Caribbean Journal of Mixed Methods Research

VOLUME 1:1

2020

Published under the Journals of the Caribbean Programme
by
The University of the West Indies Press
The University of the West Indies, Mona Campus

Published by The University of the West Indies © 2020
in association with the University of the West Indies Press
and the University of the West Indies School of Education and School of Nursing
7A Gibraltar Hall Road Mona, Kingston 7
Jamaica, West Indies.
www.uwipress.com
uwipress.journals@uwimona.edu.jm
ISSN: 0799-5962
eISSN: 0799-5970
DOI: https://doi.org/10.37234/CJMMR

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The Peer Review Process

The peer review process can be summarized into the following steps:

Step One: Submission of article
The author(s) submit the articles to one of the co-editors (Loraine D. Cook or Steve Weaver) via email.

Step Two: Editors' Assessment
The editors peruse the article before moving on to Step Three. Though the paper's quality is not assessed at this point, the editors can and have returned manuscripts to the author(s) for clarification of specific section(s) of the article.

Step three: Preliminary Preparation for peer review
A manuscript accepted for the peer review process is given a number code, and the name of the author(s) is removed along with any other identifiers. The coded article is subsequently saved as version 2 in a folder in a Word document labelled *articles for peer review*. A code sheet is developed in Excel where the number codes are aligned with the authors' names and title of the article; the names of the two or three peer reviewers for each article are also recorded on said Excel spreadsheet.

Step Four: Invitation to Peer Reviewers
Invitations are sent to members of the academic community at universities locally, regionally, and internationally. We target specialists and practitioners in mixed methods research. We issue invitations until we obtain the required number of acceptances for the role of peer reviewers we call "associate editors". We target obtaining at least two peer reviewers per article.

Step five: Review is conducted
Each peer reviewer is initially given six weeks to submit their comments. Peer reviewers are provided with guidelines (see sample in appendix). Peer reviewers are asked to assess the quality of the article, focusing on the Mixed Methods Research process. The review is then submitted

to the editors, with a recommendation to accept or reject or revise it. Most peer reviewers will advise for conditional acceptance . . .

Step Six: The editors evaluate the peer reviewers' comments
Each editor is assigned three to four manuscripts depending on the number of submissions. Peer reviewers' comments for each manuscript are read over and collated by the appointed editor for disbursement to the author(s). The editor may invite an additional reviewer to get an extra opinion before disbursing the peer reviewers' feedback to the author (s). The peer reviewers' names are removed from all documents. The information from the guideline sheets are copied into a Word document and sent as an attachment with an email along with the manuscript to the author(s). **Authors are not aware of who the peer reviewers are except in very unusual circumstances.**

Step Seven: Manuscripts Returned to authors for modifications and response to peer reviewers' feedback.
The editors return the article to the author(s)with a request for modifications. The author(s) is instructed to outline in their cover letter the response to the reviewers' comments, as well as to highlight in the manuscript the modifications to the script when resubmitting.

Step Eight: Editors do another assessment of the resubmitted articles
Each editor reads over the resubmitted articles and the editors regroup as a team to discuss their assessment of the article; the article is returned to the author(s) with the editors' comments, which the author(s) is expected to address. The author(s) at this stage is given seven days to return the article with their response.

Step Nine: Acceptance/Rejection of article
Editors look over the resubmitted article and decide if this article is going to be accepted or rejected. Once accepted, an acceptance letter and the Permission Request Form (Copyright release form) are sent to the author(s).

***What happens in event that an editor is an author or co-author**
When an editor is an author or co-author, the other editor, whose name does not appear on the manuscript, takes full control of the manuscript and corresponds with the author or with the co-author. Because the process is blind peer review, there is no ethical violation.

Contributors

Susan Anderson
Susan Anderson holds a PhD in educational psychology and has over 40 years of experience as an educator. Her research includes parental involvement, special needs and at-risk students. Her award-winning book is *Climbing Every Mountain: Barriers, Opportunities and Experiences of Jamaican Students with Disabilities in their Pursuit of Personal Excellence*. Her noted achievement has been her leadership in a specific focus on violence and aggression in schools, ensuring involvement with the local community.

Sharline Cole
Sharline Cole is a PhD lecturer in Educational Psychology and Applied Research at the School of Education, the University of the West Indies, Mona. As a researcher, Cole focuses on parenting, parental involvement, family engagement, children with special needs, psychosocial, academic and emotional well-being of students and educators, aggression and violence and teacher effectiveness. Dr Cole believes in motivating students to use creative techniques that accommodate the different learners, to continually improve teaching skills and the holistic development of students.

Loraine D. Cook
Loraine D. Cook is the first president of the Mixed Methods International Research Association – Caribbean Chapter (MMIRA-CC) and currently serves as the Outreach and Development Committee co-chair on the Executive Board. She is the co-editor-in-chief of the *Caribbean Journal of Mixed Methods Research*. She is a senior lecturer in Educational Psychology and Research at the School of Education, Faculty of Humanities and Education, Mona. She was an awardee for the Principal's Research Award for the research project attracting the Most Research Funds in 2009 as part of a team. Dr Cook has been a visiting scholar in Applied Psychology at the New York University (NYU) and the Faculty of Education, Language and Literacy Education, University of British Columbia, Canada.

Elizabeth G. Creamer

Elizabeth G. Creamer is professor emerita, Educational Research Program in the School of Education at Virginia Polytechnic Institute and State University in Blacksburg, Virginia, the USA, where she was a faculty member and administrator for 38 years. She is the author of the 2018 textbook published by SAGE, *An Introduction to Fully Integrated Mixed Methods Research*. She served as the president of the Mixed Methods International Research Association from 2018 to 2019. She is now working on an in-progress textbook for Routledge, UK: *Advancing Grounded Theory with Mixed Methods*.

Rose Gibbs

Rose Gibbs is a retired Department Head of Library at Markham District High School, part of the York Region District School Board in Ontario, Canada. She is currently an independent researcher. Her forthcoming book is titled In the Shadow of Plantations and Monuments.

Disraeli Hutton

Disraeli Hutton, Professor, is a graduate of the Mico Teachers' College and the College of Arts Science and Technology. He holds an undergraduate degree in Technology Education from Buffalo State College, USA; a master's degree in Supervisory Management and Training and Development; and a PhD in Educational Administration and Supervision in (Higher Education), both from Bowling Green State University, USA. Professor Hutton's work experience spans both the private and public sectors. At Jamaica Aluminium Company (JAMALCO), he was employed as the training director and at the Human Employment and Resource Training (HEART) Trust/National Training Agency as the chief technical director. Professor Hutton also served briefly as an executive director of the Education Transformation Team which was responsible for the implementation of the transformation programme for the Jamaican education system. Professor Hutton has taught in the public school and tertiary education systems spanning over 40 years, which included College of Arts, Science and Technology (CAST), now the University of Technology, Jamaica. He was the acting director of the School of Education (SOE) and then director from 2017 to 2019. He teaches and publishes in the areas of educational leadership, financing of education, and TVET.

Yee Han Peter Joong

Yee Han Peter Joong has spent 13 years as a senior lecturer at the University of the West Indies and Nipissing University. He also taught

in Jamaican and Ontario secondary schools for 30 years. Peter's current research centres on comparative studies on secondary reforms and integration of mathematics in environmental and peace education in fourteen countries. Peter would like to dedicate this work to Professor Beverley Bryan from UWI, Stanlie Parkins and George Chong Sang from Morant Bay, Jamaica.

Vimala Judy Kamalodeen

Vimala Kamalodeen is a faculty member at the School of Education, the University of the West Indies in Trinidad, West Indies, where she specializes in mathematics and computer science education. She became interested in mixed methods research while doing her doctoral studies at the University of Sheffield, UK. Her thesis used a complex mixed-methods design focusing on hybrid data from educational online social networking. Vimala is currently engaged in mixed methods research at her institution in game-based learning and successfully hosted the third regional mixed-methods conference in the Caribbean earlier this year. Dr Kamalodeen currently holds the post of Immediate Past President of the Caribbean Chapter of the Mixed Methods International Research Association.

Gwendolyn Medford

Gwendolyn Medford is an educator and has worked for the past twenty years preparing people for careers in the tourism and hospitality industry in Barbados. Gwendolyn holds a Master of Education in Curriculum Studies from the University of the West Indies, Cave Hill, Barbados and a Master of Science in Tourism and Hospitality from Revans University, Colorado, USA. She is currently pursuing a PhD in Curriculum Studies with a research focus on the quality of internship programmes in the tourism/hospitality industry. Correspondence regarding this article can be addressed directly to Gwendolyn Medford.

Donna Mertens

Donna Mertens is Professor Emeritus at Gallaudet University with a specialization in research and evaluation methodologies designed to support social transformation. She has authored, co-authored or edited many books related to evaluation methods and human rights, most recently *Program Evaluation Theory and Practice*, 2nd ed; *Mixed Methods Design in Evaluation*; *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods*, 5th ed.; *Indigenous Pathways into Social Research*; and *Transformative Research and Evaluation*. She focuses on the

intersection of evaluation with social justice and human rights within the philosophical assumptions of the transformative paradigm. Mertens served as the editor for the *Journal of Mixed Methods Research* from 2010 to 2014. She was the president of the American Evaluation Association in 1998 and served on the Board from 1997 to 2002; she was a founding board member of the International Organization for Cooperation in Evaluation and the Mixed Methods International Research Association.

Cheryl Poth

Cheryl Poth is a faculty member and award-winning textbook author and instructor at the Centre for Research and Applied Measurement and Evaluation in the Department of Educational Psychology at the University of Alberta, Edmonton, Alberta, Canada. Dr Poth has an adjunct appointment in the Faculty of Medicine and Dentistry and serves as the methodologist on several cross-disciplinary research teams. Her specific research interests include enhancing research quality and collaborative research teams in the fields of education and the health sciences. She served as the fourth president of the Mixed Methods International Research Association. She serves as associate editor of the *Journal of Mixed Methods Research* and editorial board member of the *International Journal of Qualitative Methodology and Methods in Psychology*. She co-authored the 4th edition of *Qualitative Inquiry & Research Design* with John Creswell and was conferred the Sage Author Cornerstone Award and 2018 McGuffey Longevity Award from the Textbook & Academic Authors Association. Her book *Innovation in Mixed Methods Research: Guiding Practices for Integrative Thinking with Complexity* was published by Sage Publications in 2018 and recently won the Most Promising Textbook Award from the Textbook & Academic Authors Association.

Nalini Ramsawak-Jodha

Nalini Ramsawak-Jodha is a Lecturer in Education (Teaching of Mathematics) at the University of the West Indies, St. Augustine Campus. She works with teachers pursuing professional development at the undergraduate and post-graduate level as well as supervision of graduate students at the masters level. Her areas of interest include pedagogy, especially in mathematics education and STEM education.

Canute Thompson

Canute Thompson is a senior lecturer in Educational Policy, Planning, and Leadership and head of the Caribbean Centre for Educational

Planning at the University of the West Indies, Mona Campus. He is a co-founder of the Caribbean Leadership Re-Imagination Initiative and the author of six books, including *Education and Development: Policy Imperatives for Jamaica and Caribbean* (2020) and *Reimagining Educational Leadership in the Caribbean* (2019), both published by the University of the West Indies Press. He is an activist scholar and public commentator who writes for both major newspapers in Jamaica. He has served at various times as a policy consultant to Caribbean governments since 2005.

Leemoy Weaver
Leemoy Weaver is an MPhil/PhD candidate in Sociology specializing in development. Her core area of study is on child maltreatment and social development. She is also a lecturer in research methods at the undergraduate level at the University of the West Indies (UWI), Mona Campus, Faculty of Social Sciences; Faculty of Medical Sciences – UWI School of Nursing; and the Institute of Gender and Development Studies. She has experience in facilitating mixed methods research workshops for graduate students locally and internationally. She is the current treasurer and incoming president of the MMIRA-CC. She has been part of the team involved in the initial development of mixed methods research in the Caribbean region. She is also a member of the editorial board for the *Caribbean Journal of Mixed Methods Research*.

Steve Randolph Weaver
Steve Randolph Weaver holds a PhD in anthropology and his life-long work interlinks both the spiritual and physical aspects of health and healing which underlie his philosophy. He is a senior lecturer and has been a registered nurse for almost 40 years. He is also the immediate past head of the UWI School of Nursing, Mona Campus, Jamaica, having completed two terms in this position. Additionally, he is currently the MMIRA-CC manager and has been part of the team involved in the initial development of mixed methods research in the Caribbean region. He is the co-editor-in-chief of the *Caribbean Journal of Mixed Methods Research*.

Peter Wintz
Peter Wintz is a mathematics education lecturer and the head of the Department of Research and Graduate Studies, Faculty of Education and Humanities at the University of Guyana. His service at the national

level includes membership on the Guyana Secondary Education Improvement Project Steering Committee and as an external evaluator for the National Accreditation Council. His current research interests are collegiality among mathematics teachers and productive classroom practices.

Introduction

The *Caribbean Journal of Mixed Methods Research* was launched at the third regional mixed-methods conference, which was held in Trinidad and Tobago on 26–28 March 2019. This conference was chaired by the then President of MMIRA-CC (Mixed Methods International Association - Caribbean Chapter) Dr Vimala Kamalodeen, from the School of Education St. Augustine campus. Prior to the March 2019 conference, there were two successful mixed methods research (MMR) conferences held in Jamaica; these two conferences were initiated by a team from the School of Education led by Dr Loraine Cook, who collaborated with Dr Steve Weaver from the UWI School of Nursing, Faculty of Medical Sciences; Mr Stanford Moore, Deputy Dean of the Faculty of Social Sciences; and Dr Lloyd Waller, at that time the Head of Government, also in the Faculty of Social Sciences; together, this group organized and implemented the two regionally and internationally successful mixed methods conferences. The implementation team was supported by then Principal Professor Archibald McDonald, Professor Dale Webber, then Pro Vice-Chancellor for Graduate Studies and Research, and Professor Eldemire Shearer, then Director for Graduate Studies and Research at the University of the West Indies (Mona). At the second Caribbean regional mixed-methods research conference, the Mixed Methods International Association (MMIRA) announced that the application for a Caribbean Chapter was accepted. At the end of this conference in 2017, the Caribbean Chapter secured over 50 members committed to the Mixed Methods International Association – Caribbean Mixed Methods Chapter. The MMIRA-CC has since expanded to approximately 134 members. Without the above activities, the *Caribbean Journal of Mixed Methods Research* (*CJMMR*) would not have been considered a possibility. It is because of this fact that the names of the team members of the planning committee are listed. This team, along with the Director of the

School of Education, Professor Stafford Griffith, forms the foundation of *CJMMR*.

CJMMR is an academic, peer-reviewed, and multi-disciplinary open-access journal which focuses on studies that incorporate an MMR approach in their design. CJMMR aims to publish original reports describing the utilization of MMR in studies from all disciplines. Only full papers are accepted for publication in this journal. The target market for the journal is academics and professionals in private and government institutions, students (e.g., master's students, doctoral students) and other stakeholders. Apart from our capable editors, we have formed an editorial board that contains emerging and experienced mixed method researchers. Also, we continue to engage a team of associate editors who are experienced mixed methods researchers to conduct peer reviews of submitted articles.

This issue begins with greetings from the Principal of the University of the West Indies, Mona, Professor Dale Webber, the Pro vice Chancellor of the School of Graduate Studies, presidents of MMIRA, and MMIRA-CC. We are incredibly privileged to have secured three prominent international experts in MMR to contribute their keynote addresses from three conferences in the Caribbean. Elizabeth Creamer and Cheryl Poth at the third Regional Caribbean Mixed Methods conference and Donna Mertens at the Biennial Education Conference in February 2019 at the St. Augustine Campus in Trinidad and Tobago. The other four articles are authored by international and regional experts and practitioners in MMR. An important part of our remit is to support and expose new mixed methods researchers and so we have included three doctoral abstracts where the graduates utilized MMR in conducting their research.

Elizabeth Creamer delivered a keynote address at the third mixed methods regional conference that was held in Trinidad 26–28 March, 2019. Professor Creamer expanded her keynote presentation to discuss advances in the critical attribute of MMR, integration which distinguishes MMR from monomethod and multimethod research approaches. She further makes a distinction between component designs and integrated designs. According to Creamer, "component designs where the qualitative and quantitative strands are kept at arms distance, integrated mixed method designs engage different sources of data and analytical techniques in an interactive, dialectical, and iterative manner at many stages of the research process, but particularly during analysis". While challenging the mixed methods researcher to prioritize integration during data analysis, Creamer discusses the attributes of an integrated case-based narrative and joint display.

Donna Mertens delivered her keynote address at the School of Education Biennial Conference in February 2020. Mertens examined the role of mixed methods researchers in addressing issues such as violence, quality education, climate change, health, and housing needs. Mertens challenges the mixed methods researchers to break from the mould of established academic research practices by rethinking their paradigmatic stance. She discussed the transformative paradigm extensively that has emerged as a response to the voices of members of the marginalized and advocates for social and economic improvement through the utilization of the Mixed methods research approach.

Cheryl Poth also delivered a keynote address at the third mixed methods research regional conference held in Trinidad 26–28 March 2019. Professor Poth presents in the article titled "Confronting Complex Problems with Adaptive Mixed Methods Research Practices" an expanded discussion of her keynote address at the conference. Poth discusses the potential of utilizing MMR to investigate complex problems. Complex problems, according to Poth, "are those that occur under conditions characterized by 'multiple, interacting influences with no known solution or established methods and expertise for studying the interrelated contexts in which they take place'" (Poth, 2018b, p. 1). Examples of complex problems are health inequities, climate change and poverty. Poth argues that when investigating complex problems, a researcher must be open to conditions not being fixed within the study context but being dynamic to the extent that the researcher may need to be adaptive in the mixed methods process – thus adjusting methodology to gain more accurate and valid outcomes and meet the needs of participants better. Poth discusses conducting MMR in the COVID environment, in order to highlight the challenges and opportunities.

In addition to the above special contributions, there are five general articles presented in this volume of *CJMMR* that serve to create a comprehensive journalistic experience. These articles demonstrate the versatile application of the mixed methods approach to a wide range of disciplines and subjects. They provide the reader with excellent examples of how MMR can contribute to strengthen the quality of the data collected and lay a foundation for unique methodological designs.

Loraine D. Cook and Vimala Kamaolodeen discuss the intersection of mixed methods and case study research in investigating complex research problems. This paper identifies two designs of mixed methods case study

research, the deductively driven design (CS-MMR), that is the researcher decides from the onset of the study to do a case study, and the inductively driven design (MM-CSR), when the cases are identified based on analyses of quantitative data. Cook and Kamalodeen using exemplary empirical studies of mixed methods case study research from the international and Caribbean research community illustrate the two designs for the mixed methods case study research. The discussions are useful in understanding the practical application of mixed methods case study research.

Sharline Cole uses an explanatory sequential MMR design to examine "the impact of family involvement on students' success at the early childhood level". Two hundred and sixty parents and guardians of children in grade one from thirteen schools (primary, preparatory and special education) participated in the study. These parents and guardians reported on the extent of family involvement in the development of students' cognitive and social skills. Parents and guardians were matched with each child in the participating grade one classes. Qualitative data were used to "explain and clarify" the quantitative findings. Fifty-five parents, seventeen teachers and eight principals participated in the qualitative phase of the study. The findings revealed moderate family involvement; there was a correlation between students' cognitive and social skills, and family members contributed to students' academic success by helping with homework and visiting the school for teacher–parent consultations in the absence of parents.

Gwendolyn Medford used a convergent mixed methods design to examine the winter internships organized by the college at multiple placement sites in Barbados from the students' perspectives. Quantitative and qualitative data were collected concurrently through the use of surveys, interviews and document analysis. Medford used a convergent MMR design to provide "comprehensive information for the three research questions". The findings showed that "the students' expectations of the internships were realized; there was a significant relationship found between the quality and satisfaction of the student internship; however, some misalignment existed pointedly in one of the Associate Degree programme specializations."

Joong, Ramsawak-Jodha, Wintz, Anderson and Hutton used a concurrent triangulation strategy to examines how secondary school teachers have implemented educational reforms in Jamaica, Guyana,

and Trinidad and Tobago; sixteen schools from Jamaica, twenty schools from Trinidad and Tobago, and 16 schools from Guyana participated in the study. At each participating school, "25 randomly selected teachers and two representative classes (one junior and one senior class, approximately 80 students) were asked to complete separately designed questionnaires." The sample size was approximately 1300. The qualitative findings from classroom observations were used to corroborate the quantitative results from the data collected from the survey. The findings revealed that "although some teachers struggled with transitioning, most were able to make the necessary changes to adopt the majority of the reforms."

Cook, Thompson, Weaver and Weaver describe findings from one-on-one interviews with John Creswell and Tony Onwuegbuzie and the existing literature synthesized to discuss a working definition of MMR and present a historical evolution of MMR. Cook et al. expanded the discussion to include various elements of MMR's philosophical foundation and how it contributes to solving society's problems through the description of studies in the Caribbean that involved the use of MMR.

This publication celebrated the success of the mixed methods research regional conferences in bringing together a community of MMR practitioners. It is from the community that we were able to garner high-quality articles in which mixed methods researchers in the Caribbean are willing to share ideas and findings based on their investigation of research problems which exist in the Caribbean. In addition to the above articles, we are pleased to include three abstracts of doctoral theses that utilized MMR for their investigations

Special Mention

It was our honour and great privilege to have Professor John Creswell and Dr Mariko Hirose contribute to the quality of the journal by offering their expertise. To all associate editors listed in this journal, we are so grateful for your input and offer our heartfelt thanks for your support.

Why Integration? Why Now?

Elizabeth G. Creamer, Professor Emerita

School of Education, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA

ABSTRACT

This article expands the conversation about the "integration challenge" presented by Fetters and Freshwater (Journal of Mixed Methods Research (2015) 115–7). To advance the discussion of the integration challenge, we first consider a variety of forces that have coalesced to bring attention to integration at this particular point in time in the development of mixed methods as a methodology. Next, we extend the discussion about integrated case-based analysis and integrated visual displays by using an example of a mixed methods study that used the life course perspective. Both procedures are formative in that they are used as another source of data during analysis. Following that, we shift our attention to two challenges introduced by approaches that emphasize integration. The first is how resistance to integration that is grounded in the persistent concern that qualitative and quantitative derive from fundamentally different paradigmatic perspectives can be overcome through the logic of abductive reasoning and a theoretical framework. The second is the challenge presented when integration is prioritized to find a way to visualize interactive, integrated designs in a procedural diagram. The article closes by illustrating how the DNA double helix has been used to capture the fluidity of situations where integration occurs at multiple points in the research process.

Keywords: mixing; mixed methods; mixed methods research; integration; fully integrated mixed methods research; integrated mixed designs; integrated visual displays; case-based analyses; life-course perspective.

The Integration Moment

Thirty-five years after the terminology started to develop that formalized it as a third methodological movement, priority has shifted in the present "moment" to exactly what the word "mixed" means in mixed methods. In a 2015 editorial in the *Journal of Mixed Me*thods, co-editors Michael Fetters and Dawn Freshwater invited members of the mixed methods community "to focus even greater attention to the 'integration

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challenge'" (115). They described the challenge in a way that put the emphasis on the outcomes of research. According to them, the integration challenge is an "imperative to produce a whole through integration that is greater than the sum of the individual qualitative and quantitative parts" (116). They expressed this logic through the formula $1 + 1 = 3$. The challenge they presented drills to the heart of the differences between mixing, combining or linking qualitative and quantitative strands to a more thorough and purposeful type of integration that weaves in and out of multiple stages of the research process.

Dating back to as early as 1993, methodologists writing about mixed methods have distinguished mixed method designs by the timing of integration of the qualitative and quantitative strands. Integration is defined as the "*purposeful interdependence* between different sources, methods, or approaches" (Bazeley 2018, 7, italics in original). The most impactful type of integration is during analysis (Greene 2007). Integration of findings from different sources of data or methods is what distinguishes mixed method from multimethod research (Johnson, Onwuegbuzie, and Turner 2007). Caracelli and Greene (1993) made a distinction between a component and integrated design. In a component design, integration of findings from different sources of data or methods occurs during the process of drawing conclusions. An integrated mixed method design is one where there is ongoing interaction between the data and/or methods at many points in the research process (Bazeley 2018; Caracelli and Greene 1993; Onwuegbuzie 2012). It is not uncommon for the design of a complex study to evolve from an initial plan that fits one of the core mixed methods designs (c.f. Creswell and Plano 2018) to an advanced or fully integrated one. Tashakkori and Teddlie characterized fully integrated mixed methods research as the "most advanced, and most dynamic of all mixed model designs" (2003, 689). They conceptualized it as a design that is well adapted to teams. Integrated designs are associated with awarding equal weight to qualitative and quantitative data, perspectives, and/or methods (Cronin et al. 2007; Moran-Ellis et al. 2006).

Although there is by no means agreement in the community about this, some advocate for more precision in the language that distinguishes between mixing or combining and integration in mixed methods research (i.e. Fetters & Freshwater 2015). Distinctions between the terms are made relative to the outcomes of a research project. Mixing is equated with a product that can be factored out to be what is extracted from each part ($1 + 1 = 2$). The word "integration" applies to research where results are brought together into a coherent whole ($1 + 1 = 3$). This could be in

the form of a conceptual framework or model. Capturing this type of synergistic outcome, Moran-Ellis and colleagues wrote: "Integration denotes a relationship among objects that are essentially different when separate but which comprise a coherent whole when bought together. The material differences are not erased but work synergistically to produce a whole that is greater than the sum of its parts" (Moran-Ellis et al. 2006, 5).

A hypothetical example illustrates the differences between research that combines, links, blends, merges or mixes data and one that integrates data in ways that lead to an end product that is more the sum of its qualitative and quantitative parts. A conventional approach to mixed method grounded theory (MM-GT), such as that conceived by the first to write about its potential (i.e. Johnson, McGowan, and Turner 2010), imagines a two-phase sequential design where each phase serves a distinct purpose. An initial qualitative phase is devoted to theory development using classic grounded theory procedures. Quantitative procedures are used in a subsequent phase to test or confirm it. In this scenario, the strands may be awarded equal priority, but they are executed in ways that it is readily possible to disaggregate them and to report on them in separate articles (i.e. $1 + 1 + 2$). MM-GT also has been approached in ways that integrate during analysis (Creamer 2018b).

A longitudinal research project using the life-course perspective to study caregiving of elderly family members among Mexican American families (i.e. Evans, Coon, and Ume 2011) illustrates an example of an integrated MM-GT study where the outcomes cannot be isolated to a single strand or research method (i.e. $1 + 1 + 3$). Integration was enhanced in this study through co-constructing a life history timeline during data collection and by producing integrative case narratives. Findings from this research challenge the Western idea that caregiving of the elderly is executed primarily through a caregiver–patient pair. This team concluded that in many cultures, caregiving is both a family and a community affair. The synergistic outcome of this research is explored more fully in a later section of this article.

Purpose and Contribution

The purpose of this methodological commentary is to bring attention to what Fetters and Freshwater (2015) referred to as the "integration challenge." To advance the discussion of the integration challenge, I first consider a variety of forces that have coalesced to bring attention to integration at this particular moment in the development of mixed methods as a methodology. I use a single mixed methods article reporting on the use of the life-course perspective in a study of caregiving for the elderly

to illustrate multiple points raised in the article. The first is to aid in illustrating the distinction between a component and integrated design. The second is to explore the ways an integrated visual display can be used during data collection and, subsequently, as the basis for a case-based analysis.

Following that, we shift our attention to two challenges introduced by approaches that prioritize integration. The first is how resistance to integration that is grounded in the persistent concern that qualitative and quantitative derive from fundamentally different paradigmatic perspectives can be overcome through the logic of abductive reasoning and a theoretical framework. The second is the challenge presented when integration is prioritized is to find a way to visualize interactive, integrated designs in a procedural diagram. The article closes by illustrating how the DNA double helix has been used to capture the fluidity of situations where integration occurs at multiple points in the research process.

The Integration Moment: Why Now?

Marking the present as a moment where attention has coalesced about the topic of integration is not to say that there has not long been calls for attention to it. For example, writing in the first issue and first volume of the *Journal of Mixed Methods Researc*h that appeared in 2007, British scholar Alan Bryman called for greater attention to the topic of integration. He pointed out that "the fundamental issue of the degree to which mixed method researchers genuinely integrate their findings has not been addressed to a significant extent" (8).

A number of social and economic forces both within the United States and the wider global community have coalesced to propel attention to integration at this moment in the methodological development of mixed methods. Figure 1 is a visualization of six of the forces that have had a significant impact on both the potential and the interest in integrating findings from multiple sources of data in meaningful ways to advance conceptual and theoretical understanding. These forces bring more attention to the qualitative phase of a mixed method study than was uncommon when mixed methods emerged in the largely post-positivist context of the mid- to late-1980s.

A number of forces impacting research practices across all methods are highlighted in figure 1. These include (1) de-escalation of the vitriol associated with the "paradigm wars" and the argument that qualitative and quantitative are epistemologically and ontology incompatible (Bazeley 2018, 2018b; Onwuegbuzie 2012); (2) growth in interdisciplinary and team-based research that is often associated with external and government

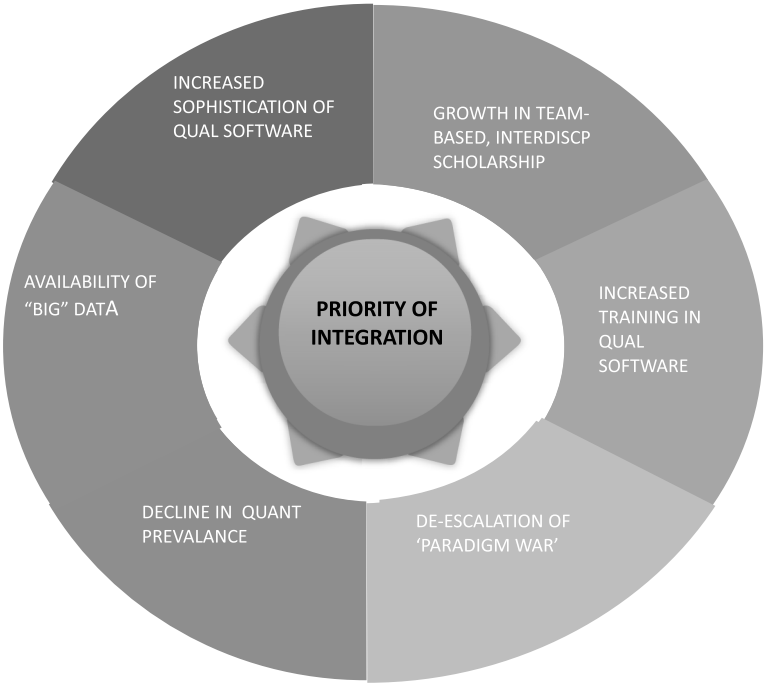

Figure 1: Forces promoting the priority of integration

funding (Poth 2018; Sanscartier 2018); and (3) increasing access to "big data" (Bazeley 2018; Creswell and Plano Clark 2018). Examples of "big data" include the type of mammoth data sets created through social media platforms and generated about online usage patterns.

Figure 1 identifies a number of additional forces that are an indicator of the increasing awareness of the challenges in distinguishing what is considered qualitative and quantitative data. These include (1) increase in training in qualitative research methods (Fielding 2010); (2) growth in the sophistication of qualitative software (Onwuegbuzie 2012) and increasing application of machine learning as an analytical tool in qualitative research; and (3) a decline in the dominance of mono-method quantitative research in many fields (Gobo 2015).

Two Analytical Strategies that Enhance Integration: Case-Based Narratives and Formative Joint Displays

As Bazeley (2018) has ambitiously documented, the possibilities for integration during data collection and analysis are nearly endless. She argued

that interpretation is not something that can be postponed to some final point in a research project when all data have been analysed, but something that researchers do throughout the research process as they engage their data in thoughtful and informed ways. Strategies for integration can never be fully imagined or planned at the onset.

The example of mixed methods research using a life history framework conducted by a team of researchers from the health sciences introduced briefly above (i.e. Evans et al. 2011) illustrates two creative ways that integration can be facilitated during data analysis that can be useful to other researchers in many different disciplinary contexts. The outcomes of this study are synergistic in that the combination of qualitative and quantitative data produced new insight that challenges conventional wisdom about caregiving. Findings point to a cultural bias in conventional assumptions that caregiving is grounded in a dyadic relationship, rather than one that extends to include family members and friends.

