in 1998. A former government statistician, Cordell has authored numerous articles on social statistics, tourism, and human resources, and has spoken at a number of international conferences.

Llewellyn Simmons, PhD, has served as the director of academics in the Bermuda public school system since 1 October 2008. Dr Simmons has also been a guidance counsellor, social studies teacher, education officer for social studies, and assistant professor at the University of Dayton. He is a committed advocate for public education, decolonisation discourse, and the education and cultural politics of Bermuda. He has various scholarly presentations, publications, and book reviews to his credit, as well as other works in progress.

Sharon Speir, PhD, is the assistant director of early childhood education in Bermuda public schools. She has been a teacher, consultant, principal, and superintendent. Her qualifications include child studies, and curriculum, teaching and learning, with a specialisation in teacher development. Her research interests are qualitative and include teacher research and documenting lived experience.

Lynette Woods, MA, recently retired as assistant to the president of Bermuda College for special projects. She was one of the driving forces behind the establishment of a journal at Bermuda College. She is currently the co-chair of Bermuda College's publication committee and co-editor of the journal's editorial board. She is also a certified trainer in appreciative inquiry, a skill she has used to assist in developing strategic plans for two colleges.

Contributor Guidelines

Contributions are welcome from all areas of scholarship relevant to student success. Manuscripts are expected to be original works able to withstand intensive peer review. Topics may address any area of educational scholarship, including humanities, science, social sciences, fine arts, politics, curriculum, assessment, pedagogy as well as institutional policy, historical perspectives, and professional themes. While the journal serves primarily Bermudian interests, any manuscript submitted for publication should be of international interest and have scholarly significance for research, policy, and practice.

Authors, rather than the editors or Bermuda College, bear responsibility for accuracy and for the opinions expressed in articles published in *Voices in Education*.

The guidelines listed below will assist contributors as they write their articles for this journal. Guidelines and timelines must be observed.

- **Format of manuscripts.** Use APA Style (6th ed.). Font Size 12, Times New Roman. Articles should be double-spaced and no longer than 3,000 words. Longer articles will not be accepted. Submissions **must only** be sent via email as a Word document attachment to bcjournal@college.bm. Submissions **must** be received on the due date at midnight Atlantic Standard Time. Late submissions will not be accepted.
- **Parts of manuscript.** All submissions must have a title page, an abstract, and complete and accurate references based on APA guidelines.
- **Abstract and key words.** The abstract should not exceed 200 words. It should be followed by a list of key words.
- **Manuscript content.** Articles are accepted for publication on the understanding that the editors and editorial board reserve the right to edit for clarity and style. Articles that are reviewed and edited may be sent back to the author for revision.

  Where applicable, articles must contain relevant empirical data. Authors are responsible for the accuracy of references and citations. Articles without references will be rejected. Manuscripts will not be returned.
- **Illustrations and tables.** Illustrations and tables must be printed on separate sheets and numbered. All illustrations and tables must have a corresponding reference in the text.
- **Citations.** Online sources should be accompanied by the most recent access date.
- **Manuscript ethics.** Do not submit articles that are under consideration for publication in another periodical, have been published in another periodical, or have been presented at a conference. Articles become the property of *Voices in Education*.

www.college.bm/bcjournal