This study of caregiving among Mexican American immigrant families used two types of relatively low-tech integrative strategies that are worth emulating for their potential to generate synergistic insight. Both of these are driven by a decidedly exploratory, rather than confirmatory, analytical approach. The first is an innovative use of a joint display. A joint display juxtaposes and sometimes integrates qualitative and quantitative data, often about the same research question or set of variables. The second is through the construction of a case-based narrative for each family unit which created a new source of data that was subsequently coded both inductively and deductively. Both of procedures moved away from "raw data" and facilitated cross-case comparisons.

Integration by Using a Joint Display During Data Collection

A joint display is a type of visual display. It is a table or figure that juxtaposes and sometimes links qualitative and quantitative data about the same constructs, research questions or themes (Guetterman, Fetters, and Creswell 2015; McCruddin, Schraw, and Buckendahl 2015; Plano Clark and Sanders 2015). These can serve both summative and formative purposes (Creamer and Edwards 2019). A summative joint display summarizes or visually portrays data during reporting. Qualitative and quantitative data are often juxtaposed in a summative joint display in ways that implicitly confirm parallels between them, but the task of drawing inferences or conclusions is largely left to the reader. Joint displays can be used

formatively. That is when visualizations serve as a form of data for analysis and/or as a mode of analysis (Shannon-Baker and Edwards 2018). A formative visual display is like a theoretical memo that plays an intermediary role during analysis in a grounded theory study. They rarely appear in a final report. When used formatively, a joint display or visualization could be used as a new source of data to generate additional insight about patterns and relationships.

The team of researchers investigating caregiving in a Mexican American community in Texas that was discussed earlier used an integrated visual display to collect both qualitative and quantitative data during data collection. Researchers visited participants in their homes and asked them questions to fill in a historical timeline in ways that collected both qualitative and quantitative data. Participants were asked to tag and identify a transition in the caregiving they received on a timeline on a horizontal axis at the same time they pinpointed the state of their well-being on a quantitative scale on a vertical axis.

Figure 2 imagines what a completed timeline might have looked like in this project. None were included in the publication. The vertical axis provides a way to quantitatively measure well-being at different points in time. The horizontal one could be used to collect qualitative insight about key life transitions. After change in the well-being score is graphed, it is possible to imagine the text being added as the researcher asks a

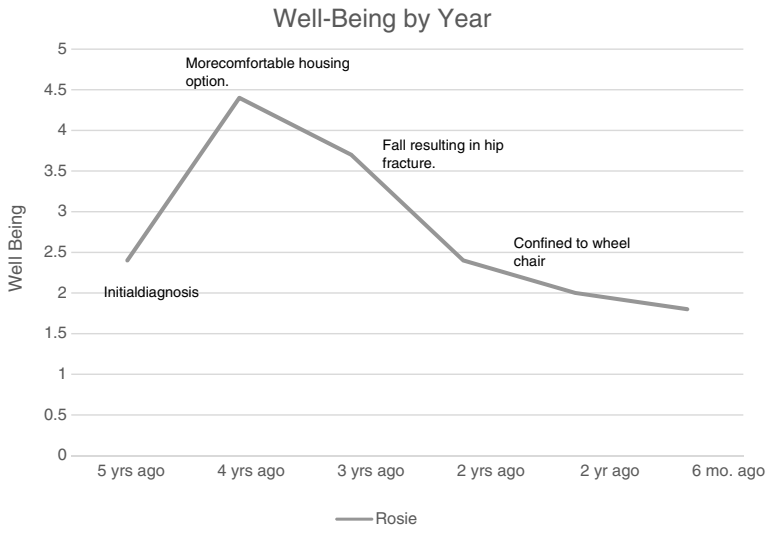

Figure 2: Imagined template for collecting qualitative and quantitative data about changes over time in well-being and key life transitions on a life history timeline

participant to explain changes in circumstances associated with changes in well-being.

The *x*- and *y*-axes are conceived in ways that could be useful for other researchers to simultaneously collect both qualitative and quantitative data on a range of topics involving change over time. Subsequent analysis could move to comparing and contrasting visualizations constructed by different participants. A case-based narrative for each participant (or unit of analysis) could be constructed that traces change over time.

Integration Through Case-Based Analysis

Integrated case-based analysis is a mixed methods analytical strategy that leverages data generated from qualitative and quantitative methods into a narrative or an integrated visual display in ways that advance analysis. It differs from case study research in that the case is not the endpoint of the research process, but produced, like a specific type of a theoretical memo, to advance conceptual and theoretical insight. A case could be a theoretical construct. It can be about an individual or an incident or event, like a mass shooting, or another unit of analysis like a caregiving dyad, a classroom, a community organization, a school, ward in a hospital, a neighbourhood, a community or a piece of land. Prioritizing case-based analysis as the "lynchpin for integration" in a mixed methods study, Bazeley wrote: "Each case holds data from different sources and different types togethers, thus cases provide the lynchpin for integration of data" (2018, 26).

In her description of it as a mixed analytical strategy, Dutch scholar Judith Schoonenboom (2019) referred to the process of developing a case in ways that highlight the dance between an exploratory and a confirmatory stance. She used the metaphor of a "spiral" to capture the fluidity of the analytical process that is constructed through "spiraling cycles of ideas and evidence" (1). The process she described is similar to the example that Maxwell, Chmiel, and Rogers (2015) used to illustrate how the act of integration can weave across data collection and analysis. They compared it to the activity of a geologist constructing field notes while climbing around a rock formation during fieldwork. For these geologists, the case could be a rock formation or a field with a solidified lava flow. Maxwell et al. imagined a researcher who alternates in rapid succession between observation, technical measurements, recording and interpreting the data.

An integrative memo or visual display is not simply a descriptive compilation like a data matrix. It is a construction that involves interpretation, a winnowing down of the data and organization in a way that

communicates a coherent logic without concealing nuances in the ways it is experienced. In that way, it is similar to the reliance in fields like geology on producing field notes from observations. The field notes become a principal source of data. Information about qualitative and quantitative data can be described in different sections of an integrated case-based memo. In other circumstances, an integrative memo can weave together findings from different sources of data in way that is so seamless that the boundaries between the different types of data and methods are difficult to detect.

Strategies that Offset Reservations About Integrating Qualitative and Quantitative Approaches

De-escalation of the ferocity of the rhetoric associated with claims about the paradigmatic impossibility of integrating qualitative and quantitative approaches is one of the social forces that have contributed to renewed attention to integration as the defining feature of mixed methods research. Onwuegbuzie (2012) pointed to an increase in the amount of commentary that challenges discursive practices that exaggerate distinctions between qualitative and quantitative data and methods. He questioned if the so called "paradigm wars" currently prevail (2012, 195). Others who resist the binary distinctions that polarize qualitative and quantitative approaches have argued for a more expansive definition of mixed methods research. These include those who endorse the idea that the logic of mixed methods extends to integrating findings from different sources of qualitative data. It also includes those who prefer the terminology "multiple methods" to be inclusive of methodologies that use visual and artistic methodologies (Shannon-Baker and Edwards 2018).

Advanced applications of mixed methods designs include those where researchers combine one of the three core mixed methods designs with another methodological approach or theoretical framework (Creswell 2015; Creswell and Plano 2018; Plano Clark and Ivankova 2016). This can include, for example, when a mixed method approach is paired with action research, case study or grounded theory. It also includes situations where a theoretical perspective drives the decision about when and how integration is achieved. For example, Hesse-Biber has long maintained that feminist, critical theory and the transformative perspective each provide a theoretical perspective that drives methodological choices. According to her, the transformative perspective "provides the theoretical perspective that links research problems and approach with a

particular method or methods of data collection and analysis" (2018, 550). Similarly, Evans et al. (2011) asserted that the logic of the life-course perspective drove methodological choices, including those about integrating their data.

The logic of abduction is another way to reframe the deadlock about the role of paradigms in mixed methods research. Abduction is one of three approaches to reasoning that include induction (generalizing from the specific to the general) and deduction (generalizing from the general to the specific) (Locke, Golden-Biddle, and Feldman 2008). Abductive reasoning introduces an emergent quality to the analytical process. When using an abductive logic, a researcher generates alternative explanations by moving back and forth between the type inductive or qualitative approach and a deductive or quantitative logic of analysis that was evident in the caregiving study. Describing what is essentially an abductive analytical process, Bazeley wrote: "Researchers move routinely between deductive and inductive thinking about their topic as they consider what is known and puzzle about what they are finding out in an iterative cycle of developing and testing ideas from and with data" (2018, 335-336).

The Challenge of Visualizing Interactive Mixed Methods Designs During Reporting

Projects that end up using an integrated design do not always lend themselves to the neat, linear visualizations evident in procedural diagrams that trace steps in the research process associated with more common core designs. More than one person has suggested that the type of advanced design that engages qualitative and quantitative approaches dialectically at many points in the research process is better characterized as a web or network (Maxwell and Loomis 2003), a spiral (Schoonenboom 2019), a DNA double helix (Bazeley and Kemp 2012; Mendlinger and Cwikel 2008), a braid (Watson 2019) or possibly a rope.

A procedural diagram is a process-oriented visualization that represents the design of a study by highlighting critical steps in the process of data collection and analysis. These are usually framed in terms of the design of a single study, but they are also used to map a project. The linear orientation of the conventionally used templates for the core set of mixed methods designs provided in introductory textbooks (e.g. Creswell and Plano 2018) has proven readily adaptable and effective for communicating key elements of research using a concurrent or parallel design, a sequential one or one that is a hybrid of the two.

An interdisciplinary pair of researchers from urban health and social work (i.e. Mendlinger and Cwikel 2008) modelled an innovative way to present a procedural diagram that foregrounds integration. These authors explained that they used the DNA double helix as a metaphor to visualize the iterative and interactive way their project unfolded. They acknowledged that the figure was constructed to reflect what occurred, not necessarily what was planned. The visualization mirrors the headings used in the results section that pulls out the principal ways that integration occurred.

Mendlinger and Cwikel's (2008) "Double Helix Model of Mixed Methods Research Processes" could be a useful template for others to use as a strategy to foreground integration. Figure 3 reproduces (with copyright permission) their procedural diagram.

The fluidity of the double helix at the centre of the figure captures an iterative, dialectical process. It points to ways that qualitative and quantitative procedures were integrated during data collection and analysis.

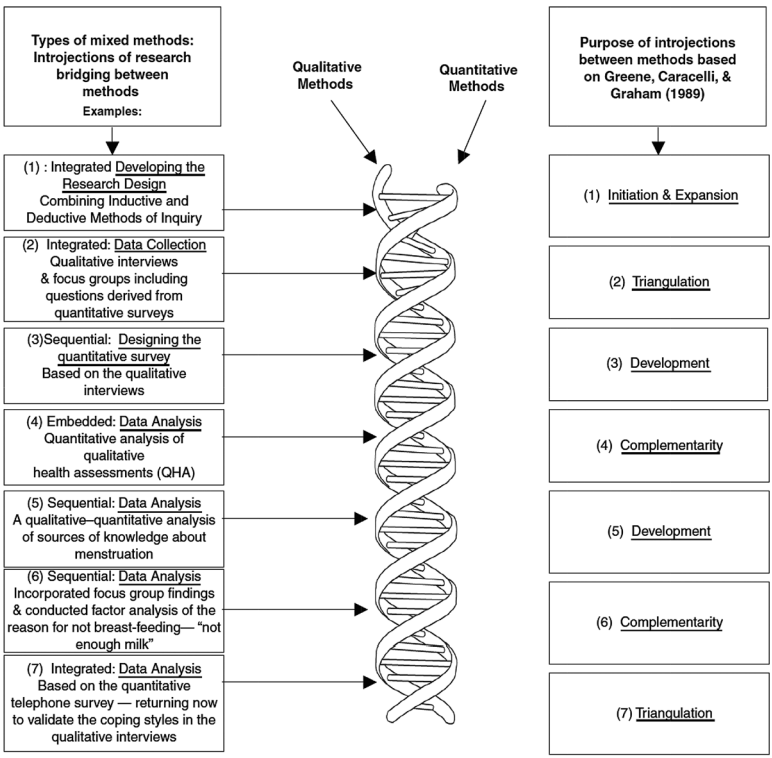

Figure 3: Reproduction of figure 2 from Cwikel and Mendlinger (2012): double helix model of mixed methods research process (with copyright permission)

Each occurrence of interaction is linked to one and one or more of the classic purposes proposed by Greene, Caracelli, and Graham (1989).

Mendlinger and Cwikel wrote that the process they used resembled the back and forth spiralling motion of a double helix. This is similar to the "braiding" technique mentioned by Watson (2019) and the "spiraling process" Schoonenboom (2019) singled out. The double helix communicates that findings from the various sources were given equal priority. Of this iterative process, they wrote:

> The method used throughout the stages of design, data collection, analysis, and interpretation closely resemble a twisting or spiraling motion as we repeatedly revising the two data sets, each time enriched by insights and analysis we had already completed. The double helix structure (of DNA fame) provides a helpful visual demonstration of our spiraling utilization of the two approaches as they came together to structure the research process. (Mendlinger and Cwikel 2008, 284)

The iterative nature of the exchange that involves a back and forth between deductive and inductive analytical strategies and the fact that is described as occurring throughout the stages of design, data collection and analysis support compatibility with a fully integrated approach to mixed methods. This type of "braided approach" to a procedural visualization embodies the synergy of the $1 + 1 = 3$ formula. It recognizes that the strands (or methods) retain their integrity but they "interweave and each meaningfully impacts the other strands, and the direction of the larger shape of the braid as a whole" (Watson 2019, 3).

Conclusions

This article expands the conversation about the "integration challenge" presented by Fetters and Freshwater (2015). It identifies two mixed method analytical procedures – integrated case-based narratives and integrated visual displays – as having the potential to produce the synergistic outcome that is reflected in the $1 + 1 = 3$ formula they proposed. Both procedures are *formative* in that they are used as another source of data during analysis. An integrated case-based narrative or integrated visual display that is used for formative purposes is likely to introduce unexpected results. The research process is very likely to become more fluid and interactive than what was initially planned.

Prioritizing integration in mixed methods research, particularly during analysis, introduces a number of challenges, including the unpredictability it introduces in any research process, the quandary of finding an appropriate label from conventional terminology, managing team dynamics

required to navigate diverse perspectives and dealing with questions raised by reviewers concerned about paradigm conflicts. An analytical approach that cycles back and forth between induction or exploration and deduction or confirmation requires a flexible design, in part because it is often driven by unexpected and unplanned detours that arise midcourse.

In the future, researchers are encouraged to experiment with creative ways to visualize a fluid iterative analytical process that moves seamlessly through dialogue and engagement with the literature between an inductive or exploratory approach and one that is confirmatory. Further experimentation with using joint displays and other visualizations to simultaneously collect qualitative and quantitative data is another very promising avenue for future initiatives.

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Transformation as a Goal of Mixed Methods Research in the Caribbean

Donna M. Mertens

Gallaudet University

Abstract

The world is facing many challenges related to economic, environmental and social injustices. Trinidad and the wider Caribbean experience the effects of these challenges in the form of climate change, violence and economic downturns. Researchers who value the use of their work for social transformation can contribute to the solutions to these challenges by critically examining who needs to be involved in the research and the best ways to involve them. The country and cultural contexts are critical to designing, conducting and using research to achieve the goal of social transformation in the form of improved quality of life in Trinidad and the wider Caribbean. I explore the application of transformative mixed methods designs that are specifically focused on the use of research as a tool to support social transformation in the West Indies. Examples of transformative mixed methods come from West Indies scholars.

Keywords: Transformative research; mixed methods design; Caribbean; social justice; violence reduction; human rights.

These are turbulent times because of the many challenges facing the world. This article addresses how researchers can contribute to the transformations that are necessary if we are to address challenges such as improving the conditions that are leading to destructive effects of climate change, decreasing violence, and increasing access to quality education, employment, healthcare and housing. Human rights violations are increasing in many parts of the world, including the United States (Human Rights Watch 2018). In Trinidad, the turbulence is manifested in the form of a large number of criminal gangs that are having a negative impact on the quality of life in many communities (Adams, Morris, and Maguire 2018, 1). These problems are complex and there are no easy answers to solving them. In this article, I explore the question: How can researchers use transformative mixed methods as a means

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to contributing to the social transformations needed to improve the quality of life for the people of Trinidad and the wider Caribbean?

Solutions to such challenges are not simple, especially in a political climate in which progress is impeded by policies that are uninformed by scientific evidence, denial of problems or inadequate allocation of resources. One response from the research community is to shrug our collective shoulders and resign ourselves to the conduct of academic research according to established practices. However, I remain optimistic that researchers can play a role in contributing to increased social, economic and environmental justice. My optimism is rooted in the belief that problems can be solved. Sandy Grant (2017), a philosopher at the University of Cambridge, described optimism as acknowledging the hardship and inequality in the world, not succumbing to feelings of despair that can lead to inaction, and choosing hope as an active way of being that keeps the possibility of a better world alive.

Hernandez-Licona (2019) notes that the world is not on track to achieve a society that leaves no one behind; rather, we are going backwards because of "rising inequalities, climate change, biodiversity loss, increasing waste from human activity, violent conflicts and related humanitarian crises causing the displacement of millions of people (p. x)." Yet, given this bleak picture, he puts forth the belief that we can reverse this backsliding through the efforts of researchers. However, this cannot be done with business-as-usual approaches to research. Rather, there is a need for researchers to shift their assumptions to adopt a transformative lens in their work so that they can contribute to finding and implementing effective solutions. A transformative lens includes the use of mixed methods (both quantitative and qualitative together in the same study) in order to strengthen the credibility of evidence. It also includes the use of a critical cultural perspective to uncover structural issues that prevent progress through the inclusion of a wide range of stakeholders throughout the research process. This requires consciously addressing issues of power and developing strategies for challenging an oppressive status quo. The transformative approach includes an orientation towards constructive action.

A Shift in Paradigms for Researchers

Many years ago, Egon Guba and Yvonna Lincoln (1989) provided a useful framework for the research world to better clarify the assumptions that underlie our work. They described a paradigm as a basic set of

assumptions or beliefs that researchers use to guide their activities. Paradigms are made up of a set of four philosophical assumptions:

- Axiological assumptions about the nature of values and ethics
- Ontological assumptions about the nature of reality
- Epistemological assumptions about the nature of knowledge and the relationship between the researcher and that which is to be known
- Methodological assumptions about the nature of systematic inquiry

For many years, the research world had been operating with two main paradigms: post-positivism and constructivism (Mertens 2020). However, the transformative paradigm emerged in response to the voices of members of marginalized communities and their advocates that past research was not resulting in an improvement of their conditions (Mertens 2020; Mertens, Cram and Chilisa 2013; Mertens and Wilson 2019). In the following section, I describe the components of the transformative paradigm along with methodological implications.

Transformative Paradigm for Research

The transformative paradigm brings a shift in the assumptions that guide researchers in order to address the complex problems facing communities in the context of an unequal world (Mertens 2018, 2020; Mertens and Wilson 2019). This shift is reflected in the characteristics associated with the four types of assumptions that constitute a paradigm. The transformative axiological assumption goes beyond traditional research definitions of ethics in terms of gaining approval from ethical review boards (Mertens 2020). An ethical research study needs to be based on the principle of cultural respect that serves as a basis for developing appropriate relationships with the full range of people affected by the study (the stakeholders). The study needs to be designed to explicitly address inequities in order to optimize its contribution to social, economic and environmental justice. The design also needs to incorporate the strengths in the community and provide for reciprocity, that is give back to the community something of value in the form of transformation.

The transformative ontological assumption holds that there can be many different versions of reality that emanate from different social positionalities, such as race/ethnicity, language, gender, disability, poverty, deafness, immigrant or indigenous status, or sexual identity (Mertens 2020). For example, in the United States, one version of reality that supported racial segregation held that Blacks were inferior to Whites

(Stevenson 2015). This version of reality emanated from privileged, powerful White persons. However, the consequence of that version of reality was to continue to discriminate against and oppress people of colour. The researcher has a responsibility to make visible the different versions of reality about a phenomenon, their origins and the consequence of accepting one version of reality over another. This requires an understanding of history and context.

The transformative epistemological assumption reflects the need to have respectful relationships that are built on trust with the full range of stakeholders. Differences in power need to be acknowledged and strategies introduced to provide a means of safe expression of ideas. As the goal of transformative research is to support transformative action, the researcher needs to include strategies for supporting the use of the research findings to this end. This might involve the use of local advisory boards or coalition building.

The transformative methodological assumption does not dictate any particular methods that can be used. Rather, it encourages the use of diverse methods that are culturally responsive and that will provide the data needed to support decisions for action. Typically, transformative researchers use mixed methods because of their desire to understand context and culture and to collect data that will be viewed as valid by the full range of stakeholders. A transformative mixed methods cyclical design can provide the opportunity to collect data about the culture and context and to use that data as a basis for developing and testing interventions. One goal of the methods can be to influence policy decisions that are needed in particular contexts.

Thus, the transformative stance means that the researcher will design studies that recognize the interconnectedness of all of us, living and nonliving, from the past, present and into the future. The studies will address the linkage between social, economic and environmental justice. Using transformative mixed methods is designed to bring visibility to the values that are driving societal decisions. The intent is to support transformative action.

Application of Transformative Approaches in Trinidad

Donna-Mae Knights (2014) provides an example of a culturally responsive intervention that was implemented in Trinidad and Tobago (T&T) in her dissertation in which she studied efforts to reduce crime in T&T. She used what she called a blended design, which I would characterize

as a mixed methods design, to investigate the effects of the Citizen Security Programme (CSP) in twenty-two T&T communities. The CSP was an initiative to address the increase in international drug trade and the associated increase in the availability of guns and violence. She described the program as follows:

The CSP, initiated in the year 2008, is a part of the government of T&T's multifaceted assault on escalating crime. The CSP delivers three main community-level interventions as part of its community action component, which will be the focus of this examination. These include (i) violence prevention training for residents, (ii) implementation of various locally designed crime prevention projects (e.g. park refurbishment, youth camps and mentorship programmes) and (iii) establishment of a Community Action Council as the local focal point for the coordination of this crime prevention effort (Knights 2014, 3).

I will use this study to illustrate some of the aspects of a transformative mixed methods study, as well as to identify conditions that inhibited the abilities of T&T to sustain the initiative. This then has implications for the design of mixed methods studies that can address the current conditions with regard to violence and drug trafficking in T&T and the wider Caribbean.

Stage 1: Literature Review and Contextual Analysis

Knights (2014, 7) began with a review of published literature on the concepts of social disorganization theory, fear of crime and collective efficacy. Rather than simply accepting the published theories and research, Knights critically analysed the literature and questioned its applicability within the Trinidadian context. This led her to conduct a contextual analysis of the historical and socioeconomic context unique to Trinidad that contributed to the crime surge and the eventual establishment of the Village Council Movement. Transformative mixed methods studies typically begin with a stage of literature review and contextual analysis in order to gain an accurate picture of the community's prior experience with initiatives to address their challenges and to understand the power structure in the community.

In Knights's (2014) study, her historical analysis revealed that T&T had experienced over five hundred years of colonization by various European countries and that it established independence in 1962. Its economy was initially agriculturally based, but this was overshadowed by the oil and natural gas industries that started in the first half of the twentieth century. The global economic downturn affected T&T and exacerbated the gap

between the rich and poor, especially impacting female-headed households and Afro-Trinidadians. The increase in violence since 2000 is associated with increased drug trade, greater availability of guns and increased deportees returned to Caribbean countries (from the United States and Canada), many of whom were involved in drug offences or violent crimes. The public works programmes (Unemployment Relief Programme (URP) and Community Environment Protection and Enhancement Project (CEPEP)) instituted to support indigent, unskilled, ex-convicts have become a source of financing for criminal gangs because of lack of adequate supervision and government corruption. As Knights (2014, 58–59) explains:

> perhaps the most lucrative source of gang financing was generated by the award of contracts for infrastructure works to gang leaders under the URP and CEPEP programs. It is suspected that monies so obtained financed the purchase of arms and the like by gang leaders. In addition, URP gangs killed each other over the award of work contracts, in many areas, projects were halted due to threats by rival gangs over the award of contracts and in some cases police security had to be engaged to protect workers. This brought a new level of violence to communities and fueled the murders and the fear under which residents existed.

The downturn in the economy also led parents to emigrate to other countries with the hope of better employment, thus leaving children to be raised by older siblings or grandparents. This contextual analysis that included both quantitative and qualitative data provides very important insights into the challenges associated with attaining the goals of decreased violence and illegal drug activity.

The CSP was a six-year government intervention (2008–2014) that was funded by the Inter-American Development Bank (IADB) through a $35 million loan. It introduced new structures at the community level, that is, a community action officer and a Community Action Council. It was specifically designed to address the risk factors for crime and violence in Trinidad and provided for strengthening community centres, increasing police skills and upgrading information systems on crime and violence at the national level. The programmes focused on "firearms, juvenile delinquency, and antisocial behaviour, child maltreatment and domestic violence." (193) Understanding of the history as part of the context in Trinidad is a critical outcome of the initial stage of this study. It makes clear that giving money without consideration of the power structure in the communities results in an increase in violence and drugs, rather than a decrease as intended. Knights reached this conclusion on the basis of qualitative historical data as well as quantitative economic and crime data.

Stage 2: Building Relationships

Knights sought to build relationships with members of the communities that participated in the CSP; however, her ability to do so was limited because of her access to members of the communities. Quantitative data were collected from nineteen communities, but qualitative data were collected from only four communities. As the building of relationships was only possible in the qualitative communities, these are the focus of this stage of the study. Thus, the use of mixed methods at this stage provided a broad picture of the communities through quantitative data and a more nuanced picture that included the ability to form relationships because of the qualitative data collection. Qualitative data revealed that Trinidad has a long history of community-based organizing. For example, village councils were established in the early 1940s to support welfare reform. In the 1960s, these organizations become more politicized and were seen as a way to implement a public works initiative, leading to a decline in their importance as representative bodies. At the time of the study, one of the communities did not have a village council, one had a transformational leader and two had authoritarian leaders.

The village councils were a precursor to the organizations for collective action set up under the CSP. Community Action Councils (CACs) had been set up as part of the CSP; in two communities the CACs were established in 2007 and in 2009 in the other two communities. The CACs had a different focus than the village councils; they focused on violence prevention and they could apply for funding to support these efforts. To this end, they engaged in capacity building about violence prevention, funding non-governmental organizations to reduce risk factors and establishing school-based violence prevention programmes (training parents, teachers and students to address violence). In some communities, the village council president also chaired the CAC; in others this was performed by a representative from civic organizations such as churches. Knights formed relationships with the village council and CAC leaders as part of her relationship building with relevant stakeholders. By building these relationships, she strengthened her ability to collect accurate data from community members in the next stage of the study.

Stage 3: Data Collection and Analysis

Knights collected both quantitative and qualitative data in order to understand the effects of the CSP in Trinidad. Knights (2014, 36) used

quantitative data that were collected through the Crime Victimization Survey that was administered in nineteen Trinidad communities between 2010 and 2012. The survey collected demographic and victimization data, as well as information about fear of crime, "collective efficacy, perceptions of safety and views about police services." The quantitative results were disaggregated by age, gender and ethnicity. The results indicated that communities with higher collective efficacy had a lower level of fear of crime.

She collected qualitative data through interviews and focus groups with 138 persons in four communities. The sampling was conducted for maximum variation and included a wide range of stakeholders, including "i) leaders and executive officers of all local organizations (including community, women, youth, sport, religious and political organizations) in each community; ii) senior community members and senior past members of local organizations; iii) business owners; iv) minors; v) newer residents and vi) persons typically uninvolved in community affairs (48)." The qualitative questions and processes were pilot tested and revised to ensure the respondents were comfortable with both. This process mirrors a transformative approach to mixed methods because she is cognizant of the heterogeneity in the communities and the need to use data collection methods that are appropriate for those communities.

The qualitative results indicated that the key variables associated with social cohesion and collective efficacy were the shared experience of prolonged poverty and stigma and the "presence of altruistic, capable local leaders and self-initiated organizations (118)." They also revealed the effect of the surge in drugs and crime on social cohesion; people were afraid to go out at night and this resulted in community activities stopping or being greatly curtailed. The communities were rife with conflict, distrust and suspicion.

Interview data confirmed that the CACs engaged in the intended activities of capacity building about violence prevention, funding nongovernmental organizations to reduce risk factors and establishing school-based violence prevention programmes (training parents, teachers and students to address violence). The establishment of the CACs was a welcome event in the communities, partially because funding was attached to the efforts. However, the contextual factors mentioned earlier made the achievement of community cohesion problematic. Interarea conflicts, lack of trust and feelings of lack of representation hampered their effectiveness. Thus, collection of both quantitative and qualitative data in ways that were culturally responsive yielded data that were well

positioned to offer a critique of current conditions and a path forward towards reduced violence and drug crime.

Stage 4: Using the Data

Knights's study (2014) was conducted as part of the requirements for her PhD programme. In the conclusion section of her dissertation, she identifies several strengths and weaknesses of the CSP. The CSP provided a source of technical and financial support to enhance programme implementation. Weaknesses included lack of a comprehensive plan to address crime prevention, no clear engagement with law enforcement and lack of plans for sustainability at the end of the programme. She provides implications for social work practice, suggesting that social workers should support the development of community-based collective efficacy, economic development, education and skill building to improve residents' employability. Policy implications included the need for "policies that affect the quality of education and employment, the availability and accessibility of opportunities for technical skill building and legitimate income creation are also critical." (238) Her work provides many useful insights; however, it is limited in some aspects of a transformative approach to mixed methods. These are discussed in the next section.

Reflections on the Use of the Transformative Approach

A comparison of the transformative mixed methods cyclical design and Knights's approach to her dissertation indicates that she did many things right. She conducted a thorough contextual analysis and she built relationships with key stakeholders. She collected both quantitative and qualitative data in order to capture more of the complexity of the phenomenon. She also modified her data collection strategies to make them more culturally responsive. The challenges in applying this model lie in the stage at which the research was undertaken; the intervention was well underway by the time she conducted her study. This is in no way the fault of the researcher. It is characteristic of many projects in which the interventions are decided before there is contextual and cultural analysis, and engagement with stakeholders tends to be with those in positions of formal authority. The argument that I am making is that hope for more effective interventions rests in the ability of researchers to contribute to better understandings of what is needed in communities and in the use of data

as a basis for developing interventions. This is the essence of a transformative mixed methods approach because it is conducted to support transformative actions that increase justice.

The transformative mixed methods approach includes a stage in which a contextual analysis is conducted to gain a better understanding of the problems as they are experienced in the communities (Mertens 2018; Mertens and Wilson 2019). It is also used to provide insights into the type of interventions that might be needed to address the problem at hand. In Trinidad and the wider Caribbean, a contextual analysis reveals details of the history and current power structures that highlight the importance of the relationship between poor economic conditions and the rise of the drug trade and the violence associated with it. The overall socioeconomic conditions of high poverty, underemployment, dependency on government welfare or public works programmes, and low levels of education persisted despite the CSP initiative (Adams, Morris, and Maguire 2018). Parents who left the community in search of better economic opportunities or who were engaged in illegal activities themselves were unable to provide quality parenting, resulting in more teen pregnancies, low school performance and engagement in illegal activities by children. Squatter camps were still found in the communities and the high levels of disorder and crime continued. The criminal element controlled the public works programmes, thus undermining the attempts to decrease drug trafficking and violence. The severe economic conditions combined with limited options supported the continuation of illegal activities.

The structure and leadership of the village councils also contributed to the challenges in bringing about transformation. They were not focused on crime reduction. Even when the village councils requested help from the police, their requests were denied (Knights 2014). While one village council had a transformational leader, he left his position due to ill health in 2005. Two communities had a wider base of leadership and one community lacked a village council. The main activities undertaken by the village councils included tutoring, sports, culture and arts programmes, and skills training. The Ministry of Community Development did not provide communities with training in community management or crime prevention. The government did not eliminate the criminal gangs' control of public works programmes, nor did it halt the importation of illegal firearms. There was no significant component to provide economic development opportunities, thus creating conditions for a thriving drug trade.

The CACs, as mentioned previously, were generally viewed positively; residents appreciated the opportunity to get together and work

to improve their communities. About 5 per cent of residents participated in employment skill training and 4 per cent in educational interventions such as help with homework (Knights 2014, 210). Indicators of violence showed a decline in homicides and gun-related injuries. However, the CAC's effectiveness was undermined by past conditions of mistrust and inability to address the conflicts that arose within the CAC. At the end of the CSP, it was doubtful that sustainable efforts would continue or that crime and violence would be reduced. Part of the reason for this is because drug use, firearms and crime are associated with poverty and economic deprivation. None of the interventions focused on economic development in these communities; most focused on promoting community attachment by hosting social and sports events. A transformative mixed methods approach provides the opportunity to bring together different types of data that can be used as a basis for developing interventions that take into account contextual factors and an accurate understanding of the power dynamics. Several researchers from the Caribbean have addressed the need for an approach to research that take these factors into account. These are discussed in the next section.

Culturally Relevant Methodologies

Wilson, et al. (2019) conducted a review of research methodologies used for research on migration and crime in the Caribbean and found that there is an absence of culturally responsive methods being used. They suggest that a Caribbean approach might be based on the forms of socialization that naturally occur in this part of the world, for example conversations that occur in such places as Woodford Square in T&T. They identify the important elements of a Caribbean approach to include "formation of enduring relationships, constructing meaning, and influencing change" (10). Such an approach needs to be cognizant of its colonial past, multiple languages, power differences, local ways of knowing, collaborating for social change, and resistance to outsider dominance. The elements identified by these researchers are compatible with a transformative mixed methods approach.

Wilson et al. (2014, 10) identified "liming" and "ole" talk as possible qualitative strategies for data collection that reflect a culturally responsive way to share knowledge that is prevalent in the Caribbean:

> Although the Caribbean has many forms and types of engagement and sharing of knowledge as there are different peoples, histories and languages, we often look to Liming and Ole talk as one manner of engagement that is a culturally relevant way

of carrying out research. Liming takes place in a number of countries within the Caribbean, though different terminologies are used depending on the country to describe this type of engagement (e.g. *bemberria* in Dominican Republic, *jangueo* in Puerto Rico, *par* or *lyme* in Jamaica). In Cuba, the names appear to be in accordance with whether food is shared (*comidita*), people get together to sing accompanied by a guitar (*descarga*), or just coming together to relax (*compartir*). Ole talk has been recognized by many scholars and writers as a uniquely Caribbean way of engaging with each other in small or large groups. In Trinidad and Tobago in particular, ole talk is traditionally associated with encounters of leisure and gossip. (10)

Wilson et al. (2014) speak of the need for an indigenous approach to research in the Caribbean. They acknowledge the problematic nature of the term "indigenous" when used in this context. "Indigenous" can mean people with shared experience of colonization or it can mean the first people who walked the land. In the Caribbean, the former definition is more appropriate because of the historical annihilation of the majority of the people who first walked the land (e.g. Kalinagos and Tainos). The people who have experienced a history of colonization in the Caribbean are those who came from other regions who were forced to serve the economic demands of their colonizers. Wilson et al. (2014, 9) conceptualized the focus of indigenous, culturally responsive methodologies as applying to "Caribbean peoples who recognize and claim the region as their home, despite deeply held and strongly marked traces of ancestry to foreign lands."

The challenge for the research world is to figure out how to integrate methodological perspectives that support transformative change. The words of the Caribbean researchers provide insights into how research can be made more culturally responsive. The examples used in this article reflect research practices that focus on the difficult problems of crime and violence in Trinidad and the wider Caribbean. The combination of learnings from the research that has been conducted within very difficult conditions with the use of a transformative, indigenous, culturally responsive framing for research provides a pathway to conduct research that can contribute to solving these problems. The use of indigenous and culturally responsive methodologies and a focus on community-informed interventions for change are compatible with a transformative approach (Cram and Mertens 2015). The transformative lens provides a focus on social, economic and environmental justice as its first principle. "Incorporating Indigenous research within the transformative paradigm stretches understandings of social [economic, and environmental] justice to acknowledge Indigenous aspirations for self-determination and decolonization." (91)

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Confronting Complex Problems with Adaptive Mixed Methods Research Practices

Cheryl N. Poth

Department of Educational Psychology, University of Alberta, Edmonton, Alberta, Canada

Abstract

Increasing recognition of the value of mixed methods research points to its usefulness to contribute novel insights to solve pressing complex problems. Yet many researchers remain constrained by their attempts to reduce, control or simply ignore the effects of complexity rather than embodying complexity and embracing adaptive practices in response to emerging mixed methods research conditions. This paper is adapted from a keynote and examines the societal demand for practical guidance for dealing with mixed methods research under conditions of greater complexity. It is argued that researchers would be well served by confronting complex problems with adaptive mixed methods research practices. This paper differentiates the conditions of higher and lower mixed methods research complexity and describes some benefits of adaptive practices under conditions of greater complexity. The conclusion positions synergistic dialogues as creating opportunities for sharing ideas and drawing upon disciplinary and methodological diversity to solve societal issues with a more complexity-informed approach to mixed methods research.

Keywords: Complexity; mixed methods research; adaptive practices; practical guidance.

Introduction

Researchers are recognizing the potential of mixed methods research (MMR) to tackle complex problems that are befalling society with creative methodological developments (Mertens et al. 2016). By definition, MMR involves the generation of previously inaccessible insights from the integration of qualitative and quantitative data and research approaches

Caribbean Journal of Mixed Methods Research 1, 1 (2020): 29–46

using a variety of design logics addressing a range of mixing purposes (Creswell and Plano Clark 2018; Leech and Onwuegbuzie 2006; Poth 2018a). Complex problems are those that occur under conditions characterized by "multiple, interacting influences with no known solution or established methods and expertise for studying the interrelated contexts in which they take place" (Poth 2018b, 1). Such problems are often described as pressing, with far-reaching implications such as climate change, health inequities and child poverty. One of the challenges for researchers is that these problems appear daunting to solve yet are imperative to address given the daily impacts seen and felt globally on the social, health and economic fabrics of society. Our attempts to reduce and ignore the interconnectedness of complex problems can often be attributed to the limitations in our methodological training experiences and orientations based on assumptions of stability in our research conditions and linearity in our research procedures (Poth 2018b).

To provide an illustrative example of a complex problem in need of pursuit, I describe my first-hand experiences as a resident of Northern Alberta (Canada) related to the impacts of climate change over the past decade. Novel insights emanate from integrating quantitative temperature and general weather trends with narrative description of impacts and changes in behaviour. A local consequence of milder temperatures and lower levels of precipitation for those providing social supports, such as emergency cold weather housing programmes, has been in lower demand for short-term shelter. The impacts in other parts of the world may look very different; for example, increased flooding or drought has had differing consequences for local communities yet are attributed to the same phenomena, with no fewer challenging effects. The study of climate change and its impacts needs to reflect the dynamic local and global conditions. What has emerged is an increased recognition that the conditions in which we live and work are complex and ever-changing in ways that cannot be predicted. Their study requires attention to the changing conditions and resulting procedural adaptions. Thus, there is great demand for more complexity-informed approaches to research that better reflect the realities in which we operate.

We have come to realize that the complex nature of many problems creates both challenges and opportunities for mixed methods researchers. It is well established that mixed methods researchers have a strong potential to play an important role in solving complex problems, yet no longer can researchers simply follow the linear sequence of identifying a problem, describing what we know about the problem, searching for what

others have done related to the problem, defining either a topic or a methodological gap, and at times, both that needs to be pursued and designing a study with the capacity for transferability to other contexts. Together these practices represent a more traditional approach where the steps are followed sequentially to completion. Much has been written about the usefulness of MMR for tackling complex problems, but practical guidance has not kept pace with demand.

I have spent the past decade refining my ideas about how to equip mixed methods researchers for conditions of complexity that defy our assumptions of stability and linearity. These efforts culminated in the publication of my book *Innovations in Mixed Methods Research: A Practical Guide for Integrative Thinking with Complexity* (Poth 2018b). This paper incorporates some of the ideas presented in the book and is based upon a keynote address at the third Regional Mixed Methods Research Conference hosted by the Caribbean Chapter of the Mixed Methods International Research Association (MMIRA) held in Trinidad from 26 to 28 March 2019. Four takeaway messages from this keynote are summarized in figure 1 and each is linked to calls for action I make in the conclusion.

This paper first examines the societal demand for practical guidance on dealing with MMR under conditions of greater complexity. Then it is argued that mixed methods researchers would be well served by confronting complex problems with an orientation towards embodying

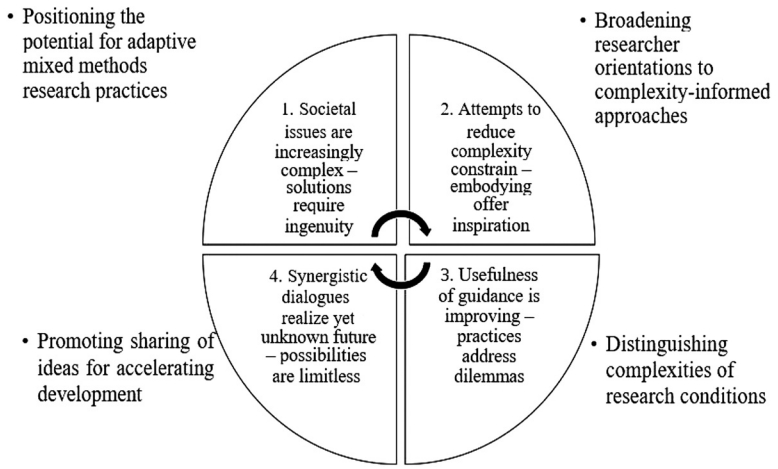

Figure 1: Four key messages and calls for action described in this paper

complexity and embracing adaptive practices. Adaptive practices are used in this paper to refer to complexity-informed research practices that are adapted to enhance researchers' capacity to respond to the unique and unfolding conditions under which some MMR studies are undertaken (Poth 2018a). I distinguish among the different conditions of MMR complexity and describe some benefits of adaptive practices under conditions of greater complexity. Finally, I position synergistic dialogues as creating opportunities for sharing ideas and drawing upon disciplinary and methodological diversity to solve societal issues with a more complexity-informed approach to MMR.

Complex Problems and the Demand for MMR

Tackling increasingly complex problems requires new skills for learning and adapting in constantly changing research and educational contexts. That researchers are generally unprepared to navigate such conditions is not surprising, given the considerable focus of methodological training on assumptions of stability and isolation. Tackling complex problems requires thinking beyond the isolated social, educational and health needs of this population and developing more integrated and complexity-informed research approaches (Poth 2018b). We need researchers who can learn and adapt in constantly changing research and educational contexts (World Economic Forum 2015). If we continue in our attempts to reduce and to ignore complexity by studying issues in piecemeal and isolated parts, we risk generating solutions that simply do not translate into useful practices in reality.

As a global society, we are only beginning to leverage the potential of MMR to address complex problems. This focus is timely because of the growing evidence of the usefulness of MMR for interdisciplinary and methodologically diverse team efforts and the yet unrealized potential for generating novel insights for problems under conditions of complexity (Mertens 2015; Poth 2018c). MMR is not new; evidence of its use spans more than two centuries (e.g., Johnson, Onwuegbuzie, and Turner 2007; Mertens et al. 2016). Although the field enjoys a long history, developments in the past four decades have solidified the unique contributions of MMR, and the ever-expanding purposes and contexts in which MMR is applied have led to conceptual and methodological innovations (Maxwell 2016). That the field of MMR is well positioned to tackle complex problems is certain: A report to the MMIRA describes the future of MMR as kaleidoscopic with its "seemingly unpredictable patterns full of

rich possibilities for diversity and potential to provide opportunities to see things that have not yet been seen" (Mertens et al. 2016, 222). The time has come to harness the opportunities afforded by MMR under conditions of complexity through the advancement of practical guidance. A key consideration for mixed methods researchers is to what extent their orientation is open to embodying complexity and embracing adaptive practices in response to emerging conditions.

An Orientation Towards Embodying Complexity and Embracing Adaptive MMR Practices

My orientation continues to be influenced by my evolving thinking, reading and applications of complexity to my research work. My initial interest and undergraduate studies in the natural sciences served me well in my initial readings about the roots of complexity science relevant to the areas of chaos theory, cybernetics, thermodynamics and ecology (see Kauffman 1995; Prigogine and Stengers 1984; Waldrop 1992). I describe in Poth (2018a) how I came to realize how examples in the natural world helped me to understand my own actions and interactions as an educational researcher. Complexity science as a theoretical framework can guide researchers to make sense of their interactions by offering a new way of interpreting the world around us. It does this because it "offers a way of going beyond the limits of reductionism, because it understands that much of the world is not machine-like and comprehensible through a cataloguing of its parts[,] but consists instead of organic and holistic systems that are difficult to comprehend by traditional scientific analysis" (Lewin 1993, 10).

Among the challenges for researchers is that complexity-focused literature remains dominated by understandings more reflective of theory than of practice. Thus, it may not be surprising that the extent to which mixed methods researchers can tackle complex problems depends on their orientation towards complexity. If researchers simply declare themselves in opposition to linear thinking but do not adapt their practices, then they are inconsistent between their thinking and actions. The former, I describe as a theoretical desire for complexity yet lacking any practical applications. The latter embodies complexity in practice and reflects an openness to adaptations. There is a growing belief that adaptations are to be expected because researchers operating under conditions of increased complexity must respond to the challenges posed by the uncertain and dynamic conditions and thus have developed situational

awareness. My current thinking extends the work of Rogers et al. (2013) to advance complexity-informed habits of mind for mixed methods researchers involving developing an openness to complexity and uncertain solutions as well as situational awareness of systems and the dynamic influences as necessary precursors to embracing adaptive MMR practices. To develop the requisite habits of mind, Rogers et al. describe engaging in "deep reflection leading to transformational learning is required to foster the changes in mindset and behaviors needed to adopt a complexity frame of mind" (2013, 1).

Reflecting upon our understandings gleaned from the dilemmas and opportunities posed by higher complexity problems can generate important insights. In my own work, I came to recognize several patterns among the many dilemmas described to me by students and colleagues over time. Key among those patterns were the following trends related to the inability to meet the expectations of predetermining in a proposal about:

- Why the integration of qualitative and quantitative data is needed, with the rationale grounded in existing literature and the mixing purpose selected from existing typologies.
- Where the study takes place, with the description specifying target populations and their contexts informed by existing literature.
- Who the study involves as team members, with the contribution to the study determined by their methodological and disciplinary expertise.
- How the study procedures gather, analyse and integrate data, with the design selected from existing typologies.
- What the study generates as outcomes, with them addressing the mixing purpose and significance for the intended audience.

The challenge for many researchers writing proposals tackling more complex problems was that the expectations for a funding proposal could not be met because we did not have literature or predictable outcomes on which to base our plans. Traditional research practices based on assumptions of stable conditions and the ability to predetermine research plans that are (mostly) implemented as designed may not be appropriate under higher conditions of complexity.

The emerging conditions surrounding the COVID-19 crisis and global pandemic have highlighted the limitations of traditional practices and the need for methodological innovations to tackle complex problems. For example, to undertake a mixed methods study of the effectiveness of

the development and assessment of the isolation measures to contain the spread of the coronavirus, it would be impossible to follow the traditional MMR practices which involve five tendencies depicted as linear steps in figure 2: defining problems, situating contexts, establishing capacities, determining designs and generating insights. This is because we simply do not know enough about the complex problem to know how best to study it. To guide researchers in adaptive actions, I have embedded questions within figure 2. This example highlights a type of complex problem that requires new ways of thinking and adapting as researchers. Examples of how researchers have adapted to the COVID-19 pandemic is evident in fieldwork approaches and research team interactions. No longer can researchers conduct face-to-face fieldwork and meetings involving participants and researchers have necessarily adapted to achieve similar ends yet avoid in-person interactions. Many scientists are now predicting the effects of the pandemic will endure long after the isolation measures come to an end. Thus, our practices may evolve irrevocably in ways that cannot be reversed. I also advance that there are infinite unique angles from which to consider the impacts on the economy, education, mental health and health systems to name a few that will benefit from the contributions of new combinations of disciplinarily and methodologically diverse researchers.

There remains little guidance for researchers to distinguish among the differing conditions of complexity. This is necessary to recognize the conditions where the traditional approaches are suitable and which

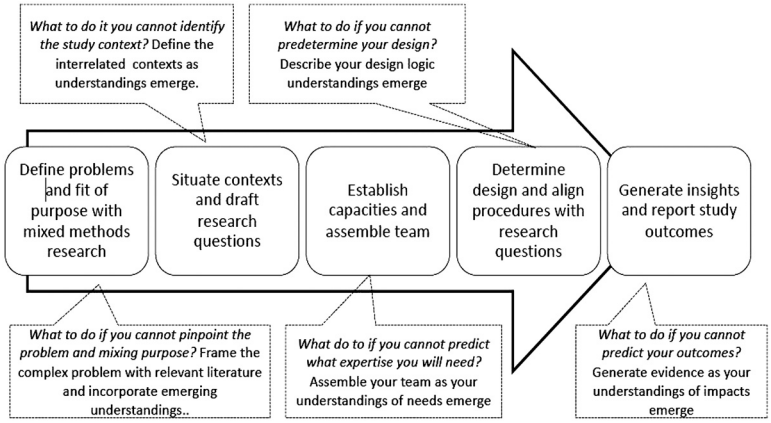

Figure 2: Five-step traditional approach to MMR with adaptive actions to guide researchers

conditions are less suited. I am not alone in this thinking about the need for new approaches to MMR. Mertens calls for researchers to consider new ways of approaching problems under differing conditions of complexity: "business as usual will not lead to effective use of research to address wicked problems, problems for which time for solutions is running out" (2015, 5). Researchers would be well served to respond to this call with access to practical guidance for diagnosing and adapting to the conditions under which the particular research was being conducted. I came to recognize the need for more adaptive research practices where researchers can adjust their practices under different conditions and accommodate emerging understandings.

Distinguishing Among the Differing Conditions of MMR Complexity

We are getting better at recognizing conditions that warrant complexity-informed approaches to MMR. The extent to which researchers initially diagnose their research conditions has important implications for how the research is planned, implemented and reported. The descriptors of low and high complexity provide a foundation from which to assess levels of complexity to help researchers recognize those conditions for which new, more adaptive MMR practices are needed. Low-complexity research conditions are found in studies that can be planned with the assumption of stability. These stable conditions have been described in the literature as being "where knowledge and experience tell you what to do and there is widespread agreement about what to do" (Patton 2010, 86). The nature of the adaptations required in these conditions are typically minimal – perhaps modifications to recruitment procedures. To contrast, high-complexity conditions are characterized by unpredictable outcomes and "high uncertainty and high social conflict . . . so many factors and variables are interacting, many of them are not only unknown but *unknowable*" (Patton 2010, 90; emphasis in original). The nature of the adaptations required in these conditions are highly variable: Perhaps the data collection methods could not be predetermined because the participant populations and contexts were not yet known. Perhaps the participant populations were transient, and so the contexts in which they were found and recruited required ongoing adaptation. In between low and high complexity represents an area of moderation where variable conditions dictate specific adaptations – perhaps more substantive modifications to data collection methods to better meet the needs of participants.

Let us consider an illustrative example of a study where I recently co-led a research team to consider the effects of greater conditions of complexity in practice. It related to tackling homelessness of hard-to-house populations in Alberta (Pei et al. 2018). The research problem was described to the team as a pressing need to understand how to optimize services of hard-to-house individuals involved in Alberta housing programmes. "Hard to house" describes those repeatedly at high risk of losing their housing – think about who these people might be in your own community. In this work, there were many reasons attributed to homelessness, including addictions, mental health issues and disabilities. Often the population lacked the support networks to advocate for them or help them through difficult times. Statistics about such populations are limited in usefulness due to incompleteness attributable to challenges with the reliability of the information and inability to link with individual health and social service indicators. Among the challenges that quickly became obvious was the variability of individual population needs and the dynamic and interrelated individual, community and societal contexts in which we were conducting the research. With the help of those involved in providing services, we identified potential sources of study complexity as part of our initial discussions and came to diagnose the study as occurring under highly complexity conditions for the following reasons:

1. The mixing purpose for the study could not be predetermined. *Why* we needed to integrate was not clear, but we knew we did not yet have access to the understandings needed to inform services. We were confident that an adaptive approach to MMR could bring together emerging understandings to create new understandings of the background social and health needs influencing individuals' well-being related to the problem that was not yet addressed in the literature.
2. The study contexts were not yet known. *Where* we would conduct the study was not yet clear, but we knew we wanted to involve both the population served by the programmes and service providers. We were inspired that an adaptive approach to MMR could be sensitive to different perspectives to create new understandings of the individual, community and societal influences related to the study contexts that were not yet reflected in the literature.
3. The procedures for the study did not fit a design typology. *How* we would go about the data collection, analysis and integration could not

be predetermined. We knew we were working with a vulnerable population that needed to feel safe to share their perspectives.

4. The yet unknown capacity needs for undertaking the study meant a team could not be preassembled. *Who* would be involved was not yet clear, but an interdisciplinary team of health, community social services, and education expertise and possible others was anticipated. We were encouraged that an adaptive approach to MMR could enable bringing together expertise as needs emerged in ways that did not yet exist in the literature.
5. The unknowable study outcomes could not be predicted. *What* we would generate was not clear but we knew it would be more than what was known at the time about how to optimize service delivery of housing programmes in ways that did not yet exist in the literature.

These dilemmas and more understandably hinder researchers' ability (and desire) to study highly complex problems. This study provided an opportunity to work within a funding budget and contract that was more flexible because it was understood the nature of the work necessitated flexibility in the process and in setting the deliverables.

It may not be surprising that many researchers simply decide not to pursue more complex problems because of the difficulties they encounter. A recent situation illustrates a key dilemma faced by new researchers where one of my students was frustrated because she could not fit her study into a design she had thought would work. I asked her to step back and simply describe to me what she wanted to do and we then figured out a design that perhaps did not yet exist. It is these scenarios – ones that our traditional practices did not intend to constrain – that inspire my work and thinking about distinguishing characteristics of lower and higher complexity problems. The thinking underpinning this work is summarized by five key features shown in table 1.

Complexity science as a theoretical framework useful in highlighting the limitations inherent in many of our current MMR practices under conditions of complexity. One of the strategies I have developed is the use of a complexity study profile to convey sources of complexity using five dimensions – it can be used in a proposal to make the sources of complexity explicit and then in a report to justify why some adaptations were made and how understandings of the conditions of complexity emerged over time. This is the difficulty with unpredictability: We can only see patterns after they have happened and there is no guarantee they will happen again. But we can begin to anticipate or at least create agility in some

Table 1: Distinguishing features of lower and higher complexity problems.

Key feature	Lower complexity problems well served by traditional practices	Higher complexity problems requiring adaptive practices
Intentions	Identifiable mixing purpose that can be selected from existing typologies	Yet-to-be-known mixing purpose
Contexts	Definable contexts for which study systems can be found in the literature	Yet-to-be-defined contexts and study systems
Integration	Distinctive designs can be selected from existing typologies with a predetermined point of integration	Yet-to-be-known study design and points of integration
Capacity	Predeterminable expertise and study contributions that can be anticipated	Yet-to-be-determined expertise and study contributions
Outcomes	Knowable outcomes and study procedures that can be implemented as planned	Yet-to-be-discovered outcomes and study procedures

parts of our studies based on our experiences. The guiding questions I use to begin identifying the sources of influence on the dimensions and creating the complexity study profiles are summarized in figure 3.

I used the guiding questions in Figure 3 to create a complexity study profile related to gaining novel insights into the complex problem of the COVID-19 global pandemic (table 2). A recent *New York Times* article from 29 March 2020 by Steven Lee Myers describes the failure of China's infectious disease reporting system to contain outbreaks and prevent the global COVID-19 pandemic. He describes the insights having been generated by interviews with doctors, health experts and officials, leaked government documents and investigations by the Chinese media. Other information includes all the epidemiology data and timelines that have been painstakingly recreated to document key incidents. Let us reimagine this research to study the current coronavirus in a Western county. This represents a highly complex problem because while some related literature exists, our understandings of COVID-19 are emerging. As a result, while we know our need for integration is for innovation, we are not sure yet if we will pursue integration for reasons of completion or explanation to name a few mixing purposes and thus our outcomes remain unknown as of yet. The systems in which we will pursue the study represent a highly complex context because of the dynamic histories and

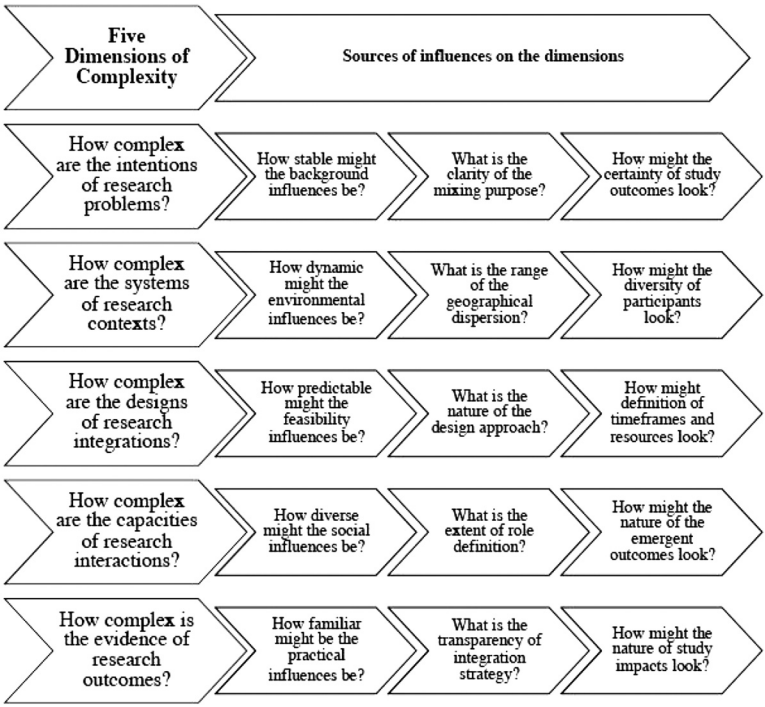

Figure 3: Dimensions of complexity: questions guiding a mixed methods complexity study profile

current political, economic influences (among others) on the COVID-19 country, province or state, and city or county responses. The range of geographical dispersion assumes great diversity among the embedded contexts and potential participants (i.e. patients and healthcare workers). The procedures which we will pursue are highly complex because they are most likely evolvable in response to changes in when and how data are collected. We may intend to pursue a fully integrative MMR design (Creamer 2017) whereby data are brought together in real time to study the spread in a Western country – the efforts on social media to raise the alarm along with community-reported infection rates. The study has high overall relational complexity because we do not know yet who will be involved and how as a result the nature of the outcomes of the research is dependent on how the team members interact to generate new understandings. For example, it is likely that a large research team will involve collaborations among disciplinary and methodologically diverse team members. The study has high overall integration complexity because

Table 2: Mixed methods study complexity profile for COVID-19 pandemic research.

Dimension of complexity	Dimension characteristics	Level of complexity			Rationale/description
		Low	Moderate	High	
Intentions of research problems HIGH overall problem complexity	Stability of background influences			✓	There exits some related pandemic literature but not specific to target population and problem is likely changeable
	Clarity of mixing purpose			✓	Multiple needs for innovation but focus yet to be known
	Certainty of study outcomes			✓	Low certainty of insights
Systems of research contexts HIGH overall context complexity	Dynamics of environmental influences			✓	Many sources of dynamics that remain unknown
	Range of geographical dispersion			✓	High degree of potential dispersion depending on county of study
	Diversity of participants			✓	High degree of potential differences in characteristics
Designs of research integrations HIGH overall procedural complexity	Predictability of feasibility influences			✓	Low predictability of dynamics as population is relatively unknown
	Nature of design approach			✓	Little agreement about procedures leads to evolving designs
	Definition of timeframes and resources			✓	No clear start date or resource allocations

(*Continued*)

Table 2 (*continued*)

Dimension of complexity	Dimension characteristics	Level of complexity			Rationale/description
		Low	Moderate	High	
Capacities of research interactions	Diversity of social influences			✓	Relatively unknown social dynamics (depends on population)
HIGH overall relational complexity	Extent of role definition			✓	Low degree of role predetermination
	Nature of emergent outcomes			✓	Yet to be known
Evidence of research outcomes	Familiarity of practical influences			✓	Sources of dynamics are unknown
HIGH overall integration complexity	Transparency of integration strategy			✓	Strategies are yet to be determined, but are thought to be intensive
	Nature of study impacts			✓	Low predictability of impacts
Overall study complexity rating			HIGH		
Rationale for study's complexity rating			This is based on consistent assessments of high complexity across all the dimensions		

we do not yet have established methods for guiding the need for integration.

Using this example to extend our discussion, can you see how adaptive practices could help us navigate adjustments to our research procedures "on-the-go" and draw upon available data to report important insights as they emerged? How would these insights benefit from a researcher team of diverse disciplinary and methodological backgrounds? We are living in an unprecedented time where researchers (and the public in some forms) have access to data in real time and funding opportunities are not requiring the same level of detail because there exist no known solution pathways. Research innovations such as adaptive MMR practices may be some of the benefits from the pandemic and the recognition of conditions of greater complexity.

Towards Adaptive MMR Under Conditions of Greater Complexity

MMR holds a strong potential for generating novel insights and ultimately tackling complex problems, but we must be open to transforming our approaches to be more complexity informed. In adopting a complexity-informed approach, a researcher can mitigate some of the dilemmas with traditional MMR practices by using adaptive practices and expanding what they previously imagined possible (Poth 2018a). A complexity-informed approach has emerged as guiding my own MMR practices because it affords new opportunities for me to be creative in my work on challenging and pressing societal issues. I position the uniqueness of a complexity perspective as it:

> Recognizes that research conditions call into question six traditional mainstays of mixed methods research practice tendencies: stability of the research conditions can be assumed; mixing purposes can be identified; contextual study boundaries can be defined; expertise for necessary capacities can be predetermined; integration procedures can be fixed; and indicators of outcome legitimacy can be anticipated. Complexity-sensitive practices are well established across diverse disciplines (e.g., business, evaluation, and health) and without exception require rethinking and indeed transforming traditional practices. Among the key benefits of complexity-sensitive approaches is the capacity to respond and adapt to evolving conditions. (Poth 2018a, 9)

As we generate evidence of the benefits of complexity-informed approaches, mixed methods researchers can accelerate its adoption and ongoing development. I can think of several misconceptions that

would be helped by different ways of thinking. For example, rather than assuming that

- all studies can be planned ahead of time, why not propose our best concept of the study at that moment?
- most studies are conducted as planned; why not assume some adaptations will happen?
- in general, study reports are authentic to what happened; why not describe the adaptations made and rationales so others can learn from them?

In particular, I note the resourcefulness of researchers working under constraints and their courage and ability to bring researchers from differing backgrounds and expertise to work together in pursuit of important research questions as truly remarkable. Diversity refers to the inclusion of different types of topics, people and voices. Inclusive interactions are a key objective for realizing the MMIRA's mission of engaging with the international community to support MMR and bringing together diverse communities with the goal of expanding knowledge. Capitalizing upon the diversity within our MMR community will be essential for tackling the wicked and complex problems that have no completely right solutions and yet present pressing issues requiring attention (Mertens 2015). By engaging the space and structure for meaningful interactions among researchers, we all get the chance to learn from one another and so enrich our own work within the field of MMR. This point is highlighted in figure 3 and table 2 where emergent outcomes from the interactions among researchers cannot be predicted.

Implications and Future Directions

In closing, I want to thank the conference organizers for creating conditions for the emergence of new ideas contributing to important future directions for the field. We could not have achieved these individually. It is also important to note the effective support of the international, interactive and interdisciplinary nature of the MMIRA mission as described in the MMIRA bylaws approved 15 March 2013 (see www.mmira.org):

MMIRA aims to create an international community to promote interdisciplinary mixed methods research. The mission of the Association is to engage with the international community to support mixed methods research, which broadly includes the following: mixing/combining/integrating quantitative and/or qualitative methods, epistemologies, axiologies, and stakeholder perspectives and

standpoints. MMIRA seeks to engage with a broad set of approaches in the service of understanding complex social, behavioral, health, educational, and political concerns related to the human condition and natural world. Our vision includes bringing together diverse communities of scholars, students, practitioners, policymakers, citizens, and other stakeholders, with the goals of expanding knowledge and producing social betterment and social and global justice.

I want to wrap up this article by raising three calls for action to realize the potential of MMR for solving societal issues in the Caribbean and all over the world. First, consider how adaptive practices can assist your MMR. Second, broaden your researcher orientation to recognize varying conditions of complexity inherent in the world in which we work. Third, contribute to opportunities such as this journal for accelerating the development of innovative MMR to better serve our communities of practice. If we consider the research conditions surrounding the COVID-19 global pandemic, I would not be surprised to see MMR approaches having some prominence and the creation of methodological innovations. These are unpresented times requiring great agility in thinking and procedural adaptations in situ as our understandings continue to emerge. Many of these practice innovations have seemed unlikely in the recent past and are now becoming the norm in our new world.

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Combining Mixed Methods and Case Study Research (MM+CSR) to Give Mixed Methods Case Study Designs

Loraine D. Cook[1] and Vimala Judy Kamalodeen[2]

[1]School of Education, University of the West Indies, Mona, Jamaica
[2]School of Education, University of the West Indies, St. Augustine, Trinidad & Tobago

Abstract

Typically, case study research (CSR) is associated with a qualitative approach. However, the increased use of mixed methods to address complex research problems provides an opportunity to combine mixed methods research (MMR) and CSR in a single investigation. This paper discusses the intersection of these two research approaches (MMR+CSR) leading to a description of either the deductively driven design (case study-mixed methods research (CS-MMR)) or the inductively driven design (mixed methods-case study research (MM-CSR)). Complex research problems require non-typical research approaches that are guided by researchers' paradigms, integrative thinking mindsets, and adaptive mixed methods designs and procedures. Exemplary empirical studies using mixed methods CSR, from the international and Caribbean research community, are discussed and used to illustrate the two designs. Features of both designs (CS-MMR and MM-CSR) are highlighted to aid the researcher in the practical application of this approach (MM+CSR).

Keywords: mixed methods case study research; inductively driven; deductively driven; complex research issues; Caribbean studies.

Introduction

Mixed methods research (MMR) and case study research (CSR) are two distinct research approaches which can intersect when studying complex phenomena (Creswell and Plano Clark 2018; Creswell and Creswell 2018).

Both approaches are "adaptable and flexible" to the utilization of different research methods (Plano Clark, Foote, and Walton 2018); both have the traditions of incorporating multiple forms of data with the goal of "creating a unified understanding of phenomena" (Creswell and Plano Clark 2018, 18). Hence, CSR and MMR are not separate entities, but rather the boundary between them is *permeable* and *fluid*, allowing each to either support or lead in a research endeavour (Carolan, Forbat, and Smith 2016). As such, this permeability or fluidity requires understanding for conducting research studies that combine both approaches. These two research approaches, mixed methods and case study, combine to give mixed methods case study research (MM+CSR). In this article, MM+CSR is defined as "a type of mixed methods study in which the quantitative and qualitative data collection, results, and integration are used to provide in-depth evidence for a case(s) or develop cases for comparative analysis" (Creswell and Plano Clark 2018, 116).

MM+CSR has become increasingly popular where there is an interest in understanding complex problems (Creswell and Plano Clark 2018). Such problems may exist in health, education and policymaking that require multiple sources and perspectives (Creswell and Plano Clark 2018). It is imperative to look more closely at the individual components of MM+CSR to understand the intersection of the two approaches more fully.

MMR Explained

MMR can be considered as the mixing or integration of qualitative and quantitative research approaches. It emerged as a third methodological field with an increasingly large amount of literature debating the concepts, methods and challenges in mixing two approaches from two seemingly different paradigmatic stances. Seminal works by Tashakkori and Teddlie (1998), Greene, Caracelli, and Graham (1989), Johnson and Onwuegbuzie (2004) and Creswell and Plano Clark (2007) continue to be cited and used to ground this type of research.

As mixed research continues to evolve, challenges across disciplines, across philosophical and methodological boundaries and contexts are being tackled by researchers across the globe. Early work seems to have emanated from the United States, but studies that broaden understandings of MMR are taking place in Europe, Australia, Asia, Africa and the Caribbean. MMR is exciting and vibrant, not just by the growing number of published research articles and studies, but with discussions

leading to a more in depth and broader understanding of what this approach entails. Recent literature has placed more focus on data analysis and presentation of MMR data. Publications and workshops on data analysis by Onwuegbuzie and Combs (2011), and more recently by Guetterman, Creswell, and Kuckartz's (2015) work on joint displays and Hatta et al.'s (2020) study on crossover analyses advances the toolset that mixed methods researchers can use. Poth (2018) advanced ideas on complexity and Creamer (2018) on full integration, while Shannon-Baker's (2015) work on feminist approaches in mixed methods and Schoonenboom and Johnson's (2017) writings augment methodological/theoretical discussions.

Mixed methods are not the same as multimethods, which often take place within either a qualitative or quantitative research study. Mixing methods necessarily involves the integration of both qualitative and quantitative approaches, but where time, priority and dominance can vary (Leech and Onwuegbuzie 2009). Integration refers to how one brings together the qualitative and quantitative results in a mixed methods study. The way the researcher combines data needs to relate to the type of mixed methods design used by the researcher (Creswell 2015). Further, different typologies in MMR design have evolved, giving authority to one or more of the above criteria. Creswell and Plano Clark (2018) proposed designs ranging from the simple to the complex. The core designs are explanatory sequential, exploratory sequential and convergent design. According to these authors, these designs have evolved over the years as MMR advanced to become increasingly complex. These complex designs are intervention/experimental, case study, participatory/social justice and programme evaluation (Creswell and Plano Clark 2018).

Integration as a Key Element in Mixing Data

The goal of MMR is to intentionally integrate qualitative and quantitative approaches to maximize the strengths of the quantitative and qualitative data and minimize their weaknesses. If qualitative and quantitative data are collected but never coalesce, interface or meet, then integration of data does not take place. Research on integration in mixed methods studies is being advanced by several experts. For example, Fetters, Curry, and Creswell (2013) indicate that integration can take place at three levels – the design level, the methods level, and the interpretation and reporting level. Creamer (2018) discussed a fully integrated approach as "an intention to mix or integrate the qualitative and quantitative strands of the

study throughout each of the stages or phases of the research process" (12). The intent of the integration of quantitative and qualitative components guides the choice of the design (Creamer 2018). The designs mentioned earlier provide a useful guide to help researchers manage their studies and assist in making them rigorous and of high quality. Complex designs, like mixed methods case study, are predicated on one or more of the core designs but continue to evolve as frameworks are designed to aid understanding of the content and the methodology. Researchers are looking towards mixed methods designs to tackle what may be termed complex issues in health, education, social science, business and marketing, and other disciplines.

Strength and Limitations of MMR

A researcher decides to conduct a mixed methods study after carefully examining the purpose of the study, time and resources and the research questions. As MMR combines two distinct approaches, qualitative and quantitative, there are both strengths and limitations in any single study, though mixed methods studies have gained increased popularity in recent times (Clark-Plano and Ivankova 2016). Some of the strengths of MMR are discussed hereunder, followed similarly with limitations.

Multiple paradigms. MMR encourages the use of multiple world views or paradigms rather than the typical association of certain paradigms for quantitative researchers and others for qualitative researchers. Creswell (2009) identified several schools of thought in the paradigm debate. They are the purists who assert that paradigms and methods should not be mixed and the situationalists who contend that certain methods can be used in specific situations. Since 2004, Johnson and Onwuegbuzie argued that

> the philosophy of pragmatism advanced the notion that the consequences are more important than the process and therefore that the 'end justifies the means'. It advocates eclecticism and a needs-based or contingency approach to research method and concept selection. (17)

Mertens (2010) argued for a transformative paradigm aimed at answering the question "for whom'" and "to what end" rather than "what works." Shannon Baker (2019) discussed a number of paradigms that support MMR, including pragmatism, critical realism, dialectical pluralism and transformation (emancipatory).

Flexibility to use cultural knowledge and contexts. Mixed methods through integrating qualitative and quantitative approaches allow for

the interpretation of survey results through evidence from qualitative cases that seek cultural/linguistic knowledge (Teddlie and Tashakkori 2010). The combination of these two approaches gives the researcher, in any discipline, the flexibility to select a methodological design that best suits the study. Creswell and Plano Clark (2018) describe three core designs and several complex designs that combine the qualitative with the quantitative giving precedence to time and priority. Though not an exhaustive list, these designs have been used to guide MMR since 2007. These designs aid both the novice researcher and the expert in succeeding with MMR.

More comprehensive evidence. Mixed methods research provides a number of strengths that offset the weaknesses of both quantitative and qualitative research as it allows for more comprehensive evidence for studying a research problem than either quantitative or qualitative research alone. Qualitative approaches have been critiqued for not being generalizable or reproducible, though those purposes are not declared by qualitative researchers who usually select one or two cases for detailed study for depth of understanding. MMR also expands on the range of research questions in a single study by allowing for qualitative, quantitative and mixed questions. Research questions are critical to a mixed methods study as they drive the methods used (Onwuegbuzie and Leech 2006). A mixed question allows the researcher to integrate data (qualitative and quantitative) to strengthen the findings of the study.

Rationales for integration to strengthen study. Rationalization of integration within a mixed methods study strengthens the rigor of the study. When rationales are supplied and aligned to a selected MMR design, the research process gains more validity. Several rationales for integration have been purported over time, from the popular Green, Caracelli, and Graham's (1989) typology to those of Collins, Onwuegbuzie and Sutton (2006) and Bryman (2006). These rationales include triangulation, complementarity, expansion and enhancement.

According to Creswell and Plano Clark (2018), there are three key challenges or limitations to be addressed in conducting mixed methods studies. They are as follows:

Researcher skills. Researchers may have knowledge and skills in only qualitative or quantitative approaches, whereas both are required for a mixed methods study plus a working knowledge of MMR itself.

Limits in time and resources. Researchers should keep in mind that qualitative phases can take longer than quantitative ones (Creswell and Plano Clark 2018) and so MMR studies can take longer than when one

approach is used. If the design is multiphase, then there is a need for a number of resource persons to provide a range of skills for the success of the study. A team-based approach can alleviate some of the issues with resources, but there are challenges in team management. Leadership of these teams is vital.

The need to educate others about MMR. Not all scholars have embraced mixed methods as an approach and this approach may be considered as new. There is a need to source scholarly publications on mixed methods to inform researchers about the extensive literature that is now available. A search through the literature may provide the researcher with a breadth of theses and articles utilizing "mixed methods," throughout the world and including the Caribbean, though finding such literature is not always easy as several authors did not explicitly use the terms "mixed methods" in the title or abstract and may have used "qualitative and quantitative" instead. Further difficulty in sourcing mixed methods literature may be discipline-specific. For example, Bazeley (2018) lamented the lack of literature in the business and management fields. These gaps may be offset by hand searches, consultation with experts and recommendations from colleagues.

Even though there are limitations to conducting MMR, we reason that the strengths and benefits outweigh these considerably. The literature is replete with mixed methods studies that utilize a variety of designs in different contexts, though some more than others. Mixed methods offer a segue from qualitative to quantitative or vice versa or both at the same time. This flexibility in research is desirable especially for researching complex issues.

CSR Explained

CSR allows for the understanding of a complex issue, which can be a single individual or a classroom of students, a programme or an incident (Zainal 2007). Yin (2014) defines case study as "an empirical inquiry that investigates a contemporary phenomenon (the 'case') in-depth and within its real-world context, especially when the boundaries between phenomena and context may not be evident" (16). Since 1995, in the seminal work by Stake, case study was referred to as an integrative system. The integrative system suggests a set of parts working together to make a whole. Stake's (1995) definition indicates that a case is made of the information from multiple sources of evidence that give a holistic understanding of phenomena.

Sometimes, as Stake (1995) pointed out, a researcher may need to go outside the immediate boundary of the case, "tracking its issues, pursuing its patterns of complexity" (2) to create that holistic understanding of the case. Nevertheless, Stake (2003) referred to CSR as having a "specific, unique, bounded system" (136). It is important to establish the boundaries of a case; "a case is a specific, complex, functioning thing" (Stake 1995, 2). While a case may be bounded by time, place, event and activity, once the boundaries of the case have been established, it may be important for the researcher to search for additional data outside of the immediate scope of the case; this builds a context that is critical to the interpretation of the findings later on. A school or classroom or a hospital or a unit within a hospital, an individual, or a community of persons can form empirical boundaries for investigation.

Establishing boundaries facilitates the development of the conceptual and methodological framework of the case study (Yin 2014). Gall, Gall, and Borg (2007) defined CSR as "the in-depth study of one or more instances of a phenomenon in its real-life context that reflects the perspective of the participants involved in the phenomenon" (447). A phenomenon can be a process, event, evaluation of a programme or any other issue that is of interest to the researcher. As noted in Gall, Gall, and Borg's (2007) definition, a case "can be a particular instance in that phenomenon" (447). It is important to note that time and spatial boundaries of the case may change as the case study of those cases progresses; "that is, cases may be re-cased" (Sandelowski 2011, 155). The decision to use or not to use case study in an investigation and whether to use qualitative, quantitative or MMR when doing the CSR is defined by the purpose of the research and the research questions. Stakes (2003) emphasized that "case study is not a methodological choice, but a choice of what is to be studied" (p. 134, cited in Denzin and Lincoln 2005). Tools of research methods and approaches are available to a researcher for examining or exploring phenomena; which devices are used and how they are used in a research project are dependent on the purpose of the study, the research questions and the philosophical stance of the researcher.

Case Study History that Combines Quantitative and Qualitative

Traditionally CSR is associated with a qualitative research approach. However, the early beginnings of case study suggest that it began with the utilization of quantitative and qualitative in one study. The history

of case study starts with a Pierre Guillaume-Frederic Le Play (1806–1882) study titled the "European Workers" ("Les Ouvriers Europeens") published in 1855. Gerring (2007) wrote, "Indeed, virtually all case studies produced in the social sciences today include some quantitative and qualitative components, and some of the most famous case studies – including Middletown and Yankee City and the pioneering family studies by Frederic Le Play – include a substantial portion of quantitative analysis" (11).

The Chicago School in the United States is credited with proliferating case study as a qualitative research strategy. The Chicago School included personalities such as Herbert Blumer, Ernest W. Burgess, Everett C. Hughes, George Herbert Mead, Robert Park, Robert Redfield, William I. Thomas, Louis Wirth, and Florian Znaniecki (Sclafani 2017). Case studies as a research approach emerged during the "paradigm war" when the attitude of qualitative researchers to the quantitative method varied considerably from tolerance to outright rejection (Hammersley 1989, 1). During this time, quantitative researchers were accused of depersonalization of the human experience; in the quantitative approach, "the person (participant) was made into something lacking quality, something merely comparable ... using measurement, experiment, statistics" (Lamiell 2003, 159). Qualitative researchers felt that the quantitative approach of operationalizing core concepts into variables that can be measured "squeezed the meaning out of the concepts" (Hammersley 1989). With the recognition that numbers only give limited insights into an issue or problem on a macro level and are unable to tell the full story that will provide a comprehensive resolution to a problem or understanding of a phenomenon, many researchers turned to qualitative research. Qualitative research emphasizes the qualities of the entities under review, the socially constructed experiences, and meanings of the individual, groups and communities' realities, whereas quantitative studies focus on measurements and causal relationships among variables (Denzin and Lincoln 2005). Though several writers primarily recognize CSR as entrenched in the qualitative approach (Stake 2005; Merriam 1998; Hays 2004), a case or cases could be examined analytically using quantitative measures or holistically using mixed methods (Yin 2014).

Strengths and Limitations of CSR

A researcher decides to conduct a case study because of the nature of the problems being investigated (Stake 1995). When properly planned,

the strengths of case studies can outweigh the limitations. The strengths of doing a case study are as follows.

Case studies are grounded in "lived reality." Hodkinson and Hodkinson (2001) noted that the case study researcher tries to capture the lived reality. The case researcher makes an effort not to disturb the normal activity of the case. The researcher tries to understand how the people being studied view things and situations within the case (Stake 1995). The description of the context and conditions are detailed. Case researchers "retain more of the' noise" of real life than many other types of research (Hodkinson and Hodkinson 2001, 3). For example, in doing a case study in an educational setting, it is difficult to discard unnecessary variables, "some of which may only have real significance for one of their students" (Hodkinson and Hodkinson 2001). So, case studies "help to explain the complexities of real-life situations which may not be captured through experimental or survey research" (Zainal 2007, 4).

They can help us understand complex interrelationships: According to Hodkinson and Hodkinson (2001), case study facilitates an in-depth understanding of the interrelationships within the case being studied. This creates the pattern for the case study report when the researcher can describe how each of two or more things and situations are related to each other or others (these others may not directly involve the case but have a relationship with participants and situations within the case).

CSR is flexible. The strategy can be implemented at various point of the research process (Creswell and Plano Clarke 2018). This advantage facilitates the use of CSR in a supporting role in MMR. Also, as was pointed out earlier, with case study, a wide variety of research methods and techniques can be used. Qualitative strategies and techniques such as ethnography, focus groups, phenomenology, interviews, observation and document analysis can be utilized in a case study, as well as quantitative techniques and strategies such as surveys.

The limitations of CSR are as follows:

Generalization from case studies. Generalization, according to Steinberg (2015), "is a logical argument for extending one's claim beyond the data" (152). Results from a case study cannot be extended to the research population as in collecting empirical data from a sample of a research population and then statistically generalizing the results beyond the sample to the larger population. This is because the case or cases are not "sampling units" and also will be too small in number to serve as an adequately sized sample to represent any larger population (Yin 2014). However, because CSR yields deep and narrow results, analytical though not statistical

generalization can be achieved in CSR. According to Yin (2014), analytical generalization is the "logic whereby case study findings can be extended to situations outside of the original case, based on the relevance of similar theoretical concepts or principles" (237).

There is too much data for easy analysis. The case study can take too long and can result in massive amounts of data. Furthermore, even the most detailed of those stories is a significant simplification of what was told to the researcher. Hodkinson and Hodkinson (2001) note that this vast amount of data can present challenges for reporting the case study results and often can result in an oversimplification of the reporting of the results. So individual stories may not be told, as in the case of multiple case studies, but analysis of the issues may take place across the stories. Thus, the complexities of the social or educational issues, for example, may not be adequately represented in the writing up of the case.

Oversimplification or exaggeration of a situation. Merriam (1998) in her seminal publication stated that case studies could oversimplify or exaggerate findings, which could lead to erroneous conclusions about the state of affairs in the case. This means that the case could masquerade as a whole when, in fact, the case represents a "slice of life" (42).

Researcher's bias. An unethical researcher could select to make available to the audience only that section of the case that they want to reveal to the audience. Researchers need to guard against the overemphasis on some segments of the data because of researcher's preference.

We argue that even with its limitations, CSR is flexible, rigorous and offers a bridge similar to that of MMR in the utilization of quantitative and qualitative research approaches in the investigation of a research phenomenon. Luck, Jackson, and Usher (2006) expanded by noting "case study is both the process and product of research. It provides a delineated boundary for inquiry, and a structural process within which any methods appropriate for investigating a research area can be applied" (103). In other words, CSR even within its stated boundary and structure is not restricted to any particular methods and similarly to MMR the selection of method(s) is guided by the investigation purpose and research questions. We compare and contrast MMR and CSR in table 1 highlighting core principles, paradigms used, rationales purported and challenges in each approach.

The Intersection of CSR and MMR

MM+CSR allows for the investigation of complex phenomena utilizing an integrative thinking mindset that allows for adaptive research practices

Table 1: Table comparing key attributes of MMR and CSR and the alignment of MMR and CSR.

	MMR	CSR	Alignment between MMR and case study
Core principles	Integration refers to how one brings together the qualitative and quantitative results in a mixed methods study.	An integrative system – a set of parts working together to make a whole.	
Paradigm	MMR encourages the use of multiple world views.	CSR uses a wide variety of research methods and hence allows for multiple world views.	Belief in multiple perspectives.
Rationales	Rationales include triangulation, complementarity, expansion and enhancement, and so on.	**Instrumental.** We do the case study because the case will help the researcher to understand something else than that particular case. **Intrinsic.** We have an intrinsic interest in the case; we the researchers want to understand the case only.	Qualitative CSR can be used with quantitative survey to expand on the quantitative findings. Mixed methods can used in a CSR for intrinsic reason.
Challenges	**Researcher skills.** Researchers may have knowledge and skills in only qualitative or quantitative approaches, whereas both are required for a mixed methods study. **Limits in time and resources.** Researchers should keep in mind that qualitative phases can take longer than quantitative ones and so MMR studies can take longer than when one approach is used. **The need to educate others about MMR.** Not all scholars have embraced mixed methods as an approach	**There is too much data for easy analysis.** The case study can take too long and can result in massive amounts of data. **Oversimplification or exaggeration of a situation.** Merriam (1998), in her seminal publication, stated that case studies could oversimplify or exaggerate findings. **Researcher's bias.** Researchers need to guard against the overemphasis on some segments of the data because of researcher's preference.	Even though qual driven CSR generates massive amounts of data, when adding MMR to the design, researchers need to be mindful of not overly increasing an already huge amount of data. They must be cognizant of the rationale for integration and the number of data sources while attempting to gain a holistic picture of the case.

that facilitate deeper understanding from multiple perspectives. In MM+CSR the researcher can embed the quantitative within the case study to "enhance the application of the case study for examining the case" (Clark-Plano and Ivankova 2016, 146). Also, a qualitative case study can be integrated into a quantitative design to provide a better understanding of the quantitative results. This mixed methods case study design aims to amplify the strengths of both approaches and minimize their collective weaknesses.

In reference to figure 1, we present MM+CSR as the intersection of MMR and CSR. This intersection captures diversity in research approaches and methods and was made possible due to the permeability of the boundaries between MMR and CSR. Drawing from previous work by Creswell and Creswell (2018) and Guetterman and Fetters (2018), we show two distinct approaches emanating from this intersection, which are *deductively* or *inductively driven* approaches. When the researcher decides to use CSR at the onset of the research project or study and then embeds a mixed methods design, the approach is *deductively driven*. A second approach is one where the researcher conducts a mixed methods study and then generates cases based upon collection and analyses of quantitative data; this approach is *inductively driven*. These two approaches can be associated with two distinct mixed methods case study designs. The deductively driven approach is called case study-mixed methods research (CS-MMR), while the inductively driven approach is called mixed methods-case study research (MM-CSR) (Guetterman and

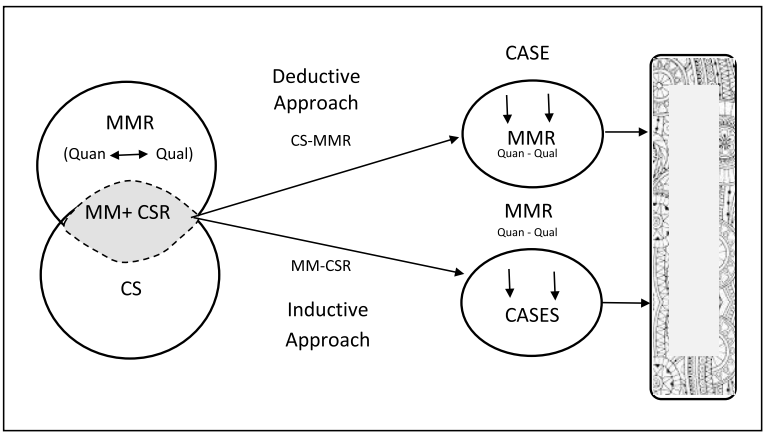

Figure 1: Mixed methods case study framework

Fetters 2018). Researchers are increasingly adopting the use of these complex designs to derive a greater understanding of the research issue.

MMR is generally used to explore more complexities of a phenomenon that might not have been possible using only one approach (Creswell and Plano Clark 2011; Morse and Niehaus 2009). As such, interrelated concepts of data drawn from multiple sources, diversity of perspectives and ways to look for convergence and divergence of data/triangulation of data are valid for both CSR and MMR and these commonalities provide a secure bridge between MMR and CSR (Creswell, Klassen, Clark, and Smith 2011; Johnson, Onwuegbuzie, and Turner 2007).

Studying Complex Phenomena

In studying complex phenomena, we argue that both approaches can be combined and that the margins and boundaries between them are permeable. The nature of complexity is that it requires new and sometimes radical lenses to study the phenomenon in depth and over time. Complexity in research, according to Poth (2018), "is characterizing the behaviour of a research system whereby its components (such as research participants, researchers, their environments) interact in multiple, nonlinear ways without direction. The outcomes of these interactions are impossible to predict with any accuracy, yet patterns of behaviour from the system can be documented retrospectively" (5). The intersection of MMR and CSR facilitates the synthetization of data and knowledge provided by diverse sources, including data collection techniques, in understanding complex and contextualized issues (Scholtz and Tietje 2002). Embracing complexity involves integrative thinking, adaptative MM+CSR design, and paradigms that support multifaceted investigation (Poth 2018; Shannon-Baker 2015).

Integrative thinking is a mindset that allows for nonlinear exploration as the researcher looks at a complex issue from multiple perspectives, involving multiple purposes undergirded by one overarching purpose. The mindset in integrative thinking is ultimately to determine the indicators of outcomes during the examination of a complex issue. Such thinking involves acknowledging the multiple contexts within the research environment and establishing interrelationships among the contexts and the various issues therein. Hence, in examining the complex process in a stated system, there is a need to look beyond one single entity to multiple entities at each stage of the research investigation. Therefore, the researcher has to develop strategies for tracking and monitoring data

collection (Poth 2018). This tracking and monitoring of responses and differences among the entities involves monitoring "dynamic influences and developing agile research procedures" (Poth 2018, 62). Agility in MM+CSR requires having an adaptive mixed methods design that is sensitive to the multiple entities of the phenomenon under investigation. Adaptive MM+CSR designs demand flexibility in data collection and analysis, hence enabling the researcher to adopt a recursive approach to the research process (Poth 2018).

Complexity requires the researcher to adopt certain paradigmatic stances that allow for the study of multiple facets of the phenomenon. Dialectical pluralism offers the researcher opportunities to embrace more than one paradigm simultaneously and is often called a metaparadigm (Johnson 2012) as the paradigmatic position allows the researcher to carefully listen to multiple paradigms facilitating discussion and thoughtful consideration of divergent viewpoints. According to Shannon-Baker (2015), dialectics have been used in MMR based on the belief that diverse perspectives are critically important in investigating the complexity of a phenomenon (Greene and Caracelli 2003), and thereby allowing for more than one perspective to support a study that utilizes both CSR and MMR approaches. Pragmatism, another paradigmatic stance adopted by mixed methods researchers, facilitates integration of methods within a single study (Onwuegbuzie and Leech 2005) and allows a researcher to make choices to answer a study's research questions. In fact, according to Shannon-Baker (2016), pragmatism breaks down the barriers between positivism and constructivism, implying a permeability between these world views, in order to look at what is meaningful from both. These paradigms can be implicitly or explicitly expressed by researchers (Alise and Teddlie 2010). +researcher is thus enabled to study complex issues using a variety of methods and perspectives.

CS-MMR is more of a fixed design in that the researcher decides from the outset of the study to do a case study that incorporates a MMR design, whereas for a MM-CSR, the decision to do a qualitative case study (or multiple case studies) emerges from the quantitative data analysis. Regardless of the MM+CSR research design/approach selected, MM+CSR targets complex research issues in single disciplines or multidisciplinary contexts.

Examples of MM+CSR

MM+CSR allows for a deductively driven approach where mixed methods is embedded within a case study (CS-MMR) or an inductively driven

approach where cases are generated from the mixed methods study (MM-CSR). Four examples of mixed methods case study research in each category are selected for more in-depth examination, two in each case. In each case, one global and one Caribbean-based study are selected. The following criteria are used to elicit key aspects of the case studies: the purpose of the study, research questions, rationale for mixed methods, the case study design, the mixed methods case study design, the participants, the data collection, analysis, and inference design, findings and results. These criteria allowed us to compare and contrast key aspects of the designs for the elaboration of MM+CSR. These studies have been purposefully selected to help the reader understand the two approaches to the design of MM+CSR. The inclusion of Caribbean-based examples in each category helps the reader understand the diversity and commonality of MM+CSR in diverse contexts and applications.

Examples of Deductively Driven Approach (CS-MMR)

The studies selected to illumine the utilization of the CS-MMR design are those of Guetterman and Mitchell (2016) and Kalloo et al. (2019) (see figure 3). Both studies started with a case and described the bounds in depth and how mixed methods were utilized within the case. Both examples indicated that the phenomenon being studied was complex and that CS-MMR was appropriate to answer the research questions.

Example One: Timothy C. Guetterman and Nancy Mitchell (2016) – *The Role of Leadership and Culture in Creating Meaningful Assessment: A Mixed Methods Case Study*

This study explored how faculty members used assessment data and what factors contributed to meaningful assessment practices. Its principal research question was: How does the institution's organization for assessment affect faculty members and their efforts to assess student learning outcomes? There were qualitative, quantitative and mixed research questions. The authors described faculty assessment as a complex problem noting that "the organization and process of assessment occurred in a more complex and nuanced manner than existing instruments could detect" (5). They rationalized integration of qualitative and quantitative data for completeness of understanding of the phenomenon.

The case was a year-long ACE 10 (Achievement Centered Education) Faculty Inquiry Project focused on the assessment of the outcome related to integrated learning with twenty-six faculty leaders who taught a

general education course. The authors declared a convergent parallel mixed methods case study design. Quantitative data were collected using three online surveys that examined the organizational context approximately nine months after the start of the programme. The qualitative data explored faculty assessment processes and were collected from three sources: faculty responses to open-ended survey items, open-ended narrative responses and the series of posters developed by the participants. Factor analysis and analysis of variance were used for the quantitative data, while the researchers utilized a thematic text analysis technique for the qualitative data.

Overall, through the qualitative analysis of the ACE 10 Faculty Inquiry Project, the authors gained a better understanding of how faculty members assessed the capstone course. Three themes emerged from the qualitative analysis: the process of assessment, the use of assessment evidence and faculty experiences through the programme. The quantitative results suggested no change concerning the pre and post in regard to organizational culture and values. However, the authors noted that "the qualitative data clarified that knowledge level improved: faculty members stressed the importance of learning about assessment strategies from their peers in addition to the fundamental assessment tasks covered throughout the project" (12). The authors concluded that "the study provided insights for institutional administrators and faculty members seeking to develop a culture of assessment" (p. 1).

Example Two : R. Kalloo, S. Jaggernauth, N. Ramsawak-Jodha, V. J. Kamalodeen, Z. Dedovets, S. Abdul-Majied, and D. Barrow (2019) – *Game-Based Learning in STEM Primary Classrooms: A Mixed Methods Case Study*

Similar to Guetterman and Mitchell (2016), Kalloo et al. (2019) utilized a deductively driven MM-CSR approach in their study. The instrumental case study (Stake 2005) explored game-based learning (GBL) approaches in Science, Technology, Engineering and Mathematics (STEM) classrooms in one primary school in Trinidad to provide methodological and procedural insights for the use of games in math and science classrooms (see figure 2). The case was the purposefully selected primary school involving all students and teachers across three levels (standard 1 (early childhood), standard 3 (middle) and standard 5 (high)). The purpose of the instrumental case study in this example was to provide methodological and procedural insights for a larger study of GBL in STEM primary schools. The intervention was the use of games in math and science classrooms. Of particular note was the close working relationship

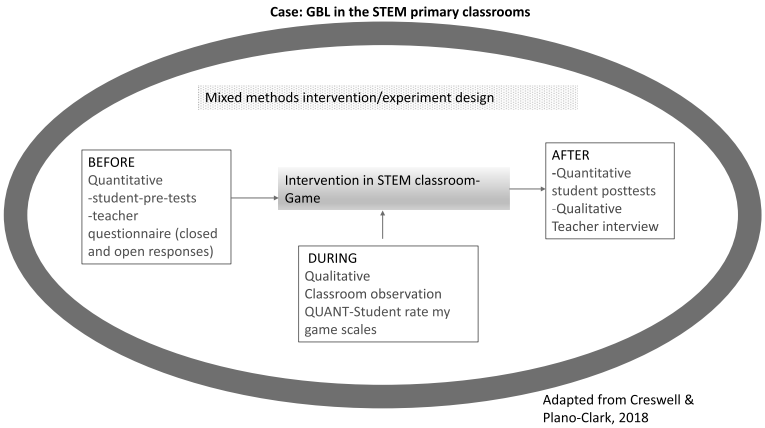

Figure 2: CS-MMR deductively driven design (Kalloo et al. 2019)

over a period of one year between the researchers and the staff at the primary school. This allowed an in-depth study of the issue over time, which is critical for any case study. GBL was described as a complex issue as there is conflicting research about the role of games in the classroom related to positive learning outcomes. According to Kalloo et al., "while conclusions from most research findings extoll the advantages of GBA, a few identify some disadvantages of using the approach. This lack of consensus of opinions leaves room to explore a range of game-based approaches within the primary curriculum" (42). The recognition of math and science anxiety in current primary classrooms was hypothesized to be overcome through game-based approaches.

The core research question was: What are student learning outcomes when GBL approaches are used in STEM primary classrooms? There were qualitative, quantitative and mixed questions. GBL in the STEM primary classroom is of central concern and the primary school was selected as an instrument to study this issue in depth (Creswell and Poth 2018). The rationale for combining qualitative and quantitative approaches was for both corroboration and complementarity (Greene, Caracelli, and Graham 1989). A mixed methods experimental/intervention design (Creswell and Plano-Clark 2018) was used where the intervention (the games) was conducted during the third term of the academic year. Gamification of tangrams, origami and arithmegons in geometry and a game called the Environment were used as the STEM focus was on the development of spatial and analytical thinking. Quantitative data were in the form of pre- and postintervention teacher questionnaires and student tests were

in math and science. The qualitative data explored student and teacher perspectives of the games from classroom observations and anecdotal notes, photos and videos (consent received), and teacher interviews at the end of the intervention. Mixed data were collected from student rating scales of the games through a binary choice related to student engagement and student open-ended items about the usefulness of the games. Data analyses included paired sample *t*-tests for quantitative data and a thematic analysis of student open-ended responses. The qualitative data were quantitized using frequency counts and cross-checked with quantitative data to generate "naturalistic generalizations of GBL" in STEM, which included favourable and unfavourable comments from students and teachers on game design. In particular, the environmental science game Extinction had mixed reviews, with some children saying favourably, "it taught me about how different species could go extinct," and the less favourable comment, "I would change the Extinction cards . . . it took away too many species."

Findings from the case study suggested that GBL had the potential for "disrupting the traditional textbook pedagogies of the Caribbean STEM classroom, as well as the capacity of culturally relevant, low-cost games to be effective in such disruptions" (Kalloo et al. 2019, 62). The utilization of the integration of mixed methods within the case provided further advantages as it allowed the team of researchers to delve into the reasons for the outcomes through the perspectives of both students and teachers. The research team comprised specialists from the following areas: math and science, early childhood, qualitative, quantitative and mixed methods. These perspectives allowed the researchers to discern potential challenges and strengths of the approach. What was particularly interesting was that there were differences in GBL with younger students and challenges in data collection with that group. Future investigation using the results of this CS-MMR study can enable researchers to examine the complexity and potential of games to create an enriching and authentic GBL learning experience in STEM Caribbean classrooms.

Both the studies by Guetterman and Mitchell and Kalloo et al. suggest that the selection of the case was important. Kalloo et al. utilized an instrumental case study inquiry, while the former did not specify the type of case study used. In both examples, the cases were explored utilizing a mix of quantitative and qualitative approaches to gain multiple perspectives from many sources. Both cases claimed complexity of the phenomenon being studied.

Examples of Inductively Driven Approach (MM-CSR)

The following examples are two empirical studies, one an international study conducted by Ivankova and Stick (2007) and the other Caribbean based, which was carried out by Roofe-Bowen (2007). These studies utilized an inductive approach to intersecting MMR and CSR. The examples highlight stages in the research processes that informed the selection of the cases, the extent to which the findings of the multiple case studies expanded on the quantitative results, and the value of the integration of quantitative and qualitative data to give insights and clarification of the research issue.

Example Three: Ivankova, N.V. and Stick, S. L. (2006) – *Students' Persistence in a Distributed Doctoral Program in Educational Leadership in Higher Education: A Mixed Methods Study*

Ivankova and Stick (2006) employed an inductively driven MM-CSR design in their study. The purpose of this study was to identify factors contributing to students' perseverance in the University of Nebraska-Lincoln Distributed Doctoral Program in Educational Leadership. A distributed learning programme is a distance instructional model in which learning materials are sent electronically throughout the world to students and instructors and learning is independent of time and place.

The research questions in the quantitative phase focused on internal and external variables of the Educational Leadership in Higher Education (ELHE). The variables are programme-related, advisor- and faculty-related, institutional-related, student-related, and external factors. The quantitative research questions dealt with the degree to which certain independent variables predict students' persistence in the programme. Four cases for qualitative investigation were generated from the statistical analysis. The cases reflected four distinct participant groups, beginners, matriculated, graduated and withdrawn/inactive. The research questions addressed seven internal and external factors, which were found to have contributed differently to the function of the four groups.

Ivankova and Stick utilized an explanatory sequential design with multiple case studies. This was necessary because neither the quantitative nor the qualitative only was sufficient to capture the complex situations that contributed to the doctoral students' perseverance in the programme. Also, the data collected using the two research approaches provided a more complete picture of the research issue. Ivankova and Stick conducted instrumental case studies with the intent to use the cases to illuminate a particular issue. The researchers noted that "each case

study was bounded by one individual and by the time he or she matriculated in the ELHE program" (101).

For the quantitative data collection phase, a cross-sectional survey was used. The participants were recruited via email before the administration of the questionnaire. The survey was administered online. Also, a hard copy of the survey was mailed or faxed to the potential participants. Of the 278 potential participants, 207 responded, resulting in a response rate of 74.5%. The goal of the qualitative phase was to explore and elaborate on the statistical results. Therefore, the content of the interview protocol was grounded in the quantitative results of the first phase. More specifically, the authors wanted to understand "why certain predictor variables differently contributed to the function discriminating four participant groups with regards to their persistence." Five open-ended questions explored the role of five factors ("online learning environment," "program," "faculty," "student support services," and "self-motivation," which demonstrated statistically significant predicting power for this sample of the ELHE students. Two other open-ended questions explored the role of the academic advisor and virtual learning community in students' "persistence" (102). These two questions were based on the literature review. Cross-tabs and frequency counts were generated for each subscale on the questionnaire. Discriminant analysis was generated to identify the predictive power of nine selected factors related to students' persistence in the ELHE programme. For the qualitative data analysis, the unit of analysis was a former or current ELHE student. QSR N6, a qualitative data analysis software, was used to assist with data storage, coding and theme development. Codes were verified through intercoder agreement check and cross-thematic analysis.

The cases were selected from the 207 participants from the quantitative phase. These participants were divided into four groups.

- Group 1: students who completed 30 or fewer credit hours of course work (beginning group) ($n = 78$)
- Group 2: students who had completed more than 30 credit hours of course work (matriculated: $n = 78$)
- Group 3: former students who had graduated from the programme with the doctoral degree (graduated group) ($n = 26$)
- Group 4: former students who either had withdrawn or had been terminated from the programme or had been inactive during the last three terms (spring, fall, summer) before the survey administration (withdrawn/inactive group) ($n = 25$).

Case selection involved two stages. During the first stage, typical respondents in each participant group were identified first by calculating summed mean scores and their respective group mean score for all participants. This was followed by selecting those participants whose mean score was within one standard error of the mean. In the second stage, maximum variation strategy was used to select the "best informant" within each group. The process produced one male and three females.

In the quantitative phase of the study, five internal and external predictors (programme, online learning environment, student support services, faculty and self-motivation) of students' persistence in the programme were revealed. The multiple case study findings showed that "four reasons were pivotal: (1) quality of the program and other related academic experiences; (2) the very nature of the online learning environment; (3) support and assistance from different sources; and (4) student self-motivation" (121). Ivankova and Stick concluded by noting that quantitative and qualitative "findings highlighted the quality of the program and participants' academic experiences in it, the importance of student support infrastructure, and self-motivation to pursue the doctoral degree in the distributed learning environment" (121). In other words, the qualitative findings not only expanded on the themes/variables associated with the quantitative findings but also corroborated the quantitative findings.

Example Four: Roofe-Bowen, C. (2007) – *The Revised Primary Curriculum in Jamaican Primary Schools: Grade One Teachers' Levels of Use and Concerns*

Similar to Ivankova and Stick (2006), Roofe-Bowen (2007) in the Caribbean utilized an inductively driven MM-CSR design in her study that assessed the levels of use and concerns of implementers, specifically teachers, of the revised primary curriculum (RPC) in Jamaica (see figure 3). The RPC was introduced in Jamaica on a phased basis, starting with ninety-six public schools in September 1999. Roofe-Bowen used an explanatory sequential MMR design that involved the collection of quantitative data in the form of a survey among the ninety-six teachers. The results of the quantitative dataset were used to identify four teachers for CSR.

Roofe-Bowen's (2007) study was guided by the Concerns Based Adoption Model (CBAM), which has been used successfully over the years to assess the implementation of a new curricula programme. The CBAM model established categories for the levels of use: orientation, preparation, mechanical, routine, integration and refinement. Teachers' levels of use were self-reported using the quantitative survey. The quantitative data

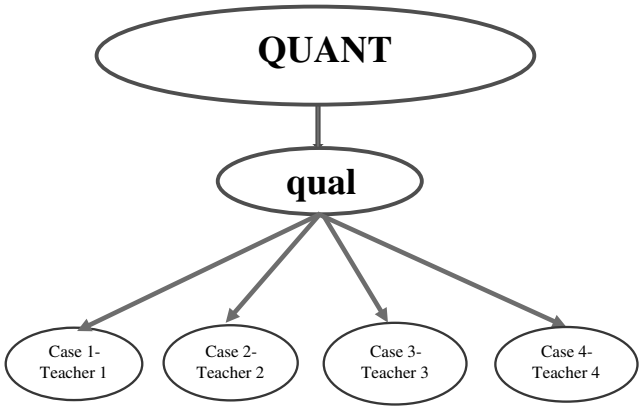

Figure 3: MM-CSR design used by Roofe-Bowen (2007)

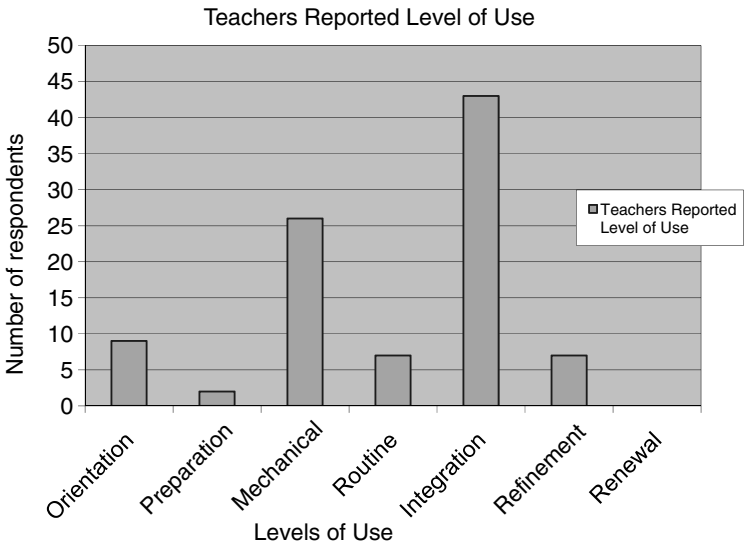

Figure 4: Graph showing levels of use of the RPC.
Source: Roofe-Bowen (2007, 128)

were used to analyse the distribution of the categories of the levels of use of the curriculum in primary schools (see figure 4).

The researcher selected two teachers from each of the two most frequently occurring levels of use for elaboration using CSR (two teachers who reported their level of use as predominantly mechanical and another two teachers who reported their level of use to be predominantly integration). The researcher used the results from the case study analysis to

confirm teachers' self-reported categorization of their levels of use of the RCP and to expand on the statistical results in phase two.

The case study observations by the researcher of the four teachers' classroom practices were matched with their responses on the self-report questionnaire to ascertain some validity to their responses on the quantitative measure. Roofe-Bowen noted that in some cases, there were no agreement between teachers' self-report and the researcher's observations of the teacher. Roofe-Bowen noted that there was a mismatch between the self-reported information and what was observed during the qualitative phase. The qualitative finding did not corroborate with the self-reported Level of Use, as indicated by the survey findings. The teachers in the survey reported operating at the Integration Level of Use, which is a high level of use of the curriculum. In contrast, they were observed as operating at the Mechanical Level of Use, which is a lower level of use. Also, the case studies were used to assist in finding out how four of the grade one teachers were using the RPC as well as to provide explanations that could not be assessed in the survey. This Caribbean study typified an instrumental case study in that within this research the cases explained in detail the levels of use and concerns of the four teachers.

Both the studies by Ivankova and Stick and Roofe-Bowen suggest that associated with the inductively driven approach to MM+CSR is instrumental case study enquiry. CSR in both examples were used to expand on the results of the quantitative phase. The qualitative findings were also used to give some validity to the quantitative findings.

Discussion

A comparative summary of the two designs (MM-CSR and CS-MMR) within MM+CSR (see table 2) highlights aspects of each design, using the four examples discussed earlier. These aspects are useful in understanding the practical application of MM+CSR and in guiding a researcher's decision in utilizing a deductively or inductively driven approach. This is particularly important in studying complex phenomena in education, and possibly other fields.

Using Stake's (1995) categorization of case studies, both examples (Ivankova and Stick 2006; Roofe-Bowen 2007) within the inductively driven approach utilized an instrumental case study inquiry in that the cases were tools for understanding the quantitative results. Kalloo et al. (2019) reported on an instrumental case study enquiry in the form of a

Table 2: Highlights of two mixed methods case study designs CS-MMR and MM-CSR.

Design	CS-MMR	MM-CSR
Approach	Deductively driven	Inductively driven
Rationalization for mixed methods case study design	Complex issue being investigated, e.g. faculty assessment processes and practices/GBL in STEM classrooms	Complex issue being investigated, e.g. student persistence in a doctoral programme/teacher implementation of a revised curriculum
Timing of mixed methods	Starts with the case study, embedded with mixed methods	Starts with mixed methods and cases are generated
Bound of case	Clearly defined boundary	Clearly defined boundary
Case identification	Case is purposively selected at the beginning	Case(s) are generated after the quantitative phase
Types of case	• Instrumental (Stake 1995)	• Instrumental (Stake 1995)
MMR Designs	• Convergent • Experimental/ intervention	Explanatory sequential
Timeframe	Longer because of complex design	Longer because of complex design
Resources	Team-based	Team-based or individual
Researcher skills	Integrative thinking mindset Adaptative practices – adding members to the team	Agility Adaptative practices – changing the bounds of the case

pilot study as a tool to provide methodological and procedural insights for a larger study of GBL in STEM primary schools.

In the deductively driven approach, researchers selected either a core design (Guetterman and Mitchell 2016) or a complex design (Kalloo et al. 2019) to embed within the case study. This suggests that there is flexibility on the part of the researcher to choose a CS-MMR design that suits the intent or purpose of the study. In the inductively driven approach, an explanatory sequential design was used in both examples, which suggests that this design was a good fit for the MM-CSR design.

We view MM+CSR (CS-MMR and MM-CSR) as a type of research approach that can tackle complex research problems. It is a type of advance design that can incorporate core mixed methods design, which

together justify the intersection between MMR and CSR. Several authors (Onwuegbuzie and Leech 2005; Shannon-Baker 2016) allude to MM+CSR as grounded in dialectical pluralism or pragmatism as these philosophical paradigms embrace multiple perspectives.

Pragmatism is a world view that is problem-centred and allows for a practical way of bringing together a research team that has a mix of researchers subscribing to different philosophical paradigms. In the example of GBL, researchers ascribed to paradigms that were either post-positivist or constructivist; however, the team of researchers was able to work together in combining qualitative and quantitative methods to answer the three types of research questions (quantitative, qualitative and mixed) to obtain a comprehensive understanding of the effects of GBL in mathematics and science in the participating primary school. While Roofe-Bowen did not explicitly identify a paradigm for her dissertation, she alluded to a duality of paradigmatic world views that guided the selection of methods for her study. These methods were from both the "scientific paradigm" and those that seek to understand human behaviour and action. According to Alise and Teddlie (2010), the prevalence of declaring paradigms explicitly among MMR practitioners was very low. In fact, "it is surprising that even in fields such as education, which showed a good mix of methodologies in the articles sampled so few make mention of the differing paradigmatic foundations of the various research methods being used" (Alise and Teddle 2010, 118).

In the case of GBL, the adaptive mixed methods design came about in the agility of procedures and capacity of the researchers to assimilate case study and MMR as one design (see figure 2). In addition, the researchers had to redesign the students' data collection instrument, which was a standardized instrument, when it was realized that students from the early childhood level had challenges in completing it. The challenge for the researchers was that prior to data collection, one instrument was designed to solicit data from students of all participating age groups. It was only when piloting the instrument that the researchers became cognizant that the instrument was unsuitable for early childhood learners. As such, the researchers sought the assistance of early childhood specialists in redesigning the instrument. The instrument was redesigned to accommodate the reading and writing levels and fine coordination skills of the five-year-old students. Poth (2018) suggests that "there is a need for agility in data procedures and for researchers willing and able to anticipate and adapt to the unexpected" (191). Roofe-Bowen demonstrated agility in her research process when she went outside the boundary of her case study with

teachers' use of the RCP as her unit of analysis. She collected data from principals, grade one coordinators and five students from each of the four participating schools, subsequent to collecting data from the teachers who participated in the multisite case study. According Roofe-Bowen, "this was done as a means of probing the level of support and collaboration within" each school (93). Sometimes, as Stake (1995) noted, it becomes necessary to venture outside the boundaries of the case when a complex issue is being researched to gain a holistic understanding of the case. The researchers adopted a complexity-sensitive approach to their respective studies and demonstrated an integrative thinking mindset that optimized their effort and skill. In that they did not have a linear approach to their research process but were adaptable to the demands of the research process. Kalloo et al. (2019) during the pilot study assessed the need to add an early childhood specialist to the research and Roofe-Bowen (2007) extended data collection beyond the boundaries of the case. Adaptive MMR requires an integrative thinking mindset that considers the expertise within the research team (Poth 2018, 75) and an added dynamic component by extending beyond the boundary of the case study to deepen understanding of a complex issue.

Conclusion

In this article, we have looked in detail at the intersection of mixed methods and CSR approaches that involved two clear designs, CS-MMR and MM-CSR. These designs are aligned to deductively driven and inductively driven approaches, respectively. Both designs were seen to have added value to understanding the complex phenomenon being studied in the four examples discussed earlier. MM+CSR designs have been used to aid an understanding of complex phenomena where the researchers in the four examples spent much time in the field gathering data from multiple perspectives or, in the latter case, where quantitative and qualitative data are deliberately combined to maximize understanding research issues. MM+CSR brought insights into and clarity regarding the researchers' understanding of the various issues. The researchers' agility and integrative mindset helped them not only to achieve their aims, but also to bring validity to the research process. We suggest that it is critical for researchers to be reflexive as they progress throughout a study, keeping in mind that MM+CSR is not linear. This nonlinearity, therefore, requires the researchers to do interim data analysis even as they are engaged in the data collection phase(s). Reflexivity allows for a sensitivity to the need for adjustment of various components of the research process. Complex designs such as MM+CSR can take longer than simpler

designs and may require a team-based approach to harness multiple skills that are often needed to address complexity. Though this paper addressed complex phenomena in education, the principles outlined within are transferable to other disciplines and fields.

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An Explanation of Students' Cognitive and Social Skills at the Early Childhood Level: The Influence of Family Involvement

Sharline Cole

The University of the West Indies, Mona Jamaica

Abstract

The family is the first agency of socialization, the primary caregiver and the first source of education for young children. This very important agent is indispensible to the process of maximizing the future well-being of children. Jamaica has a high percentage of single-parent-headed households, which in itself poses a challenge for effective parenting, necessary to ensuring positive psychosocial and educational outcomes. The support of the family is therefore critical to early childhood development. Epstein et al. (School, Family, and Community Partnerships: Your Handbook for Action (2002)) emphasize that the involvement of the family in children's education influences the social, behavioural and academic outcomes of students. This sequential explanatory research seeks to investigate the impact of family involvement on students' success at the early childhood level. A sample of two hundred and sixty parents completed questionnaires on parental and family involvement in the quantitative phase, while fifty-five participated in focus group discussions and interviews in the qualitative phase. The participants were drawn from all school types and locations representative of the Jamaican educational landscape. The findings of the study were as follows: (1) moderate family involvement, (2) correlation between students' cognitive and social skills, (3) the number of hours parents spend with their children daily and weekly predict the involvement of families, (4) the challenges of being a single parent require the support of the extended family, and (5) family members contribute to students' academic success by helping with homework and visiting the school for teacher–parent consultations in the absence of parents.

Keywords: cognitive and social skills; early childhood; family involvement; Jamaica.

Introduction

As Jamaica seeks to achieve Sustainable Developmental Goal 4 "Quality Education," consistent improvement in early childhood education is

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important and requires the participation of parents and their families in the education of their children. Jamaica has a culture of close-knit families in which children are supported by a network of extended families and close relatives. These close family networks contribute to children's socialization. Leo-Rhynie (1993) asserted that the family, which is the first agent of socialization, is the first place where learning begins. Children acquire language and some social skills and learn about their environment from their interactions within the family. The family serves as a protective factor for children as they transition through the education system. With single parenting being a common feature of many Jamaican families, the reduced social capital of many working class families and with more parents entering the work force, the support of the extended family is critical for children's growth and development.

Family involvement can be defined as family members helping parents to provide a supportive learning environment, in assisting with homework, participating in extracurricular activities and having direct school contact through visiting the children's classes. Henderson and Mapp (2002) reported that the term "family" includes parents, siblings, members of the extended family, individuals who are considered as close family friends and guardians who have a positive impact and contribute to the growth, development and education of children.

Berk (2010) states that

> within the family, children learn the language, skills and social and moral values of their culture. And at all ages people turn to the family member for information, assistance and pleasurable interactions. Warm gratifying family ties predict physical and psychological health throughout development. (59)

Ferguson (2011) as cited in the *Family and Community Engagement Research Compendium* stated that "increasing family involvement at the early grades predicts literacy achievement and, most importantly, is a stronger indicator for literacy development than family income, maternal level of education, and ethnicity" (37). Dearing et al. (2006) also concluded that family involvement reduces the achievement gap between children from high- and low-income families. The family is a protective factor that ensures the growth and development of children (Bronfenbrenner 1994). Very often, families that were not involved in their children's education at the early childhood and primary levels are more likely to experience difficulties with them in high school.

For the purpose of this paper, cognitive skills are operationalized as the ability to learn and problem solve, master the basic skills for motor coordination, visual perception and/or auditory perception, knowledge

of numbers and letters and inferential reasoning. In addition, social skills are behaviours learned that are socially acceptable and enable individuals to interact effectively with others through listening, following instructions, problem solving and avoiding socially unacceptable responses.

This research aimed to examine and explain the influences of family involvement on the cognitive and social skills of grade 1 students. Also, the research will identify ways in which family involvement contributes to grade 1 students' cognitive and social skills.

Theoretical Framework

Ecological Theory

The family as the primary source of socialization plays a critical role in how children navigate the different subsystems on their journey towards growth and development. Through socialization, children learn and develop cognitively and socially. According to the ecological theory, children's development is influenced by the interactions between and among multiple environments, namely the microsystem, mesosystem, exosystem and macrosystem. The direct interactions at home, between home and school, the subsequent interactions, and the influences of the different subsystems impact children's development (Vest Ettekal and Mahoney 2017).

Development is multifaceted and is affected by the different subsystems. Children's cognitive development and social development are influenced by the home, the environment and their interaction (Bronfenbrenner 1994). According to Urie Bronfenbrenner's ecological theory, children's development and experiences are influenced by different subsystems – micro, meso, exo and macro – where there is interaction and bidirectionality of influences. The innermost level is the microsystem, where different structures like parents and the family play critical roles in mediating children's development. At the micro level, the personal relationships that children have with family members, teachers and students have a significant impact on their future development (Ahuju, n.d). The family, school and significant others serve as protective factors as children navigate the social environment (Dodor, Sira, and Hausafus 2010). Therefore, the more nurturing and supporting the interactions are at the micro level, the more likely there will be improved growth and development (Vest Ettekal and Mahoney 2017).

The interactions between parents, family members, peers, school and community are important features of the mesosystem. In addition, there

should be some level of consistency within the different interactions for children to experience congruence in behaviour and attitude because what happens at home and in the community can influence children's outcomes. Parents are more likely to motivate children to achieve set tasks whenever the goals and norms of school and home are aligned (Vest Ettekal and Mahoney 2017). Sirin and Rice (2009) reported that if there is little interaction between home and school children are affected negatively when there is impoverishment in the mesosystem. Therefore, whatever is reinforced at home influences what treatments are meted out to children based on their environmental context.

The exosystem, to which family support is critical (Dunst 2011), speaks to the indirect influences of outside sources and includes members of the extended family, parents' workplaces and communities where children live. For example, the parents' work environment, which affects the parents, can impact children's experiences. Therefore, parental experiences and what children are exposed to can determine children's outcomes (Vest Ettekal and Mahoney 2017). This, therefore, suggests that parents' engagement in employment and the length of time away from home can have an effect on their level of involvement. Vest Ettekal and Mahoney (2017) reported that parents who have demanding jobs have less time to help their children. Such circumstances give rise to other family members taking over the role of parenting.

The macrosystem is the outermost part of the structure. It explains how the culture, norms and values of a society influence development – "The macrosystem influences development within and among all other systems and serves as a filter or lens through which an individual interprets future experiences" (Vest Ettekal and Mahoney 2017, 5). The family context is important in determining children's development. A family that experiences poverty will have different experiences from middle and upper class families. This undoubtedly influences the environment provided for children and the capacity of parents and family members to participate in children's education. The influences from the macrosystem, such as government and educational policies and environmental conflicts, affect individuals and if not dealt with appropriately affect involvement and student chances for success.

The changes in children's environment, such as changes in family structure, employment status of parents and where children live, notwithstanding the social welfare provided, impact children's overall school success (Vest Ettekal and Mahoney 2017). Therefore, parents who do not have the support of the family may find it challenging to

provide the best environment and educational opportunities for their children's growth and development.

Social Capital Theory

Coleman (1988) asserted that social capital is the network of support provided by families that contribute to children's learning and development. Social capital is instrumental in explaining the outcome of students based on the family situation and school relationships. Therefore, the resources of home and school and the social relationships that facilitate collective actions influence students' overall outcomes. The social capital of the family can include the quality and variety of the children's relationships with adults (Grant and Ray 2016) that promote the well-being of children.

Coleman, in Yan (1999) stated that in order to understand the involvement of parents, it is important to understand the types of social capital the family can provide or possess. There are three levels of social capital, namely financial, human and social. Financial capital refers to the level of income and wealth, human capital points to parental education and social capital is tied to social networks and the interaction between parents and children. Although all three are significant predictors in assessing parental involvement, "parents may still have educational aspirations for their children and support their educational pursuit" (Yan 1999, 6).

Coleman (1998) further explained social capital by stating that it functions as a mechanism to transfer the effects of families' human capital from parents to children. Parents with high social capital are perceived to be of high socioeconomic status and vice versa. Additionally, there is greater involvement with regard to social capital in families where both parents are present, more so than in single-parent families (Yan 1999).

The social capital theory explains that the family provides social capital for its members. Family support serves as a protective factor for families that struggle, thus reinforcing the social capital theory, which promotes the utilization of family members in the education of children. "For teachers, this means using all available resources within the student and family social network, such as extended family members" (Grant and Ray 2016, 50). Therefore, the families with the ability to access and provide key resources (social capital) for their children are more likely to have the skills and knowledge representing the norms and values to which educational systems tend to subscribe (cultural capital). This tends to give their children a head start in their education system.

Bourdieu (1986) in his theory of cultural capital and habitus states that "family plays an important role for an individual in acquiring cultural capital" (Bourdieu and Wacquant in Haung 2019, 46). The theory suggests that the values that the education system sets out to teach are usually the values of the middle and upper classes. Children born in in working class families may have little or no social capital, which may put them at a disadvantage in the education system (Bourdieu 1986). Therefore, family involvement in their children's education is not the only predictor of students' outcome but also the culture in which schools operate (Dumais 2015).

Cultural capital proposed by Bourdieu (1986) can further explain how family involvement is viewed by schools. Some families' ability to provide the necessary resources for children differs. Schools consistently promote the values of the middle and upper classes. Some families cannot always live up to the financial and social expectations of the schools their children attend. These expectations may have a chilling effect on some families and may affect the extent to which they participate in school activities. This in turn may affect the children negatively.

The materials produced, presented and disseminated at school are of the dominant culture. The cultural resources of students from low and working class families are at most times inadequate for them to compete with their middle and upper class peers; they are more likely to drop out of school before graduation. Students from poor and working class families dropping out of school further perpetuate the social stratification. Students with social capital have more control and are able to navigate and negotiate the changing environment with greater success. (Dumais 2015; Haung 2019).

Bourdieu (1986) contends that the success of some students from poor and working class families did not necessarily change their social status. Although many people from the lower classes worked and achieved social capital, it is still considered different from the cultural capital of the middle and upper classes. This is because cultural capital is thought to come naturally to children who are born in middle and upper class families. Having social capital is also associated with strong social networks, which can lead to economic success (Haung 2019). Dumais (2015) suggests that students from poor and working class families who excel academically are likely to have scholarly capital, but they are less likely to navigate the systems developed by the middle and upper classes.

Compulsory primary and secondary education keeps more students in school. However, as a result of the social and cultural capital of the ruling classes and how the education system is structured there is inequality in

the performance and accomplishments of students from different social classes (Bourdieu 1986). Leo-Rhynie (1993) was concerned that the quality of education being offered in Jamaica differed for children attending preparatory or private schools and those attending public schools. This therefore suggests that the ones whose families can afford preparatory or private schools are at an advantage.

The Overlapping Spheres of Influence

Joyce Epstein (1987) theorized parental involvement as the relationship between the family, the school and the community. Children are more likely to remain in school and do well academically when they feel secure and are motivated to work hard (Petrović, n.d.). Children who experience encouragement from the home, community and school are more likely to do well in school, as espoused by Epstein's (1994) framework that connects the family, school and community through six types of activities: parenting, communicating, volunteering, learning at home, decision-making and collaborating with the community.

Parenting ensures that the family provides a home that is safe and healthy for children, where learning and positive behaviours are encouraged. Schools also promote effective parenting by providing parents with training and information that will facilitate children's positive growth and development (Epstein et al. 2002). In addition, the support and guidance to parents from teachers facilitate children's learning at home, where parents help their children with homework and other school-related activities.

In order to encourage students' success, the school should communicate with the families about the progress of their children. Therefore, schools should take into consideration the circumstances of the parents and use appropriate approaches to reach them. It is also important for parents and families to communicate with the school about the concerns that they may have with regard to their children (Epstein 1994).

Volunteerism at school contributes to students' overall success, and improved academic and behavioural success (Henderson and Mapp 2002). Epstein asserts that parents make significant contributions to their children's education and overall school success through volunteerism. Through volunteerism, schools are aware of parents' skills and competencies and may select them to be participants in the decision-making process. Epstein argued that schools should provide opportunities for parents and families to have significant roles in the decision-making process and encourage others who may not have the time to participate.

When there is close collaboration between parents, families, communities and schools, their children do better in school, are less likely to drop out of school and are more likely to go unto tertiary-level education (Van Roekel 2008). When schools, families and community organizations collaborate, students' achievements improve (Carter 2002). Therefore, schools should collaborate with the community and the different stakeholders in strengthening the different programmes that will lead to school success and empower families to help their children (Epstein 1994; Epstein and Sanders 2000).

When families are involved in children's education in the early grades, there are positive outcomes in literacy. In addition, family engagement influences students' outcomes when compared with the educational levels of mothers and family income (Ferguson, 2011 in *Family and Community Engagement Research Compendium*). In addition, Ball (2006) asserted that effective family engagement contributes to improvement in children's social skills, behaviour and academic performance. Children's cognitive, social and emotional development are enhanced when there is early family involvement and positive interaction with teachers who support students' overall development and achievement (Morrison, Storey, and Zhang 2011).

This study is guided by the following research questions:

1. Is there a relationship between family involvement and the cognitive and social skills of grade 1 students?
2. Does family involvement predict the cognitive and social skills of grade 1 students?
3. What are the experiences of family involvement in the development of cognitive and social skills of grade 1 students?
4. In what ways does family involvement contribute to the cognitive and social skills of grade 1 students?

Cognitive Skills

The development of children's cognitive skills is a result of interaction with the family and the mediating forces in the society (Hetherington and Parke 1999). Being raised in a home that provides the children with rich experiences contributes to the development of cognitive skills linked to students' academic outcomes (Piaget 1972, 1990; Vygotsky 1986). Children are considered impressionable and the scaffolding that they receive significantly influences their cognitive outcomes (Hetherington and Parke 1999). According to Vygotsky and Bruner, children can learn

anything at any age, which points to the interaction of the different influences at home, in the community, at school and the reciprocal impact of the different subsystems. Therefore, children's cognitive development should be contextually understood based on the experiences in the family and the influences of the community.

Welch et al. (2010) in their study of Head Start programmes found that growth in general cognitive skills was reflected in mathematics and literacy at the kindergarten level. Powell et al. (2012) in their research reported that having a stimulating environment with enriching out-of-home experiences contributes to improved mathematics skills. In addition, they found that at the end of the first grade while there were improvements in the mathematics skills of students, there were no improvements in the reading and language skills with improved parental involvement. This finding was different from what was hypothesized because of their general assertion that parents and family members are more likely to focus on literacy development than on mathematics skills. This assumption is also reflective of Jamaica's earlier policy directive that mastery in the grade 4 literacy test qualifies students to sit for their grade 6 examination but does not emphasize numeracy. Therefore, families and schools are more likely to spend more time on literacy than on numeracy.

Social Skills

Children's learning is socially mediated. Their primary agents of socialization, namely the family, peers and teachers, are important in the development of their social skills (Goswami 2015). The National Association of School Physiologist (2001) stated that for children to be successful in life they need to have the necessary social skills. In addition, children with good social skills do better academically and are able to maintain and establish positive relationships (Sharma, Goswami, and Gubta 2016). Students who develop the necessary social skills are able to navigate the environment, are resilient when faced with challenges, utilize safe ways of expressing frustration and aggression, and take personal responsibility (The National Association of School Physiologist 2001). Emotional self-regulation is an important feature in the development of social skills, which is learned from adults. Therefore, children tend to copy the behaviours of parents and family members who lack anger management skills (Foscol and Grych 2012).

An important aspect of social skills in young children is the development of empathy. Children's earlier experiences, for example the interactions at

home with family members, have significant impact on the development of empathy (Wang and Wang 2015). Therefore, "children who are sociable, assertive and good at regulating emotion are more likely to help, share, and comfort others in distress. But poor emotion regulators less often display sympathetic concern and prosocial behavior" (Bengtsson; Eisenberg et al., in Berk 2010, 261).

Family Involvement: Time Spent with Children on Their Cognitive and Social Skills

According to Ball (2006), improved social, behavioural and academic outcomes are the result of effective family involvement. Vygotsky (1986) through his sociocultural theory asserted that the social interactions children have with their family members influence their cognitive development. "Programs and interventions that engage families in supporting their children's learning at home are linked to higher student achievement" (Henderson and Mapp 2002, 25). Carter (2002) found that when families are involved there is a positive impact on students' outcomes from the elementary level to the secondary level. In addition, the involvement at home had more of an impact on students' outcome than involvement in school activities. Therefore, the quality time spent with children at home contributes to their social and cognitive outcomes.

"Time" may be defined as the amount of time parents spend with their children (Cooksey and Fondell 1996). For a better understanding of this construct, one needs to refer to the social capital theory. This theory explains that the family provides social capital for its members. The time and effort that parents spend on their children are of great importance to their development (Parcel & Menaghan, cited in Cooksey and Fondell 1996). The kind of relationship between parents and their children will not be strong if parents are uninvolved or absent.

Ainsworth and Bowlby (1991) suggested that the quality of the time parents and family members spend with their children influences attachment. Therefore, quality time and what is done during that time determine if a child is secure, insecure, ambivalent or disorganized in their attachment style. Milkie, Nomaguchi, and Denny (2015) reported that the amount of time mothers spend with their children influences the children's social, emotional and academic outcome. Interestingly, the time to spend with children may be problematic because of work-related commitments. Therefore, Speights, Grubbs, and Rubin (2017) found that the autonomy of parents with regard to their work schedule significantly

impacts the quality time spent with their children. Furthermore, an increase in the hours worked contributes to a reduction in the amount of time parents can spend with their children.

Heinrich's (2014) review found that parent–child bonding is negatively impacted when parents work long hours, more so among young children. Limited or inconsistent parenting and supervision as a result of less time spent with children contribute to an increase in children's participation in risky behaviours. In addition, the quality of time and how the time is spent with the children are very important. Heinrich (2014) highlighted researches that found a positive impact on children's early development with the investment of time. Even if parents are highly educated and economically well off, if they do not spend enough time with their children the outcomes are likely to be poor. There are more benefits for children when parents with higher levels of education spend quality time with them.

Cano, Perales, and Baxter (2018) found that mothers spent more time with their children than the fathers even in households where both parents lived. Brown et al. (2011) factored in an important variable of father and mother involvement based on workdays and non-workdays in relation to time spent with children. The role of fathers was highlighted as being that of breadwinner, where it is expected that the father's time should be spent on maintaining financial stability. This has implications for time spent with their children as they are expected to work long hours. Research reviewed by Choi (2010) identified a negative association between the parenting of nonresidential fathers and the cognitive development and behaviour of children. When nonresidential fathers are uninvolved, there is an increase in children's behavioural problems.

Methods

Research Design

The research employed a sequential explanatory mixed methods design that utilized two phases to integrate quantitative and qualitative data where the quantitative phase is dominant. According to Shea and Onwuegbuzie (2008), in a sequential explanatory mixed design where the quantitative phase is dominant, the data are first collected quantitatively, followed by qualitative data collection. The qualitative data explain and clarify the quantitative findings. For sequential explanatory methods, the approaches to data collection are clearly defined.

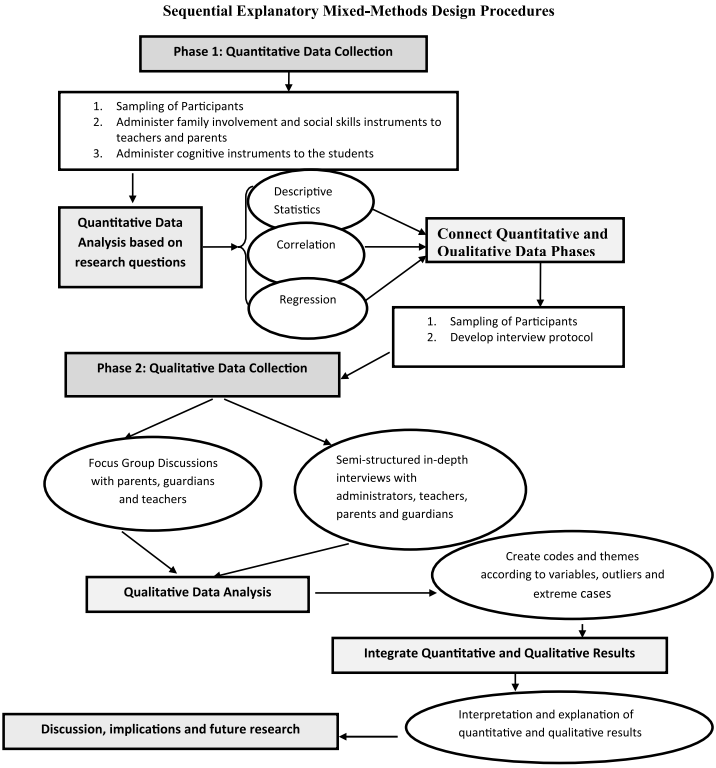

Figure 1: Sequential Explanatory Mixed- Methods Design Procedures (Adapted from Ivankova, Creswell, & Stick 2006 in Cole, 2013)

The quantitative data are collected first, followed by the qualitative data. This approach was the appropriate method to conduct correlational analysis of the study variables and to provide insights for the qualitative phase (see figure 1).

Participants

For the quantitative phase, data were collected from six primary, four preparatory and three special needs schools at the grade 1 level. For the six primary schools, there were equal representations of two urban, inner city and rural locations. The preparatory schools accounted for rural (2) and urban (2) locations as well. The special needs schools were one school for the blind that enrols students from across Jamaica and two schools for the deaf, which were located in rural and urban locations.

Criterion sampling was used to select 34 grade 1 teachers. Grade 1 teachers were selected to complete the questionnaires on family involvement and social skills because they had a certain depth of knowledge about the students and their families. The teachers had some insights into the students' cognitive skills based on their knowledge and experience in administering the Grade One Individual Learning Profile (GOILP). The GOILP is a diagnostic assessment administered to all grade 1 students at entry to grade 1. The assessment is used to determine the level of readiness of the students for grade 1.

The parent and guardian sample of two hundred and sixty was selected using consecutive sampling. Consecutive sampling is a nonprobability sampling approach that provides the best representation of the population because all accessible participants are selected (Explorable.com, 2009, Student Learning Centre 2013) and it reduces sampling bias (Thewes et al. 2018). This method is a good approach when there is sufficient time for the sampling period (Polit, Beck, and Hungler 2001). Parents and guardians were matched with their children from grade 1 (general and special education schools) based on their consent to participate and to allow their children to be participants. The sample for the qualitative phase was stratified based on the significance of findings from the quantitative analysis, representativeness of the sample, the school types and parents' and guardians' consent to participate in the qualitative phase. After this stratification, forty-nine parents were purposively selected from five of the ten "regular" schools and six from the three "special needs" schools to participate in the focus group and individual interviews.

The qualitative phase utilized stratified purposive sampling to select fifty-five parents and criterion sampling to select seventeen teachers and eight principals. The parents and guardians were stratified according to school types, gender of children, age and gender of parents/guardian. After stratification was done, forty-nine parents were purposively selected from five of the ten "regular" schools and six from the three "special needs" schools. The selection was based on the representativeness of the sample.

Instruments

The instruments that were used to collect the data included results of an assessment of students' cognitive skills, surveys on students' social skills, parents' and guardians' reports on family involvement and interviews. For the quantitative phase, questionnaires were developed and adapted

to collect data on students' cognitive skills, social skills, and parents' and teachers' reports of family involvement, while for the qualitative phase, protocols were developed for individual and focus group interviews.

Cognitive Skill Assessment

This assessment was developed based on the constructs measured by the GOILP in association with the Grade One Integrated Curriculum and the Jamaica Early Childhood Education Guide. The instrument was developed with the expertise of a school psychologist, an educational psychologist, a literacy specialist, early childhood educators and special education teachers specializing in auditory and visual impairment. The instrument covered gross and fine motor skills, reading, writing, number concepts, verbal language, comprehension and visual spatial thinking. The instrument's reliability was 0.77.

Social Skill Assessment

This instrument, developed by Goldstein and Pollock (1988), measured the students' social skills with a Cronbach's alpha of 0.97 and consisted of twenty-three items each with a six-point Likert scale response which ranged from "very poor" at this skill to "exhibits this skill better than others." Parents, guardians and teachers completed the social skill assessment.

Family Involvement

The instrument on family involvement developed by Hoover-Dempsey and Sandler (1997) examined how often someone in the family was involved or engaged in particular activities with the children. Parents and guardians were asked to report on the engagement of family members in different activities related to the children's education. The activities included helping at home, visiting and volunteering at school. The instrument has a total of ten questions on a six-point Likert scale response, which is considered reliable with a Cronbach's alpha of 0.80. The responses were 1 – never; 2 – one or two times this year; 3 – four or five times this year; 4 – once a week; 5 – a few times a week; and 6 – daily.

Interviews

The use of interviews allowed for a higher response rate and provided some protection against confusion when asking and interpreting questions. The researcher was able to observe the respondents while they

were responding to the questions (Babbie 2004). In exploring the participants' experiences of family involvement, there was opportunity to probe and delve deeper into the responses and opinions of the respondents' as they freely expressed their thoughts, feelings, beliefs, practices and attitudes. The interviews were semi-structured and open-ended to allow respondents to "talk freely about their points of view" (Bogdan and Biklen 2003, 96). Individual interviews were conducted with the principals, teachers of the preparatory and special needs schools and parents with children attending the school for the blind and the rural school for the deaf. The focus group interviews were conducted with the teachers and parents from the primary schools (rural, urban, inner city) and the urban school for the deaf.

Procedure

Ethical guidelines were maintained to protect the participants from harm and to ensure their right to withdraw from the research if they wished. Confidentiality was maintained as the participants were told that their names and the school that their children attended would not be reported. Anonymity was ensured by using ID numbers instead of the names of the participants for the quantitative data entry. The parents' and teachers' questionnaires were matched with each child, after which an ID number was used for each student in the data entry. No names were used; instead a letter or pseudonym was assigned to the participants in reporting the qualitative data. Permission was sought and granted from the respective publishers to use particular texts and pictures from their publications.

After consent was provided, grade 1 teachers, parents and guardians completed questionnaires on family involvement and students' social skills, while the students participated in the cognitive skill assessment. Following the analysis of the quantitative data, interviews were conducted with principals and teachers and focus group interviews were held with parents, guardians and teachers.

The individual and focus group interviews were typed verbatim and member checks were done to ascertain the authenticity of the transcripts. Manual codes were developed and then topic codes were developed, followed by themes reflective of all the similar codes.

Results

Quantitative Analysis

Family involvement was considered moderate and accounted for 87 per cent, while students' social skills were considered moderate to high from

teachers and parents. Parents reported 51 per cent and teachers 54 per cent moderate social skills, while 45 per cent of the parents and 43 per cent of the teachers reported high social skills. Cognitive skills were found to range from moderate to high, registering 60 per cent under high and 36 per cent under moderate. The data also revealed that 44 per cent of the students lived in single-parent, female-headed households, 26 per cent in common law unions while 25 per cent lived with parents who were married, 3 per cent in other family types and 2 per cent in families with visiting relationships. The average hours spent with children daily were 48 per cent spent two hours and less, 29 per cent spent three to five hours, and 23 per cent spent five and more hours. For the number of hours spent with children weekly, 27 per cent spent fourteen hours and less while 73 per cent spent twenty-nine hours and more.

Relationship Between Family Involvement and the Cognitive and Social Skills of Grade 1 Students

There was no significant relationship between family involvement and students' cognitive and social skills. There was however a positive moderate relationship between grade 1 students and teachers' report of students' social skills ($r = 0.454$, $p < .01$). This suggests that as students' cognitive skills improve, so do their social skills.

The Extent to which Family Involvement Predicts the Cognitive and Social Skills of Grade 1 Students

A multiple regression was carried out to investigate whether or not family involvement predicted the cognitive and social skills of the students. The results revealed that family involvement did not predict the cognitive and social skills of grade 1 students. However, time spent daily and weekly with the children predicted family involvement and students' social skills.

The results of the regression analysis suggest that 7.8 per cent explained the variance in family involvement $F\ (2,\ 93) = 3.913$, $p < .05$. This suggests that the number of hours spent daily ($\beta = 1.115$, $p < .05$) and weekly ($\beta = -0.116$, $p < .05$) predicted the involvement of family members. The data therefore suggest that on a daily basis, family members are more involved but as time progresses their involvement decreases. Family members are therefore more likely to be involved at the initial stage (for a day) in the children's education. However, as family members spend more time with the children, their involvement declines.

The time family members spend with children predicted their social skills. The results of the regression analysis suggest that time spent with children predicted 11.2 per cent of the variability in parents' and guardians' report of children's social skills $F(2, 125) = 7.733$, $p < .05$). This suggests that the number of hours spent daily ($\beta = -0.536$, $p < .05$) and weekly ($\beta = 0.707$, $p < .001$) predicted the social skills of the children. The data therefore suggest that there is improvement in social skills when more time (weekly) is spent with children than less time (daily).

Qualitative Analysis

The Experiences of Family Involvement

In exploring the experiences of family involvement in developing the cognitive and social skills of students, the following themes were identified: The family is supportive in developing their children's cognitive and social skills, the knowledge and skills that parents and family members bring to helping children and how work-related challenges influence the quality of involvement.

The family is considered to be supportive in all family structures. Members of the extended family and siblings have significant influence in helping children at home. Parents reported that the extended family is very supportive because they ensure that homework is completed, they sometimes visit schools on behalf of the parents and they volunteer at the children's schools because the parents have to work. One parent with a child at the urban school stated that her father helps when she is not there because "most times he sits in, do what I cannot do." Another parent whose child attended the rural primary school reported that

> I leave before five and leave him with his aunt and uncle. Whenever he gets homework his uncle and sister will help him. Another parent said that her "niece helps them with homework, so whenever I reach home the children are able to say that they have completed their homework."

In addition a parent from the urban preparatory school stated that "The other family members, aunt, uncle, grandma, everybody is involved. You know everybody chips-in."

The teachers reported that they found members of the extended families were very supportive because they provided strong family support and paid close attention to homework. A teacher from the urban school stated that parents "can depend on the family that they are living with, if they are living in an extended family they can ask the sister, aunt or uncle to come in and sit in for them." Additionally, the teacher from the urban

preparatory school said, "I can see children with strong family background performing, what I found was that the aunts help." The teachers of the urban school however reported that some of the children are at risk for low academic achievement and that they display poor social skills. The teachers think that these shortcomings are related to poor socialization the students receive from their families. They link this to family experiences and the family discord that some students experience.

From the principals' perspective, the support of the extended family was manifested in helping with homework at home and general support from other family members. The principal from the rural school stated that in many single-parent families other siblings often step in to provide support; she said, "The bigger ones help the smaller ones so that the child is at an advantage." In addition, the extended family was identified as being supportive of children's education. The principal of the urban preparatory school also stated that "They have a grandfather or an uncle that is very involved in their life."

The principal from the Urban Primary School explained:

> the extended family was good for some of the parents in parental involvement, because when the children have to do homework and they have the extended family, there was somebody there to oversee the children to see that the homework is done.

Sometimes when a member of the extended family is the person visiting the school on behalf of a parent, accurate information concerning events at school may not be passed on in a timely manner to the parent. This means that sometimes parents who are not able to personally make visits to schools get a distorted picture of what is really happening at school. For example, the principal from the rural school described a particular situation, saying the following:

> A student who was reprimanded for his behaviour and the parents were called, but the grandmother came in and reported that the parents were oversees because this boy knows that he can't go around his parents so his grandmother is the one that he can play around and so he gave his grandmother the letter because he does not want his parent to know about his unacceptable behaviour.

Parents and family members who have the necessary knowledge and skills in helping their children contribute to improved cognitive and social skills. Parents, teachers and principals reported that parents who are interested in their children's education seek the necessary knowledge and skills in helping them. One parent from the rural school for the deaf

stated that the family makes an effort to learn sign language. Whenever the school has sign language classes, at least one available member of the family attends the training. In addition, they learn from their children and they use the sign language dictionary online. The parents of children attending the school for the blind shared a similar experience. However, because they live far from the school, it is difficult to attend all the training sessions. Whenever they practise what they learn at the sessions that they are able to attend, it helps them to understand their children. One parent reported that "Now I start to go out to workshops and so I learn how to help my children."

For the parents whose children attend "regular" primary schools, they reported that children whose parents and family members know how to help the children with homework and facilitate positive interactions with the children are likely to do better academically and socially.

The principals reported that they facilitate training through workshops and outreach programmes for parents who need to know how to help their children. The principals of the urban, inner city and rural primary schools reported that they have training for families each term addressing the different needs of the students. In these sessions, the parents learn how to work with their children at the different levels. The rural preparatory school reported, "I started a writer's club based on the writing skill of the children and it's the parents who are involved in it."

The teachers' responses were similar to those of the principals. They reported that families who are knowledgeable and seek to learn about how to help their children are likely to raise children with improved cognitive and social skills. Although they share similar views, they were of the opinion that the education of the family members influences their capability for helping. One teacher of the urban primary school stated that "If the family was academically inclined, the child would develop cognitive skills at a faster rate."

Teachers also reported that the manner in which they approach parents and family members helps to determine whether or not the parents and family members will respond positively. One of the teachers from the urban primary school stated that

> I would try to be open with them, so if you don't understand come and ask me don't be afraid, and I give them a time when they can come in, I make sure that I don't speak down to them in anyway where they will be afraid, they will always feel welcome.

On the other hand, although family members seek to be involved and are able to help their children academically and socially, the responsibility of parenting rests on the parents. A teacher reported that

> sometimes you have brothers and sisters who keep coming for the children., whenever the child is giving any problem I don't tell the sister because its pressuring her. I just tell her to tell her mother. I want to see her and if I don't get her to come in, I will call the mother. I don't tell the child what the problem is because it frustrates them and I don't like that.

The urban preparatory school teacher reported that

> Some parents really don't have the time and then there is no one there to monitor the children so they are basically left on their own and the other side from that some really don't know how to help them they don't have the experience or the knowledge and they don't have support, support in the sense of family members

Families are involved; however, work-related challenges influence the quality of involvement. One parent reported that her workplace is an extension of school and home for her child learning the appropriate social skills. She stated

> I come for Mark* and he is at my workplace after school, my staff members are there and if he doesn't say good afternoon the boss will say Mark* you need to say good afternoon and if he calls you by your first name the boss will say you need to say Aunty Primrose, so it's not me alone is involved, people at my work place are also involved.

Not all single parents have the support of the extended family. One reason provided by the parents is that the other family members have to work and they are sometimes very busy or they sometimes do not have the energy level to keep up with the children. One parent from the rural preparatory school stated that

> the children are hyperactive, grandparents in younger days could do it but now they cannot run up and down behind a child, so when they take care of them today the can't do it tomorrow as it is very stressful for them, even on parents when you have to run up and down.

In addition, a teacher from the urban primary school suggested that "the child is not really close to the family member because doing something for your niece and nephew should not be frustrating unless the child is not behaving." Additionally, in some instances the family is busy and requires the involvement of others. Another teacher from the urban primary school stated that "the helper looks after the children and checks homework." Involvement is multifaceted and therefore positive interactions between family members and children would contribute to their cognitive and social outcomes.

Integration of Quantitative and Qualitative Results: Ways in which Family Involvement Contributes to the Cognitive and Social Skills of Grade 1 Students

Family involvement was reported to be moderate, accounting for 87 per cent, and most parents viewed family involvement as an important factor in children's development. This is associated with parents' experiences of family involvement where families are supportive and are willing to help the children at home. Family involvement had no significant relationship with the students' cognitive and social skills, so family members are involved. The family ensured that the appropriate academic and social skills are promoted through assisting with homework, involvement in school-related activities through volunteering, and reinforcing positive behaviours.

Students' cognitive and social skills are influenced by the knowledge and skills of the family. Families that receive appropriate training offered by the respective schools contribute to their children's success. Children's cognitive and social skills are impacted by the work-related obligations of their parents and families and the increased reliance on others to work with children at home.

It was found that the quality of involvement of family members when they spend less time with the children contributed to higher social skills in the children. It was found that conversely the more time they spent with the children the positive effect seemed to diminish. Some parents as a result of the economic and social challenges nonetheless have to rely on family members to help with their children. However, the family members and extended family also have other work commitments and sometimes the people who are asked to help may not know how to help and may be frustrated with being asked to help regularly. They may also be distracted by their own concerns. Although responsibilities are shared in the family, there are cases where a particular family member may not want the responsibility of caring for children when parents are unavailable.

Discussion

Family involvement serves as a protective factor for children (Berk 2010; Bronfenbrenner 1994; Dodor et al. 2010; Grant and Ray 2016). As children develop cognitively in a supportive environment, they learn from others (Vygotsky 1986) like their teachers, families and peers and are physiologically ready (Piaget 1990) to learn particular skills that would

make them ready for grade 1. This is evident in the findings that the cognitive skills of students are related to their social skills. According to the findings, as cognitive skills increase so do social skills. This is consistent with Vygotsky's (1986) social constructivist theory that learning is a social process, which makes social skills an important feature of school success. In addition, good social skills are associated with better academic outcomes (Sharma, Goswami, and Gubta 2016). Furthermore, being raised in an enriching home environment contributes to children's success (Hetherington and Parke 1999; Powell et al. 2012).

Children learn different types of social skills at home and in the immediate environment through observational learning and the microsystem providing the framework for their development. The findings reinforce the bidirectional development and the influence of children and parents on each other based on ecological theory (Berk 2010). Although in this research family involvement is not associated with the social and cognitive skills of students, it is considered as a being additional support for some parents. This suggests that the social capital (Coleman 1988) of the family influences children's outcomes, which means that the involvement of family members is of great importance. The support of the extended family is critical as this can make or break the support provided by the microsystem. Whenever the microsystem is adversely affected, the children's development and how parents are involved are compromised (Bronfenbrenner 1994).

Ainsworth and Bowlby (1991) highlighted the importance of time spent with children and attachment styles. The data suggest that there is a decrease in social skills as family members spend more time with children. Social behaviour is learned through social learning, which implies that the more time children spend with their parents and family members over an extended period of time, the more they pay attention to, retain and exhibit the behaviours observed. Foscol and Grynch (2012) highlighted that children can copy the negative behaviours of their parents and family members.

The extended family provides the necessary support that a single parent may not be able to provide. Parents and guardians who spend more time with their children on a weekly basis are more likely to have children with improved social skills; this is consistent with the findings of Milkie, Nomaguchi, and Denny (2015). However, family involvement declines when more time is spent with children, thus suggesting that, on a daily basis, family members are more involved but as time progresses their involvement decreases. Family members are more likely to be involved at the initial stages in the child's education. However,

as family members spend more time with the children, their involvement declines. Although the quality of the relationship between children and family members impacts the social capital, families who have competing demands, limited finances, limited knowledge and skills in how to help children can negatively impact the quality of time spent with children (Coleman 1988; Grant and Ray 2016).

Parents and guardians generally do not want to leave their children with family members because they consider it their duty and responsibility to nurture their children themselves. However, because of the economic and social challenges, some parents may ask family members to help in taking care of their children. They spend less time with their children, as pointed out by Cano, Perales, and Baxter (2018) and Brown et al. (2011), because of work commitments. As the family seeks to provide the social capital (Coleman 1988), it is sometimes difficult to do so because of the demands of the exosystem. The findings of Vest Ettekal and Mahoney (2017) suggest that the length of time spent engaged at work negatively impacts children's outcomes. As a result of work commitments and other factors, the support from other family members and the extended family is very important. Having the support of the family benefits working parents because according to Heinrich (2014) longer work hours of parents negatively impact upon opportunities for bonding. In addition, the extended family may have individuals with different skills that can help the child to develop. Therefore, the help of the family members provides the necessary support that children need when parents are absent.

These findings reflect the importance of learning at home, as proposed by Epstein (1994). The imperative for children learning at home adds greater importance to the idea of all family members helping where it is not possible for parents to be present all the time. Epstein (1994) and Henderson and Mapp (2002) highlighted the benefit of voluntarism to students' education and agree with Van Roeke (2008) that when it is evident that family members are working together in ensuring the success of children, they will get involved and volunteer.

In addition to volunteerism, other members of families may visit schools to represent parents when they cannot attend. Consistent with Epstein's (1994) model, including a child's family in the decision-making process contributes to their success at school. When families are involved in the decision-making process, the interaction between teachers and family members is positive and contributes to students' improved outcomes.

When parents are absent, the responsibility of child care is sometimes given to the older sibling, which may result in the older sibling feeling

overburdened. If parents make a habit of leaving their children with older siblings and family members, the family members and siblings may start losing interest in helping with the children. Furthermore, some family members may not want to be burdened with child care for extended periods because they also have their personal responsibilities and obligations. In addition, some family members may not want to help because some parents take advantage of their willingness to help with their younger siblings and family members.

Conclusion

Parenting and learning at home are important (Epstein 1994); therefore, the more family members participate in caring for the children, the greater the benefit to the children. This creates a healthy family identity through proper monitoring of children. The continued effort of family members in helping with homework contributes to positive academic outcomes. The quality of the time spent is more important than the amount of time spent as the positive interaction and family–child bonding engender resilience and adaptability of children in school.

Because of the family situation in Jamaica, where there is a higher percentage of single-parent families as against nuclear families, the support of the family is important, as explained by the social capital theory. Members of the extended family should be aware of the impact of the quality of their involvement on children's outcomes and be willing to embrace the role of caregiver for children or siblings when asked to assist. Therefore, family members who may not be enthusiastic about helping may be more willing to keep an eye on children who can work on their assignment on a technological device or prescribed texts with a degree of independence.

The collaboration between the home and the school is important for students' success. Therefore, consistent teaching and modelling of the appropriate social skills over time are expected to produce appropriate behaviours. The schools should understand the circumstances of the students and their families and seek to collaborate with families in supporting students' cognitive and social development.

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Tourism and Hospitality Internships in Barbados: Students' Perspectives

Gwendolyn Medford

Abstract

The primary purpose of a tertiary educational institution (the College) in Barbados is to train potential workers for the tourism and hospitality industry. This is accomplished in part through internships. The purpose of this study was to examine, from the students' perspectives, the winter internships organized by the College at multiple placement sites on the island. A convergent mixed methods design was employed to conduct the research. Both quantitative and qualitative data were collected concurrently using the methods of surveying, interviewing and document analysis to provide comprehensive information for the three research questions which were used to investigate the phenomenon. Analysis, interpretation and merging of the quantitative and qualitative data yielded some interesting results. Major findings in the study were that overall the students' expectations of the internships were realized. There was a significant relationship found between the quality and satisfaction of the student internship; however, some misalignment existed pointedly in one of the associate degree programme specializations.

Keywords: Barbados; tourism/hospitality; tertiary educational institution; internship; mixed methods research design; pragmatism; internship quality.

Introduction

The tourism/hospitality industry is an intensely service-oriented industry. This means that it relies heavily on people in its production, delivery and success (Christou 2002). It is one of the largest employers in the world because it is heavily dependent on human resources. This is particularly true for the small island state of Barbados, which depends heavily on tourism as a major economic earner. For this country, the travel and tourism industry's contribution to total employment was almost 41 per cent of the total employment for 2017 (WTTC 2018).

Caribbean Journal of Mixed Methods Research 1, 1 (2020): 105–133

For educational institutions offering programmes to twenty-first-century learners, the prospect for developing life and career skills has become a necessary aspect of any academic discipline. Therefore, the practice of providing students with authentic opportunities and experience in a real-world working environment, through internships, has become customary. The importance of internships is globally recognized (Tse 2010; Cho 2006; Walo 2001) in all fields, including tourism and hospitality.

There are multiple definitions and descriptions for the term "internship", which include "experiential education", "experiential learning", "work experience", "practical experience", "industrial training", "industrial attachment", "a bridge" and "supervised work experience" (Beggs, Ross, and Goodwin 2008; Kuh 2002; Tse 2010; Sharma, O'Reilly, and Salvaris 2005; Collins 2002; Maertz Jr, Stoeberl, and Marks, 2014; Critchlow-Earle and Dahl 2013). However, the term "internship" will be operationalized in this study as the supervised work experience conducted by internship supervisors and experienced by students, in an authentic real-world environment. The overall aim of the mixed methods study was to examine the students' perceptions of their internship experiences within the tourism/hospitality industry and whether there was an alignment of the experience with the educational institution's internship syllabus.

Background to the Problem

The focus of this research study is on a tertiary educational institution (the College) in Barbados whose primary purpose is training potential workers for the tourism/hospitality industry. The College offers three full-time associate degree programmes or sub-baccalaureate degrees in Culinary Arts, Tourism and Travel and Hospitality Studies. All the sub-baccalaureate degrees include a required, credit-bearing internship which is situated in the Business core of the programmes.

An examination of the College's associate degree programmes reveals that there are differences in their offerings. The Culinary Arts associate degree focuses primarily on the food and beverage production and service areas. The Hospitality Studies associate degree concentrates on the food and beverage and accommodation sector, whereas the Tourism and Travel sub-baccalaureate programme applies to the hospitality and wider tourism industry.

Each of the sub-baccalaureate programmes has theoretical and practical components in its area of specialization, but all students enrolled have exposure to varying degrees in food and beverage production and

service courses. The College provides authentic work experiences in its training hotel and so provides practice in fully operational areas. However, the environment has a high degree of control and "buffers" in terms of the number of guests to which the students are exposed. Hence, it is necessary that students have real-world work experience through internships that give both supervision and greater guest–staff interaction.

After the first year of study, students engage in a minimum three-week (winter) or six-week (summer) internship within the tourism/hospitality industry. Internships occur in the various components of the industry, including hotels, food and beverage establishments, travel agencies, air and sea ports and tourism-related government ministries.

Problem Statement

The problem in the study is based on the analysis of the students' written and oral reports, which reveal that there is variability in the quality of the internship experiences each student has. This reality begs the question: Why does this variability exist? Ultimately, it raises questions about the quality of the internship programme offered to the students and of alignment between the internship experience and the College's internship syllabus. Study on the quality of internships is an important construct to consider because as Abdullah et al. (2015) indicated, the type of internship the intern is exposed to can influence their decision to enter or not enter the industry as professionals after graduation.

More than two decades ago, Bailey, Hughes, and Barr (1998) asserted that due to the growth of internship programmes, program developers or educational institutions needed to be more attentive to the quality of internships or it would become a problem. They stated that there was a need for "better measures of quality" as "the problem is a lack of good conceptualization of what an internship should provide" (12). Therefore, given the significant role of the internship programme and the paucity of research on the measures of a quality internship programme and the outcomes of the internship as noted by Bailey, Hughes, and Barr (1998), which still exist today, this research problem is worthy of investigation as the tertiary education in this study has a fiduciary responsibility to provide its students with a superior educational and training experience.

Purpose of Study and Research Questions

The purpose of this mixed methods study was to examine the internships in the tourism and hospitality industry organized by the College in Barbados.

The convergent mixed methods design used in the exploratory study was intended to provide comprehensive information that may be useful in the future planning of the internships. The research questions were as follows:

1. What are students' expectations of their internship experience and to what extent were those expectations met?
2. a) What are the students' perceptions of the quality of the internship experience among the three associate degree programmes?
   b) What are the students' level of satisfaction with the internship experience?
   c) Is there a relationship between overall students' perception of quality and their satisfaction with the internship experience?
3. To what extent and in what ways do the qualitative and quantitative results converge on an alignment of the tasks in the students' internship and the College's associate degree programmes' internship syllabus?

The literature provides an understanding of the nature of the internship, its quality measures and contributors to its satisfaction. The internship programme is a tripartite arrangement between the educational institution, the student and the placement employer (Tse 2010; Collins 2002; Maertz Jr, Stoeberl, and Marks 2014; Soneson 2010). Hence, the quality of internships is originated by these three stakeholders (Cho 2006) and the benefits redound to all of them (Doniņa 2015). For the educational institution, offering an internship can boost their enrolment and having students do well during these occurrences will add visibility to their programmes and enhance their reputation (Maertz Jr, Stoeberl, and Marks 2014; Bălтescu 2016). The offer of internships can also create a competitive advantage over other educational institutions that do not offer them. For the students, it provides opportunities to experience the real world of work, to decide if a career in the industry is really what they want for their future life and to network (Bălтescu 2016; Wan et al. 2013; Kessels and Kwakman 2007; Cho 2006; Collins 2002; Zopiatis 2007). For the placement organization or employer, participation in the internship can be a means of easing the workload for existing staff and to assess future employee potential (Billiones 2016; Collins 2002).

Although some of the positions and jobs do not currently exist, it is the work of education through its curricula to prepare students to suit the needs of the industry (Felicen et al. 2014; Krueger 2017).

Thus, the internship experience allows for partial fulfilment of this responsibility. By ongoing collaboration and cooperation between the three stakeholders, the future demands of the tourism and hospitality industry can be met and be successful (Walo 2001; Doniņa 2015), enabling both students and educators to "keep abreast of the hospitality trends and future developments" (Zopiatis 2007, 66). Therefore, given the nature of the internship and the potential benefits for the stakeholders, it is imperative that the quality of the internship programme provide superior service for its requisite stakeholders.

Quality as a construct is difficult to define due to its elusive, subjective and complex nature (Assante et al. 2007; Parasuraman, Zeithaml, and Berry 1985). As a result, the evaluation of quality in higher education is controversial (Hertzman and Ackerman 2010). For industry practitioners, having quality indicators (QIs) could be a means of defining and having measurable performance standards (Assante et al. 2007) that will serve to assess and compare intern and industry performance. As a result, any necessary adjustments can then be made to show an internship curriculum that is more industry-driven, which will assist students in being more industry-prepared and able to transition from school to the work environment more smoothly (Felicen et al. 2014). Therefore, "having a symbiotic relationship with the industry" (Assante et al. 2007, 66) creates a quality hospitality programme.

Billiones (2016) and Rangan and Natarajarathinam (2014) found that a successful or quality internship is planned and structured. This should occur before and during the internship, through the educational institution and the internship placement coordinator or agency engaging in some form of communication (Collins 2002; Soneson 2010; Beggs, Ross, and Goodwin, Ross, and Goodwin 2008). Therefore, for achieving quality internship experiences, the educational institution and the employer should make contractual internship agreements (Collins 2002) that will outline whether the intern is involved in a specific project or several projects during their experience, or in a tailored programme, and the length and type of internship (Rangan and Natarajarathinam 2014; Billiones 2016). Consequently, according to set criteria, the student may have a customized internship and not a cookie-cutter experience.

From the feedback and recommendations from the industry and progress in managerial involvement in the supervised work experience, there can be improvement in the internship syllabus (Wan et al. 2013; Băltescu 2016). Otherwise, as posited by Jack, Stansbie, and Sciarini (2017), "If educators build a curriculum without adequate input from

industry leaders, there is the potential for deficiencies in students' skill and marketability upon graduation" (22). For "the absence of any internship-specific quality standards causes a discrepancy between the practical and theoretical components of the student hospitality curriculum, which may intensify the perception of a gap between classroom theory and internship practices" (Zopiatis 2007, 69).

A vital benefit therefore is that the internships serve as the bridge from the theoretical knowledge gained in the classroom to real-world practices, thereby making application and connection of theory to real-world situations (Collins 2002; Kessels and Kwakman 2007; McGlothin Jr 2003; Zopiatis 2007). However, despite the benefits that an internship offers, satisfaction with the experience is an essential factor. Some authors stated that there is a disconnect or difference in the expectations and satisfaction of students and employers with internships (Rangan and Natarajarathinam 2014; Yiu and Law 2012; Tse 2010; Chapman and Lovell 2006). However, the disconnect can be remedied through communication and an understanding of expectations between these two stakeholders (Rangan and Natarajarathinam 2014).

Hence, orientation and training should be offered by the placement sites and educational institution (Beggs, Ross, and Goodwin, Ross, and Goodwin 2008; Sharma, O'Reilly, and Salvaris, O'Reilly, and Salvaris 2005). Such communication at the start of or during the internship will enable the student to have an active participation to share their interests and collaborate with the placement organization or industry partner to establish goals and objectives for the duration of the internship that will aid in maximizing the experience for them (Soneson 2010; Joyce-Beaulieu and Rossen 2015), and hence the need for collaboration among the stakeholders.

The concept of job satisfaction is an attitudinal component (Wan et al. 2013); hence, the intern's personality factor can greatly influence the quality of the internship experience.

Cho (2006) advanced that satisfaction was based on expectations regarding issues such as task orientation (the direction in planning how to get a task accomplished), future career development, and supervisor support and administration for coordination. Equally, Wan et al. (2013) posited that "goal orientation and mentoring positively affected both person-job and person-organization fit, leading to intern job satisfaction and commitment to the profession" (36).

In the tourism/ hospitality industry, which is highly people-oriented, learning occurs in a social setting; therefore, a mentoring system may

motivate student learning and "improve the efficacy of an internship program" (Wan et al. 2013, 51) and be one of the programme characteristics to assess quality (Bailey, Hughes, and Barr 1998).

Methodology

The choice of the mixed methodology design was guided by the demand for a comprehensive understanding of the issue. Johnson and Onwuegbuzie (2004) postulated that both quantitative research and qualitative research are useful and valuable to have the greatest chance of answering the research questions. Furthermore, these authors suggested that in mixed methods research, the strengths of each approach are magnified while the weaknesses are minimized; each method therefore complements the other and provides top quality research.

To address the three research questions, a mixed methods case study with a convergent design was chosen to examine the phenomenon of quality internships in this study. In the convergent design, both quantitative and qualitative (QUANT + QUAL) data are collected simultaneously and integration occurs through the methods and interpretation levels (Creswell 2014).

A case study is for investigation of a contemporary issue or phenomenon in a particular context (Yin 1989; Leacock, Warrican, and Rose 2015). In this study, the case refers to the multiple internship experiences of the cohort of students of the College at the placement sites for a minimum of three weeks in the winter season. The exploration of the case at more than one industry organization allows for a deeper picture of the issue (Leacock, Warrican, and Rose 2015; Cohen, Manion, and Morrison 2005). Therefore, the benefit of using a mixed methods case study research design is that it allows for a comprehensive understanding of the issue in the bounded system and a better understanding of the phenomenon (Jackson 2009; Cohen, Manion, and Morrison 2005; McMillan and Schumacher 2010; Newby 2010).

Philosophical Underpinnings of the Research Design

The mixed methods convergent design adopted for this research is grounded in the philosophical underpinnings of the pragmatic worldview. Creswell (2014) posited that the lens of this worldview offers an in-depth understanding of the phenomenon that may not be gathered from only one method. This position is complimented by Cohen et al.

(2011), who contend that pragmatism "enhance[s] the quality of research", as it uses "what works" (23). It is therefore valuable to the investigation of the phenomenon and answering the research questions. In pragmatism, the worldview has its ontology in relativism. This ideology states that there are multiple truths that exist to a phenomenon and they should be studied in seeking to understand the case. Consequently, this perspective naturally supports the use of mixed methods research, which Johnson and Onwuegbuzie (2004) asserted attempts to fit together the insights provided by both quantitative and qualitative research into a doable solution.

Therefore, the philosophical basis of this research design is congruent with the purpose of the study to address the research questions and yield in-depth understanding of the issue being examined. More importantly, due to the practical nature of the study and of the research questions, this philosophical underpinning is appropriate to the study of the internships at the College (Figure 1).

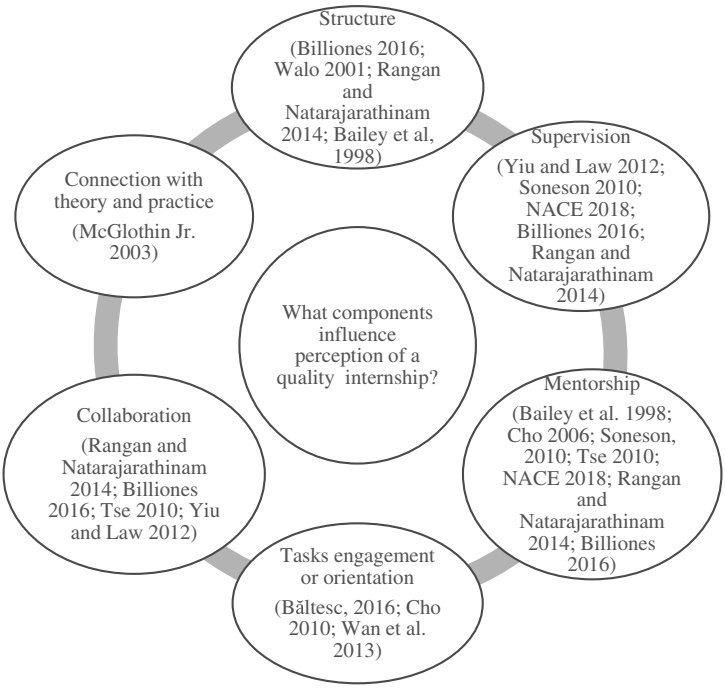

Figure 1: Conceptual Framework

Participants

The non-probability sampling technique of purposive sampling was employed in the case study. In addition to the students, the internship coordinator was included to provide context to the internship programme and process. The internship coordinator is the tutor at the College responsible for organizing the internship programme and liaising with the placement sites and the internship supervisors who complete the Employer Appraisal Forms for the interns.

The sample for the students was drawn from the target population of the ninety-five second-year associate degree students from the three programmes at the College who completed the 2017–2018 internships at sixteen internship sites. After excluding the four students who were in the pilot test, the study's sample became ninety-one people. Ninety-one questionnaires were distributed to the students after the adjustments, of which seventy-four were completed and returned. The response rate was just over 81 per cent (81.3 per cent). Of the seventy-four questionnaires returned, three were later discarded due to huge sections of missing data. The final sample size was seventy-one students who were employed at twelve internship sites.

The demographic information revealed that the sample comprised fourteen males (20 per cent) and fifty-seven females (80 per cent). The mean age was twenty years (SD = 3.642); the minimum age in the sample was seventeen years and the maximum age was thirty-five years. Figure 2 represents the distribution of the participants by associate degree programme.

Of the seventy-one participants, document analysis (Student Reports and Employer Appraisal Forms) utilized a subset of twenty students from the three sub-baccalaureate programmes – five (25 per cent) males and

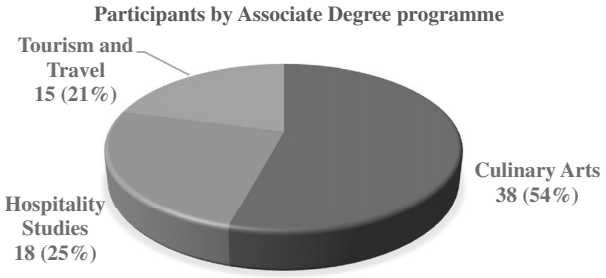

Figure 2: Percentage of sample by Associate Degree programmes

15 (75 per cent) females. Ten of the twelve placement sites were represented in the document analysis; this equated to 83 per cent of the total sites in the sample. The sample of students for the qualitative strand included the same individuals who were part of the quantitative strand. However, there was a difference in the size of the samples. Whereas there were seventy-one respondents for the questionnaires, there were only twenty of these respondents whose Student Reports and Employer Appraisal Forms were accessed. So, when compared, the qualitative documents represented 28 per cent of the quantitative, a ratio of 1:3.55. Although the weighting was small in comparison, the results of the qualitative data were consequential, for Creswell (2014) posits that mixed methods researchers should not consider the unequal sample sizes to be an issue as the intent of qualitative data is to provide a more comprehensive perspective, whereas the quantitative data are to generalize to the population.

As shown in table 1, the twelve internship sites at which the participants were engaged were of three types – hotels (H1, . . . , H8) of varying ratings (diamond or star), food and beverage operations or restaurants (R1, R2) and tourism organizations (TO1, TO2). The table also shows that the majority of placement sites (8, 67 per cent) were hotels. A total of sixty-six students (93 per cent) from the sample worked at this type of site; this comprised thirty-six (92 per cent) Culinary Arts students, eighteen (100 per cent) Hospitality Studies students and twelve (80 per cent) of the Tourism and Travel students.

Instruments

The data collection instruments were the student questionnaire (SQ), the semi-structured interview protocol and a researcher-designed document analysis form. The SQ was pilot tested with four students who went on internships during the December to January 2017–2018 period; from their comments, the questionnaires were adjusted by the researcher before administering. The interview protocol was piloted by a graduate student who works in the field of education. The document analysis form was a paper-based template or record used in reviewing and recording data from the Student Reports and Employer Appraisal Forms.

Both qualitative and quantitative data were derived from the self-reporting SQ, which consisted of thirty-nine items, divided into four parts (part A, B, C and D), with sub-parts that included open-ended and closed-ended questions. Open-ended responses were limited to two lines. Part A consisted of three questions for demographical information about the

Table 1: Research questions, data collection procedures and type of data.

Research Question	Data Collection Method/(Instrument)	Type of Data
1. What are students' expectations of their internship experience; and to what extent were those expectations met?	Face-to-face interviewing (semi-structured interview protocol for the Internship Coordinator) Surveying Document Analysis (Student Reports)	QUANT + QUAL (QUANT - descriptive statistics – mean, standard deviation, frequencies; QUAL -(Open coding; Conventional content analysis)
2. a) What are students' perceptions of the quality of the internship experience? b) What is the students' level of satisfaction with the internship experience? c) Is there a relationship between overall students' perception of quality and their satisfaction with the internship experience?	Surveying	QUANT – (inferential statistics - Pearson's Correlation; Analysis of Variance - ANOVA)
3. To what extent do students perceive that their internship experience aligns with their College Associate Degree Programme?	Surveying Document Analysis (Student Reports and Employer Appraisal Forms)	QUANT + QUAL (QUANT - descriptive statistics QUAL -Conventional content analysis)

intern. Part B consisted of eleven questions that investigated the student expectations and alignment of the placements' internship programme with the College's internship syllabus and related documents. Parts C and D comprised the five-point Likert scales ranging from 1 ("strongly disagree" or "extremely dissatisfied") to 5 ("strongly agree" or "extremely satisfied"). Part C comprised sixteen items linked to six particular QIs – task engagement or orientation, connection of theory with practice, collaboration, structure, supervision and mentorship – which emerged from a review of the literature. Part C related to describing and measuring the participants' perception of quality of the internship experience, whereas

part D comprised eight items that related to measuring the participants' level of satisfaction of the internship using the same Qis as in part C.

Of the twenty-four interval scale items that comprised part of the questionnaire (parts C and D), there was an overall Cronbach alpha of 0.845. The perception of quality scale that was part C had good internal consistency, with a Cronbach alpha coefficient of 0.749. The satisfaction with internship scale, part D, had a Cronbach alpha coefficient of 0.764. Pallant (2005) posits that preferably the Cronbach alpha coefficient of a scale should be above 0.70 to be considered reliable. These Cronbach alpha coefficients not only suggest that the individual scales had good internal consistency reliability, but also indicate that collectively the items in the scale reliably measure a single construct – the internship experience. This is whether the components of the construct refer to satisfaction or perception of quality.

Data Collection Methods

Three data collection methods were utilized to collect quantitative and qualitative data to adequately answer the research questions. The methods were surveying, interviewing and document analysis.

After it was piloted, the revised self-report SQ was administered in a controlled environment under the supervision of colleagues in the various classes held for the different associate degree programmes. Czaja and Blair (2005) affirm that the classroom method of surveying is an efficient method of surveying.

In addition to the SQ, qualitative data were gathered from the semi-structured face-to-face interview with the internship coordinator and from document analysis of the Student Reports and the Employer Appraisal Forms. The Student Report is a summary of the internship experience that describes the internship site and departments where the intern worked, the connections made between theory and the actual internship experience, activities engaged in, reflections on lessons learned and so on. The Employer Appraisal Form is completed at the end of the student's internship by the internship supervisor at the placement site or the mentor (if there was one). It is an assessment of the student's performance during the internship in areas of individual strengths, weaknesses, personal and technical skills among others.

The quantitative data were analysed using the SPSS® version 22.0 software and Microsoft Excel. This software was used to generate descriptive statistics (mean, standard deviation, frequencies) and inferential statistics

(Pearson's correlation and ANOVA). In contrast, the qualitative data were analysed using conventional content analysis, which employed the recursive or constant comparison process for analysing the emerging themes and patterns. The transcription from the internship coordinator and the data from the students utilized both in vivo and constructed codes in the process.

Kitchenham (2010) observed that the inductive and deductive reasoning applied to mixed methodology yield more robust results especially in case study research as the "gaps" from the qualitative data are filled by the quantitative methodology. This is seen in the convergent or concurrent triangulation design that was used in this study when both quantitative and qualitative data were gathered and analysed simultaneously (McMillan and Schumacher 2010; Creswell 2014). Three-prong instrumentation or triangulation of data collection methods, document analysis, interviewing and surveying, was utilized in the study in order to alleviate the possible drawbacks of using a single method and to add credibility to the findings in the study.

Triangulation occurred within and across data sources. It was used to limit the bias from two qualitative data sources, such as with the Student Reports and Employer Appraisal Forms, which can arise from the subjectivity of the participant (Cohen, Manion, and Morrison 2005). Across data sources, triangulation was used to answer the mixed methods research question (# 3). Responses were sought from the quantitative items on the SQ referring to students' perception of alignment in the internship tasks with the associate degree programmes, which included the activities and objectives mentioned in the internship syllabus. These results for alignment were triangulated with the related open-ended items on the SQ, comments in the Student Reports, Employer Appraisal Forms and the transcription from the interview with the internship coordinator.

Ethical Issues

Before the study, participants and subjects were given the option to participate and or withdraw from the study at any time without prejudice (APA 2017). Gaining informed consent was vital, which was accomplished through use of the Authorisation Form. To further ease any ambivalence in participating, students were apprised of who they may contact for questions about the research study.

To ensure a measure of anonymity in the survey method of data collection, the researcher did not collect the questionnaires directly from the

students, but this action was delegated to colleagues in the various classes of the different associate degree programmes. To this individual, two envelopes were provided – one for the Authorisation Forms and one for the self-completed questionnaires. After completing the questionnaire, participants were asked to detach the Authorisation Form and place it in any order in an envelope that was separate from the one for the questionnaires.

Findings

The Findings section is organized according to the research questions based on the analysed data gathered from the data collection instruments and triangulated across and within data sources.

Research Question 1: What are students' expectations of their internship experience, and to what extent were those expectations met?

The participants' expectations prior to the internship experience were analysed using two data sources: the SQ (open-ended items) and the Student Reports. Participants were also asked whether these prior expectations were met or realized during the supervised work experience.

On the self-reported SQs, sixty participants indicated that they had expectations prior to the internship and what they were. Of this number, 87 per cent indicated what those expectations were and that they were met, whereas the remaining 13 per cent said their expectations were not met. When triangulated with the Student Reports, it was found that 90 per cent of the participants indicated similar expectations. The "real-world work experiences" from the students were categorized into themes using the constant comparison process.

Seven main emerging themes were identified from the qualitative data. These themes were learning new things, technical skills, soft skills, self-development, uncertainty and fear, expectations of the organization and job fit. However, in the triangulated results from the SQs, Employer Appraisal Forms and Student Reports convergence is seen in the two broad themes of technical skills and soft skill development, which factored predominantly. A detailed examination of these themes is as follows.

Learning New Things and Technical Skills

Generally, the expectation of learning new things and technical skill enhancement were realized by the participants. Most of the participants

commented on wanting "to gain experience in the tourism field" and "to learn more than I did at school". Specifically, the Culinary Arts students' replies were "to broaden my culinary knowledge by learning new terms/dishes/recipes", "to get more comfortable with my knife skills" and to "learn new things, gain experience in the different restaurants". By contrast, for the Hospitality Studies and Tourism and Travel students the technical skills mentioned were " . . . answering the telephone in a professional way; interacting with guests and solving guest problems", " . . . manage guests while doing bookings" and "how the restaurant operates".

However, there was one student who had the expectation of learning new things that may have been more challenging than what was accustomed to who was disappointed as the expectation was not met. The Culinary Arts student remarked "I wasn't able to do fancy stuff just basic stuff." Nonetheless, overall, these two themes – learning new things and technical skills – when combined from the SQs and Student Reports were the highest-ranking themes in over 50 per cent of the comments.

Soft Skills and Self-Development

Participants reported expectations that were generic to any type of work and these were therefore classified as soft skills. These skills included life lessons and customer service, which were coded by the researcher under the category of soft skills because they are transferable lessons to any work, not only in the hospitality industry. As with the technical skills, these skills also looked at self-development.

Soft skills were the second highest ranked theme that emerged from almost 37 per cent (36.5 per cent) of the comments. Under the theme of soft skills and self-development, there were comments from students in all three sub-baccalaureate programmes, such as:

> Working at the H8 taught me a lot and prepared me for the real world of work.; Dealing with different personalities . . . ; I was able to apply the skills I learned so far . . . such as time management, punctuality, health and safety; to prepare me for the world of work and to improve social skills"; improving communication skills; . . . improve interpersonal and decision-making skills; I realized everything will not be easy . . . but you have to push through it; Having to be punctual, . . .

Uncertainty and Fear

Expectations of uncertainty and fear were seen and some seemed to be born from personal insecurities, such as with the comment "My expectations were that the internship would be difficult, but I was determined to overcome my fears and excel; I was nervous . . . and . . . at first, I was a little

hesitant . . . ." One participant noted in the report that "Although it was not my first time working in a restaurant, I was nervous but still excited." A Culinary Arts student wrote, "My first night in . . . I was thrown right into service because they were short of staff . . . So, I was lost as to what the dishes were and what to do . . . but I learned a lot and I caught on fast."

Expectations of the Organization

The participants voiced their expectations of the organization where they worked in terms of the standard and quality of service based on the ratings of the property and participants' own perceptions. A student wrote "My expectations were they were a four-diamond establishment, so the level of service would be high [sic]." Someone else noted that they expected a "fast-paced work environment with long hours and a friendly staff". Other people wrote, "My expectation was that the hotel would have strict rules and high standards" and "to be exposed to what happens in a functional busy hotel". Then there were low expectations of some of the placements. For example, one participant wrote " . . . I did not think that working in the deli would be a big deal . . . ".

Later comments in the Student Reports and on the SQs showed that the expectations were met in some instances and not met in others. The expectations that the hotel would have strict rules, that in a four-diamond establishment there would be a high level of service and that the environment would be fast-paced were met. However, one student reported that the expectation of a strict work environment was not met but instead it "was laid back". As for low expectations about the deli, the student later commented " . . . but boy was I wrong".

The real-world experiences students stated included how shift work in a practical environment was and the rudiments of working in a 24/7 industry. Such comments were of "The different working hours, the task I had to perform . . . ". The students also wrote of having to be professional and the behaviours associated with professionalism, with one directly citing "Having to clock in and out, dressing like a professional every day . . . ".

Job fit. Participants reported they saw the internship as an opportunity to be hired afterwards and to determine the future job fit potential. This is reflected through the voice of a culinarian.

> To know for sure this was the career path I wanted to pursue; I used the internship to determine which part of the industry would suit me best; . . . to see how a kitchen runs and in ten [sic] give me an edge over my future competition. As much as I enjoyed my placement it also opened up my eyes to the fact that I might not want to be a chef as my career choice.

One Tourism and Travel student commented, "I wanted to see if I would enjoy event planning and design and I did and I would do it again." Another participant from the same associate degree programme remarked that before the internship she was not interested in working in the food and beverage department but after the internship "realized how interested [sic] this field is . . . ".

Research Question 2a): What are the students' perceptions of the quality of the internship experience among the three associate degree programmes?

To answer this research question, data from the sixteen items in part C of the SQ were used. The one-way between groups ANOVA test was used to investigate whether there were any significant differences in perception of quality of the internship among the three associate degree programmes (Culinary Arts, Hospitality Studies and Tourism and Travel). Significance was at the $p \leq 0.05$ level. The mean perception of quality scores obtained by the groups are shown in table 2. The perceptions are very widely spread among the sub-baccalaureate programmes, with a mean of 62.86 (SD = 7.047). When the ANOVA was run, there was no significant difference found among the perception of quality scores of the groups (F [2, 68] = 0.275; $p > 0.760$) from three different programmes.

Table 3 shows the which is a summary of data regarding the perception of quality during the internship as grouped under the six QIs used in the questionnaire. From analysis of table 3, it was found that the participants agreed that the QI of Structure existed in the internship, obtaining the highest mean of 4.25, whereas the QI of Task Engagement and Orientation received the lowest composite mean of 3.50. There appeared to be some ambivalence among the participants about the perception of quality regarding this latter QI, for while there was agreement that "direction was given about the tasks to be performed" ($\mu = 4.55$), participants were unsure if "the tasks given were menial" ($\mu = 2.76$) and whether they "needed more tasks to hone my skills" ($\mu = 3.18$).

Research Question 2b): What is the students' level of satisfaction with the internship experience?

The mean satisfaction score for the sample was 34.41 (SD = 4.013). The majority of the participants (69, 97.2 per cent) reported that they were satisfied (summated satisfaction) with their internship. No one was

Table 2: Allocation to internship sites according to Associate Degree Programme.

	ASSOCIATE DEGREE PROGRAMME				
Name and type of internship sites	**Culinary Arts**	**Hospitality Studies**	**Tourism & Travel**	**Total**	**Percentage**
Hotels					
H 1	13	6	8	27	38.0%
H 2	6	3	3	12	16.9%
H 3	12	0	0	12	16.9%
H 4	2	1	1	4	5.6%
H 5	2	3	0	5	7.0%
H 6	0	3	0	3	4.2%
H 7	0	2	0	2	2.8%
H 8	1	0	0	1	1.4%
Total	36	18	12	66	93.0%
Food and Beverage establishments					
R 1	1	0	0	1	1.4%
R 2	1	0	0	1	1.4%
Total	2	0	0	2	2.8%
Tourism organizations					
TO 1	0	0	2	2	2.8%
TO 2	0	0	1	1	1.4%
Total	0	0	3	3	4.2%
Total internship sites	38	18	15	71	100.0%

Table 3: Mean perception of quality scores for the three Associate Degree programmes.

	n	**Mean**	**Std. Deviation**
Culinary Arts	38	63.26	5.769
Hospitality Studies	18	63.00	8.478
Tourism & Travel	15	61.67	8.432
Total	71	62.86	7.047

extremely dissatisfied with the internship. In part D of the SQ, the QI for satisfaction, Mentorship, had the highest number of students (65; 91.6 per cent) who were satisfied, whereas Structure was ranked the lowest among the other indicators by the participants (60; 84.5 per cent).

Research Question 2c): Is there a relationship between overall students' perception of quality and their satisfaction with the internship experience?

When the Pearson's test was conducted to investigate the relationship between the two variables of perception of quality and satisfaction in the sample; a significant relationship was found between the students' perception of quality and satisfaction scores ($r = 0.642$; $n = 71$; $p < 0.0005$). Significance was at the $p \leq 0.05$ level. In accordance with Burns's (2000) work, (quoted in Leacock, Warrican, and Rose 2015), 0.642 indicates a substantial direct relationship. This means that the strength of the relationship is significant, with a moderate correlation between the variables. The "direct relationship" indicates that "the variables vary in the same direction" (Leacock, Warrican, and Rose 2015, 152); therefore, when perception of quality increases, so will satisfaction in an equal degree.

Research Question 3: To what extent and in what ways do the qualitative and quantitative results converge on an alignment of the tasks in the students' internship and the College's associate degree programmes' internship syllabus?

Table 4 shows that 90 per cent (64) of the participants found that there was suitability or alignment of the tasks engaged in during the internship according to their specialization. This is most notable for the students in the Hospitality Studies programme.

There was convergence with the qualitative data of alignment in the tasks with the associate degree programmes shown in comments such as the following:

> Already knew how to serve food and drink from school, "so we didn't have to go through that process; Basic operations of the Café . . . reinforcing the rules I would have previously known from the school, such as hair neat, no jewellery, enclosed shoes; Shown the ropes of how things were done at R2 especially the teamwork, as instilled in us at the College; as learned at school in the [named course].

Table 4: Student perception of alignment of internship tasks with Associate Degree programme.

	Yes	**No**	**No response**	**Total**
Culinary Arts	34	3	1	38
	89.5%	7.9%	2.6%	100.0%
Tourism & Travel	12	3		15
	80.0%	20.0%		100.0%
Hospitality Studies	18			18
	100.0%			100.0%
Total	64	6	1	71
	90.1%	8.5%	1.4%	100.0%

Contrariwise, despite the overwhelming support for alignment with tasks, table 4 also shows that six (8.5 per cent) of the participants in the Culinary Arts and Tourism and Travel programmes reported that they did not find the tasks suitable for their programme. The reasons they cited included that the tasks were too simple, repetitious or not a major part of their specialization at the College aligned with the expectations under emerging themes of learning new things, technical skills and job fit. Their voices were heard in comments such as the following:

> Too much prep and not enough hands on work; the tasks given were too simple, could have been exposed to more, to gain new knowledge; just did prep, learned nothing new. Food and Beverage interns were allowed to serve water and clear, and they were not suitable because in Tourism & Travel (T & T) 2 we do not work or talk about the restaurant. The T & T course is not heavily based on the hotel industry.

As to the extent to which internship experiences were perceived to have met the goals and objectives stated in the internship syllabus, the internship coordinator during the interview was emphatic in stating, "I keep my eyes very, very peeled . . . and find out what students are saying about their internship experience and also through the appraisal forms what industry has said about our students . . . So yes, there is alignment."

On the Employer Appraisal Forms, there was no direct statement to alignment. Nonetheless it can be deduced from the comments related to the question of technical and soft skills exhibited by the interns that generally there was alignment, especially in those notations applauding

the students' use of the property management system (PMS) used at the front desk, competence in "answering calls within three rings", "responding to reservation emails", "willingness to learn new dishes", "good interpersonal skills and positive attitude", "attention to detail" and "understanding the importance of teamwork". The few exceptions of misalignment were in those situations when it was noted that there is "need to work on ... knife skills and cuts".

Table 5 shows the results of alignment which looked at the ten activities that are stated as learning objectives on the internship syllabus. From the distribution in the table, the highest alignment was in "follow instructions" by almost 96 per cent (95.8 per cent) of the sample. This is with a difference of almost 30 per cent above the next objective of "practice principles learned in theory" and a greater difference of just over 32 per cent to the third highest experienced objective of "apply procedures".

Table 5: Achievement of objectives stated on the Internship Syllabus as reported in the activities students completed.

Internship Syllabus Objectives	**Culinary Arts**	**Hospitality Studies**	**Tourism & Travel**	**Total**	**Percentage of sample**
Follow Instructions	36	18	14	68	95.8%
Practice principles learned in theory	25	12	10	47	66.2%
Apply procedures	19	14	12	45	63.4%
Demonstrate knowledge of specialty area	20	12	8	40	56.3%
Prepare procedures related to the functional area	20	12	6	38	53.5%
Organized tasks	18	14	5	37	52.1%
Analyze plans and procedures	13	10	6	29	40.8%
Supervise procedures being performed	13	10	5	28	39.4%
Manage area of specialization	15	7	2	24	33.8%
Preparation of reports	7	10	2	19	26.8%

Overall, table 5 shows that six of the ten objectives in the internship syllabus were achieved by a high percentage of the respondents. Similarly, Student Reports revealed that competency in skills and the influence of courses learned factored into the issue of alignment of the internship with the internship syllabus and the associate degree programmes with comments such as "... reminded me of what the tutors at the school are constantly saying to us" and "as learned at school – greeting guests, use of PMS [from named course]". Hence, in the interpretation of the qualitative and quantitative data there was convergence shown within and across the different data sources.

Discussion

The goal of the study was to examine the College's second-year students' perceptions of their internship experience within the tourism/hospitality industry, whether there was satisfaction with it and if there was an alignment of the experience with the College's associate degree programmes internship syllabus. Both the qualitative and quantitative data of this mixed methods study when analysed provided comprehensive insight into the internships organized by this tertiary educational institution.

The findings of the study from this cohort of the College as shown in the expectations that were met by the participants concurred with the purpose of the internship, which was to provide real-world work experience. The measure of excellence or superiority of the internship; its quality, will be biased by stakeholders' own comprehension of quality according to their expectations and pre-conceived views of what is a quality internship experience (Cho 2006; Assante et al. 2007, Beggs, Ross, and Goodwin, Ross, and Goodwin 2008).

Therefore, having QIs in hospitality internships is a way of delineating and having assessable performance standards (Assante et al. 2007). The study supported this premise as it was shown that particular QIs – task engagement or orientation, connection of theory with practice, structure, collaboration, supervision and mentorship – influenced the perception of a quality internship experience for stakeholders.

The overall perception of quality was high among the three programmes – Culinary Arts, Hospitality Studies and Tourism and Travel – with minimal variation. There was also a substantial direct relationship perception of quality and satisfaction. However, that there was no significant difference in the students' perception of quality among the

three programmes as further supported by the ANOVA test was surprising due to the nature of the varying programme offers. This may indicate that the educational institution is preparing its students for the real-world work encounter sufficiently and that there is some collaboration between industry and educational institution. As Tse (2010) suggested, any disconnect in students' expectations and satisfaction can be reduced if they are alerted of the possible difficulties that can occur during the internships. There can be successful achievement of the demands in the tourism and hospitality industry through collaboration and cooperation between stakeholders (Doniņa 2015; Walo 2001).

Task Engagement or Orientation

The highest individual mean for perceived quality was under the QI task engagement or orientation in "direction given about tasks to be performed". Yet under this same QI, students were unsure if there was "need for more tasks to hone skills" and whether "the tasks were menial". Along with the reports by some of the students that the tasks were simple and repetitious, it may be surmised that the internship required more tasks but in variety and challenge.

This may also provide an answer to why the internship syllabus objectives achieved are mainly at the lower end of the scale in terms of following instructions, demonstrating knowledge and organizing tasks, and the higher order educational objectives in the four activities of analyse plans and procedures, supervise procedures being performed, manage area of specialization and prepare reports in the internship syllabus were sorely missing from the experience of many students. Bailey, Hughes, and Barr (1998) posit that internships are most productive when interns are involved in jobs that they can credibly be expected to complete, but tasks that still require skills and abilities they do not already possess. Felicen et al. (2014)) further opine that there is a correlation between the practicum programme and students' expectations of achieving the objectives in a course syllabus.

Connection with Theory and Practice

During the internship, along with task engagement or orientation there is recognized connection with theory and practice. This QI referred to both the theoretical and practical skill development received at the College that prepared the students for internship. Consequently, that the interns' expectations and perspectives were realized suggests that this QI was

involved. This view is corroborated by Tse (2010), who indicated that there is a connection between perception and satisfaction in internships.

Yet, despite lauding the College for providing students the skills needed and preparing them for the supervised work experience, there was strong agreement among the participants that they did not need to attend the College to perform the tasks given during the internship. Perhaps this may be linked to the menial tasks that were given. It nonetheless raises a question of the relevancy of the educational institution and a serious potential for its loss of business. Consequently, there should be further investigation of the internships in order to reduce the percentage of students who felt this way. Further, in considering the type and level of tasks given, there may be more alignment to the associate degree programme specialization in which the student is registered and a greater connection of theory with practice realized.

Structure

The QI with the highest mean for perception of quality was Structure, yet this same QI scored low for satisfaction. This QI as a component in measuring the perceived quality of internships usually focuses on the placement organization and the educational institution. The structure of the programme includes the content of the experience and its scheduling. Hence, the goals and objectives of the internship syllabus as tied to the tasks the students perform while on internship and the departments in which they are assigned must be consistent with the associate degree programme specialization and cannot be solely at the demand of the placement organization. Abdullah et al. (2015) posit that when employers are not well versed in the internship objectives there is the tendency to "wrongly use the interns" (35) and for the employers' expectations of the intern's ability to perform in a particular manner not to be met.

It may be inferred that considerations of the structure of the internship may help reduce and or prevent the misalignments that occur with the Culinary Arts and Tourism and Travel programme students and increase satisfaction with this QI. Although merely 7 per cent of the Culinary Arts students perceived misalignment with internship tasks, a greater 20 per cent of the students in the Tourism and Travel programme perceived that the internship tasks did not align with their programme specialty. In a broad context, the connection with theory and practice and task engagement or orientation was conflicting as the internship reportedly did not enable enhanced knowledge that can truly assist the students in their particular field of study. For while the interns from this programme were all exposed

to food and beverage service during their studies at the College, that course and its operational activities are marginal to their programme specialization. Consequently, congruence between the choice of department and students' associate degree programme specialization is essential to optimize their internship experience. As postulated by Zopiatis (2007), the internship experience allows the intern "to evaluate whether their career choice is compatible with their interests and personality" (66); is it a correct job fit?

Collaboration

Communication between the educational institution and the placement organization must be overt and include the students as well (Busby and Gibson 2010; Rangan and Natarajarathinam 2014) in order to provide greater alignment between the internship experience, the internship syllabus and the associate degree programme specialization. Empirical evidence shows that students agreed there was collaboration at the internship site as "there was opportunity for teamwork". However, since the "placement organization appeared to have communication from the College" was weighted lower than for the component of teamwork; this may be a QI that needs some work.

Supervision and Mentorship

Supervision and mentorship are also inherent aspects of the nature of the internship experience, and not only in the internship syllabus's objective of "follow instructions". For in order to assess an intern's performance accurately, there must be supervision, and more so by an assigned supervisor. The participants agreed that "there was consistent supervision by an assigned supervisor" and that they "received feedback on my performance". This is noteworthy as feedback is vital to improving the curriculum and in assisting the students to improve their skills for greater marketability (Wan et al. 2013; Băltescu 2016; Jack, Stansbie, and Sciarini 2017; Beggs, Ross, and Goodwin 2008; Billiones 2016; Rangan and Natarajarathinam 2014).

Having "formal mentorship at the placement organization" and "someone more knowledgeable to offer guidance" allows the students in a workplace cultural setting to network and glean from the experience of that more knowledgeable other, as coined by the educational psychologist Vygotsky (1978). In this way, perhaps more of the higher level objectives may be addressed. The literature concludes that through mentorship and guided supervision, the best results for the students occur and their

integration into the organization and the real world of work is more efficacious (Wan et al. 2013; NACE 2018; Rangan and Natarajarathinam 2014; Billiones 2016).

Conclusion and the Way Forward

The findings of this study only reflect the perceptions of second-year associate degree students who completed their internship during December 2017 to January 2018 at twelve internship sites. Therefore, the results may not be generalizable to other internship sites or internships conducted at other times of the year and so may be considered as limiting. However, the findings may be interpreted in light of this limitation and can be meaningful to other hospitality training institutions in the Caribbean or the world offering internships as part of their academic programmes.

There are myriad possibilities for extending this study with the overall goal of greater understanding of quality, in order to package more powerful and effective internships for all the associate degree programme specializations. Future exploration of this phenomenon should include more qualitative reports from the students about their internship experience, which were underprovided in this study. The evaluation of the internship programme at the College and measurement of its instructional objectives are certainly paramount if this educational institution expects to competently prepare twenty-first-century learners for the workforce in the tourism/hospitality industry, thereby ensuring students are provided with sterling academic and practical learning experiences both in the classroom and on internships.

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Understanding the Ecologies of Education Reforms: Comparing the Perceptions of Secondary Teachers and Students in Jamaica, Guyana, and Trinidad and Tobago

Yee Han Peter Joong[1], Nalini Ramsawak-Jodha[2], Peter Wintz[3], Susan Anderson[1], and Disraeli Hutton[1]

[1]UWI, Mona
[2]York Region District School Board in Ontario, Canada
[3]UWI, St. Augustine
[4]University of Guyana

Abstract

This mixed methods study examines how secondary school teachers have implemented educational reforms in Jamaica, Guyana, and Trinidad and Tobago. The major sources of data were surveys for sample teachers and students in sixteen to twenty schools in each country. Teacher and student surveys asked questions on how often a teaching or evaluation strategy was used in a given course. Teachers were also asked to describe the major changes in secondary education in their respective countries. Classroom observations were made in three sample schools in each country to triangulate results from the survey data. In addition, results from open-ended questions were also used for triangulation. The mixed methods approach was selected as this approach lends itself to stronger explanations of a phenomenon and adds to the reliability and validity of the study. The study concluded that although some teachers struggled with transitioning, most were able to make the necessary changes to adopt the majority of the reforms. Even though teacher-directed lessons still dominated, student-centred learnings were incorporated. Tests, classwork, homework, exams and performance tasks were used for student evaluations. However, classroom management and integration of technology need increased attention due to the new challenges of transitioning. More resources and in-service professional development are needed. Policymakers and educators in all jurisdictions can learn from the reform efforts in the Caribbean.

Caribbean Journal of Mixed Methods Research 1, 1 (2020): 134–166

Keywords: secondary education reform; student-centred learning; activity-based learning; classroom management; special education; mixed methods research.

Education is generally regarded as a basic requirement for the socioeconomic transformation and advancement of societies – Baksh, Former Minister of Education, Guyana

Introduction

In the 1990s, large-scale education reform orchestrated by provincial, state or national governments emerged around the world. Fullan (2000) studied system reforms in England, Canada, Finland and the United States. Each country had its unique history and context, but all of the governments introduced policies that sought to reformulate the relationship among government, schools and parents and develop closer links between objectives, programmes, teaching and student evaluation. Joong et al. have examined secondary reforms in Canada, China, Sierra Leone and the Philippines (2012a, 2013a,b, 2019). In our previous studies, we have found that student-centred learning (SCL) has mostly been introduced by national governments as part of educational reforms. The studies concluded that teachers are ready to change and respond positively if they think that the change is justified. However, changing classroom practices and adopting a more SCL pedagogy are particularly problematic in developing and underdeveloped countries. Key hindrances to reform implementation were contextual issues such as a lack of resources and training. Studies by Schweisfurth (2011), Schweisfurth (2013) and Altinyelken (2011) carried out in various developing or underdeveloped countries had similar findings.

Reform in education often demands changes in practice that challenge classroom teachers (Fullan 2000; Sowell 2005). Teachers initially report feeling overwhelmed and undersupported (Helsby 1999; Lasky and Sutherland 2000; Taylor, Rizvi, Lingard, and Henry 1997). These feelings occur because changing the curriculum and the resultant transitioning require teachers to alter the "specific blueprint for learning that is derived from the desired results—that is, content and performance standards" (Wiggins and McTighe 2006, 6). Educational changes increase tension as outcomes are measured and results are evaluated against standards. These changes can trigger resistance, debate and passivity within teachers. Teachers play key roles in reform as the agents of change who work directly with students (Clarke 1997; Fullan 2001). Fullan (1996) explained, "We need to first focus on how teachers make sense of the

mandates and policies because there will be no educational reform until after the teachers interpret the policies and make decisions based on their beliefs about the new demands" (12).

We must also pay attention to the influence of reforms on students (DeFur and Korinek 2010; Earl and Sutherland 2003). To date, little research directly sought the views of students as compared to those which have reported the wide range of teachers' views on problems with educational change. We cannot deny the credibility of students as expert witnesses of effective instruction. Recommendations from the National Association of Secondary School Principals (NASSP) (2004) suggest that listening to students can be an effective strategy for school improvement. The report also encourages teachers to use a variety of instructional strategies, including SCL activities. Fullan and Stiegelbauer (1991) posed the question: "What would happen if we treated the student as someone whose opinion mattered in the introduction and implementation of reform in schools?" (170). Voices of students and teachers do matter in education reforms. This study provides a comparison of secondary education reforms from three Caribbean countries – Jamaica, Guyana and Trinidad and Tobago – by listening to the voices of students and teachers.

Secondary Education in the Caribbean

The Caribbean region encompasses more than a dozen countries that are diverse in terms of physical size, population, language, ethnicity, culture and level of economic development.

The governments fund and manage both primary and secondary education. Public education systems are modelled on the former British education system (Tsang, Fryer, and Arevalo 2002). The education systems remain class-based and this is particularly evident at the secondary level. Secondary schools are streamed and admission is based on scores on the National Grade Six Assessment in the respective countries. London (2018) claimed that children of low-income parents in Guyana lack the resources to compete with the children of affluent parents. He concluded, "the system has created an achievement gap between the children of the affluent and those from low-income families" (121). Alexander and Maeda (2015) and De Lisle (2009) had similar findings in Trinidad and Tobago.

Nevertheless, all schools must follow their respective national curriculum when preparing students for Caribbean Secondary Education Certificate (CSEC) examinations. Tsang et al. (2002) concluded in their report, *Access, Equity and Performance*, "Given the deficiencies in

education inputs and processes, it is not surprising that the education system is plagued by low performance and quality, defined as student achievement and measured in terms of examination results" (92).

High-Stakes Examinations

Secondary education is five years (Forms 1–5). The curriculum offered is that of the Caribbean Examinations Council (CXC) geared towards preparing students to leave secondary school with subject passes at the CSEC examinations. In all three countries, annual reports show that students who attend the Upper Streamed schools consistently perform better in the CSEC examinations. Irrespective of which stream, students are expected to pass a minimum of five CSEC courses with grades 1–3, with passes in English and mathematics. In our analysis of data available from the Ministry of Education in Jamaica in 2008–2013, approximately twenty-five thousand students wrote mathematics and English exams each year; the passing rates fluctuated from 43 per cent to 65 per cent for English and 33 per cent to 39 per cent for mathematics. CSEC performance is Guyana is similar; of the fourteen thousand students, data from 2009–2014 indicate that one-third of them passed mathematics and between 40 per cent and 50 per cent passed English. However, CSEC performance has improved in recent years. In Guyana, English recorded a pass rate of 77 per cent in 2019, a 10 per cent increase from 2018, while mathematics remained constant from 2018 at 43 per cent. In Jamaica, English recorded a pass rate of 83 per cent in 2019, an increase of 7 per cent over 2018. Maths had a 58 per cent pass mark, compared to 50 per cent in 2017. In Trinidad and Tobago, of the sixteen thousand students, 61 per cent were successful at gaining five or more subjects in 2017 as compared to less than half of the students in 2010–2014 (James 2014).

SCL Reforms in Jamaica, Guyana, and Trinidad and Tobago

Historically, education in the Caribbean has been thought of as quite traditional. Instruction in English and mathematics usually was conducted using teacher-led and whole-class models that were geared towards the majority of the class. (Jennings 2001; Roopchand 1987; Warrican, Down, and Spencer-Ernandez 2008). In Guyana, Roopchand and Moss (1998) claimed that reasons for the poor CSEC achievement might lie in the nature of the lessons offered in secondary schools.

Today, students are expected to be equipped with skills and abilities enabling them to think analytically and critically, solve authentic problems, work in collaboration with others and monitor their own learning (Hargreaves 2003). SCL is one way to help students to develop these skills. SCL requires teachers to employ strategies that increase awareness of what and why something is done, activate prior knowledge and experience, help develop higher-order thinking and independent learning skills, and provide multiple opportunities for students to take responsibility for their own learning (Schunk 2004; Altinyelken 2011; Blumberg 2009; Weimer 2002). Based on the above description of Caribbean education, the SCL secondary reform in the three countries is ambitious. However, according to William and Staulters (2014, 310), "efforts are being made to help educators utilize more progressive instructional behaviors and Caribbean schools are experiencing a shift toward more student-centered approaches, which emphasize thinking and reasoning." In 2010, MacKinnon and MacKinnon (2010) examined the implementation of learning technologies in Guyana. They concluded: "It becomes irrelevant to attempt to enhance good teaching with technology when in fact a history of traditional lecture-style lingers in a system that essentially "teaches to the test." Pedagogies that espouse a constructivist curriculum of heavily contextualized learning with authentic assessment are dearly needed in developing countries. (232)"

SCL approaches were promoted in recent Ministry of Education policies in the three countries to help educators utilize more progressive instructional behaviours.

Reforming Secondary Education in Trinidad and Tobago

Trinidad and Tobago is a multicultural and multireligious society. Outcomes in its previous Policy Paper implementation were not positive as the secondary school completion rate for the years 2004–2008 was 27 per cent and less than half of the students gained five or more passes in CSEC examinations. (James 2014) The Draft Education Policy Paper 2017–2022 is intended to provide the strategic direction necessary to guide programmes, projects and action plans. The abridged version of the Policy Paper states:

> The curriculum plays a critical role in the teaching and learning of the children. In order to meet the dynamic and changing needs of the nation, the curriculum must be modern and student-centered (SCL) with particular emphasis on addressing the diverse learning needs of all our learners. In order to ensure quality, the Secondary Education System needs to be revised to facilitate the improvement of academic performance throughout all Secondary schools. (44–45)

Reforming Secondary Education in Jamaica

In 1984, the Reform of Secondary Education (ROSE) project was introduced in grades 7–9 of 124 target secondary schools, which included development of a common curriculum. ROSE was a reform initiative that heralded a shift from teacher-directed to SCL pedagogies. However, William and Staulters (2010) found educators were being asked to implement ROSE without sufficient strategies or interventions to modify instructions for students. Also, Jennings (2017) made this claim about reform efforts such as ROSE recently, "Although all of these interventions sought to change pedagogy from teacher-centred to learner-centred (SCL), none succeeded" (826). She also claimed that "teacher-centred pedagogy is a relic of colonial influence" and blamed teacher educators for its continual practice. She also placed blame on the examination-driven education system in the Caribbean, where teachers are often criticised for "teaching to the test" in both primary and secondary schools.

National Standards Curriculum (NSC) in Jamaica

In 2016, Jamaica introduced its NSC for grades 1–9. According to the Ministry of Education (MOE), the NSC is "student-centred" (SCL) as "learners are also given some measure of control over the learning process as they work together with others to experiment, in safe ways, with creative solutions to problems" (MOEY& I, 2016, 2).

Reforming Secondary Education in Guyana

Guyana is a large, sparsely populated country that has approximately 80 per cent of its population living in or near the capital, Georgetown. The remaining population is spread throughout largely undeveloped "hinterlands." In the 1990s, the Guyana Secondary School Reform Project emphasized development of literacy and numeracy skills; teacher-centred strategies and teaching to the test, which resulted in an impoverished quality of education. Jennings (1999) blamed the failure on lack of vision in educational planning and weaknesses in implementation. The World Bank Report (1996) painted a very negative picture of the project:

1. Very passive approach to teaching, with students copying notes from the board.
2. Teachers with limited strategies due to lack of training and subject knowledge.
3. Lack of supervision and technical support.
4. Textbooks and teaching resources are in very short supply in all schools.

Guyana Education Sector Paper 2014–2018

The paper contains six outcomes. Outcomes relevant to this study are to

1. Improve the quality of the curriculum, which includes textbooks and alignment of assessments with the curriculum.
2. Improve the quality of teaching through sustaining and intensifying initial teacher training and continuous in-service professional development programmes.
3. Improve the quality of education for students with special needs.

Special Education in Jamaica, Guyana, and Trinidad and Tobago

The National Policy on Student Support Services in Trinidad and Tobago (2004) estimated that 25 per cent of students have diverse needs related to learning and behavioural challenges, with another 5 per cent related to sensory impairments and 2 per cent to giftedness. Most of these students were integrated in the schools (Conrad and Brown 2011). In January 2020, the Ministry of Education (2020) started implementation of the Inclusive School Project (ISP) with a mandate to provide a safe, nonviolent, inclusive and effective learning environment for all students, regardless of physical, intellectual, social, emotional or other needs. In each district, two primary and one secondary school will be involved in the project.

The key barriers for inclusion in Trinidad and Tobago and Guyana were attitudes and perceptions towards students with special needs (Adjodhia-Andrews 2007; Conrad and Brown 2011). Andrews and Frankel (2010) recommended that "all Guyanese children must be viewed as having equal access to all aspects of society" (141). Fraser (2017) recommended, "There should be greater implementation of the Persons with Disabilities Act (2010) and a more focus approach primarily on the establishment of special schools in rural districts in Guyana" (85).

In Jamaica, the Special Education Policy aimed at providing a framework to meet the educational needs of special students was before Cabinet for approval in October 2018 (Jamaica Gleaner 2018). Its two main goals are ensuring equity and access to educational opportunities and promoting a system of inclusive education where possible. It will ensure that students are provided with the necessary accommodations they need in the educational setting. Anderson (2017) claimed that as government and policymakers work towards full inclusion, an integrated approach is used.

Common Themes on Secondary Reforms in Jamaica, Guyana, and Trinidad and Tobago

Common themes and restraints on secondary reforms in the three countries can best be summarized using Jennings's (2017) recent study. She examined interventions in school curricula to achieve quality education in Commonwealth Caribbean countries. Interventions included SCL pedagogy and integration of technology. She found that despite numerous reform efforts, the Caribbean educational systems continue to be fraught with challenges that prevent the successful implementation of many of their programmes. SCL pedagogy has proven challenging for secondary teachers. A high student–teacher ratio prevents educators from using more SCL activities in the classroom and many schools, especially rural schools, experience the pressures of implementing reform programmes without adequate financial and professional development support (Williams and Staulters 2014).

Studies conducted on reform efforts in Caribbean countries are limited, in particular SCL reforms. A previous study by Joong and Hutton (2012b) on secondary reform in Jamaica found numerous challenges that prevent implementation of many of its reform initiatives, such as SCL and integration of technology. Challenges included inadequate resources and professional development support and high student–teacher ratios (Jennings 2017; William and Staulters 2014). A large-scale comparative study is timely involving the three largest Caribbean countries.

Objectives of the Study and Research Questions

The objective of this mixed methods study is to compare the perceptions of teachers and students on the implementation of secondary education reforms in Jamaica, Guyana, and Trinidad and Tobago. This research draws attention to reforms that had a direct impact on teachers and, in turn, on students. Topics studied include curriculum planning, teaching strategies, assessment and evaluation strategies, classroom management, integration of technology, special education programmes, postsecondary aspirations, high-stakes examinations, teacher in-service training, and student attitudes and behaviours. In this respect, this study tries to collect and analyse similar data on the above topics across the three countries. The research questions are as follows:

1. What are the perceptions of students and teachers of secondary reform in secondary schools in Guyana, Jamaica, and Trinidad and Tobago?

2. To what extent have teachers implemented secondary reform in secondary schools in Guyana, Jamaica, and Trinidad and Tobago – in particular, SCL?

Methodology and Data Collection

This study used a concurrent triangulation strategy (Creswell et al. 2003; Terrell 2012). It consisted of two distinct phases: quantitative followed by qualitative. A survey was conducted first, which collected both quantitative responses through the use of Likert-type questions and qualitative responses through open-ended questions. Surveys are commonly used to measure the implementation of large-scale reforms and how often certain strategies are used (Desimone, Smith, and Frisvold 2010). Students and teacher surveys were used in previous studies by Joong et al. (2012a,b, 2013a,b, 2019) and were modified for the present study. All the items on the survey were analysed quantitatively. The qualitative data were then analysed to help explain, or elaborate on, the quantitative results. Subsequently, classroom observations were conducted at three sample schools in each country, which yielded qualitative data used to corroborate the quantitative findings. The data from the survey and the observations were analysed individually, and integration of the findings occurred in the discussion of the findings.

Though the data collection was concurrent, priority was given to the quantitative data collection and the qualitative findings from classroom observations were used to corroborate the quantitative findings (Terrell 2012) with respect to curriculum planning, teaching and student evaluation strategies. Integration of the findings from the classroom observations was used primarily to confirm the quantitative findings in the three areas identified (Creswell et al. 2003; Terrell 2012).

Population and Sample

The population, from secondary schools in three countries (Jamaica = 16, Trinidad = 20 and Guyana = 16), included fifty-two sample schools, which were selected representing school types (urban and rural, academic and vocational/technical), and SES backgrounds. At each sample school, twenty-five randomly selected sample teachers and two representative classes (one junior and one senior class, approximately eighty students) were asked to complete separately designed questionnaires. The return rates for questionnaires were 92 per cent (students) and

76 per cent (teachers). Class observations were made at three sample schools in each country.

Due to the large sample sizes, convenience sampling was used to identify schools for the quantitative and qualitative phase of data collection as the survey was intended to capture data from a wide variety of schools in each country. Researchers utilized school personnel in each country through networking that spanned school types and locations representative of the contextual differences among schools in each country. This type of nonprobability sampling was selected with the underlying assumption that there is similarity among research participants and research findings will not be in contrast to those obtained from a random sample (Etikan, Musa, and Alkassim 2016). However, due to the nonprobability sampling research findings were not generalized to populations but are presented as findings from the captive participants (Etikan et al. 2016).

Results of the Study

Comparison of Teachers' Voices in the Three Countries

About three-quarters of the sample teachers were female (217 Jamaicans, 314 Trinidadians and 196 Guyanese). Mean teaching experience was 11.5 years. Sample teachers were well represented in different subject areas and grade levels. Mean class size was thirty in Guyana and Trinidad and Tobago and thirty-five in Jamaica. However, in our classroom observations, class size seemed larger in some cases due to the practice of packing three/four classes ranging from thirty-five to forty-five students into one large room separated with blackboard partitions. This practice also accounted for noisy classrooms in some observations.

Curriculum Planning

On average, respondent teachers spent 6.5 hours each week preparing for classes. Most of them used the national curriculum geared towards preparing students for the CSEC examinations. A majority (79–87 per cent) of the teacher respondents were satisfied with the current curriculum (see figure 1). In planning their courses, most sample teachers used the Internet, books or both. About three-quarters of the sample teachers claimed that they do not have enough resources as confirmed by several studies in all three countries (Williams and Staulters 2010, 2014; Tsang et al. 2002; London 2018). A majority of the sample teachers in Jamaica and Guyana claimed that they received adequate professional development

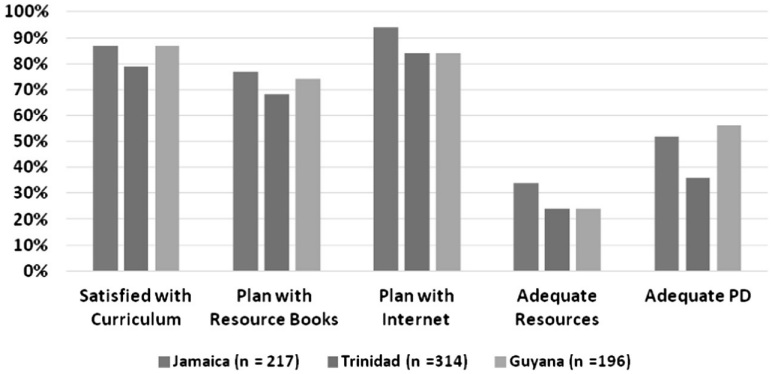

Fig. 1 Teachers' Perceptions of Curriculum Planning and Satisfaction, and Resources and PD

but only one-third of the Trinidad and Tobago sample teachers did. Professional development was one of the goals found in Guyana's Education Sector Paper 2014–2018 (MOE, N/D).

Teaching and Student Evaluation Strategies

In comparing sample teachers' perceptions of teaching strategies always/often employed in the three countries (figure 2), there were many similarities and two differences. It appears that sample teachers were using a variety and similar amounts of teaching strategies combining teacher-directed methods (teacher talk, questioning and discussions) and SCL

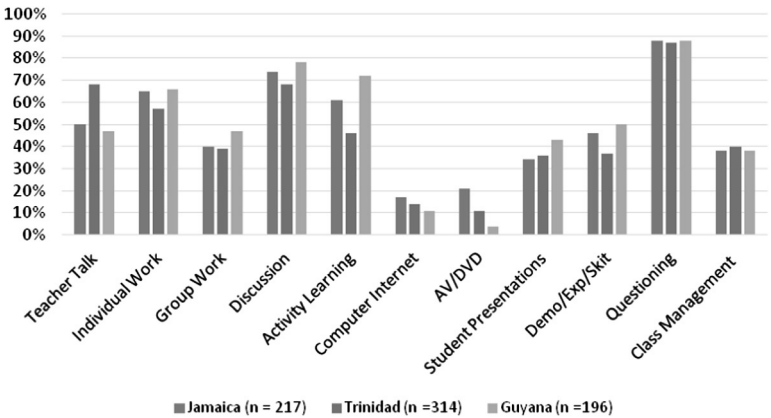

Fig. 2 Comparison of Teachers' Perceptions of Teaching Strategies in Guyana, Jamaica and Trinidad (% always/often used)

activities (group work, activities, experiments, role-playing and student presentations). As for the differences, about half of the sample teachers in Jamaica and Guyana claimed that they would always/often use teacher talk in their classes, whereas close to 70 per cent of sample teachers in Trinidad and Tobago did. Reverse claims were made in activity learning strategies: Less than half of the sample teachers in Trinidad and Tobago claimed that they would always/often use activities, whereas 72 per cent of sample teachers in Guyana and 62 per cent of sample teachers in Jamaica did. In open-ended responses in the survey, several sample teachers claimed that a major change that can be attributed to the reform initiative is the "movement towards student centre learning."

An alarming similarity is that almost 40 per cent of the sample teachers in all three countries claimed that they always/often have classroom management problems. In open-ended responses, quite a few teachers claimed that their "class size is approximately 45 to 50 students." A typical comment was: "increase in pupil/student to teacher ratio; reduction in discipline as classes get bigger in size." Joong et al. had similar findings in their secondary reform studies in China, Sierra Leone and the Philippines (Joong et al. 2012a, 2013a,b, 2019).

Comparison of teachers' self-reporting of student evaluation strategies always/often employed in the three countries is shown in figure 3. Sample teachers were always/often using a variety of student evaluation methods that included tests, class work, homework/assignments, student presentations/projects, and examinations. They were also used by sample

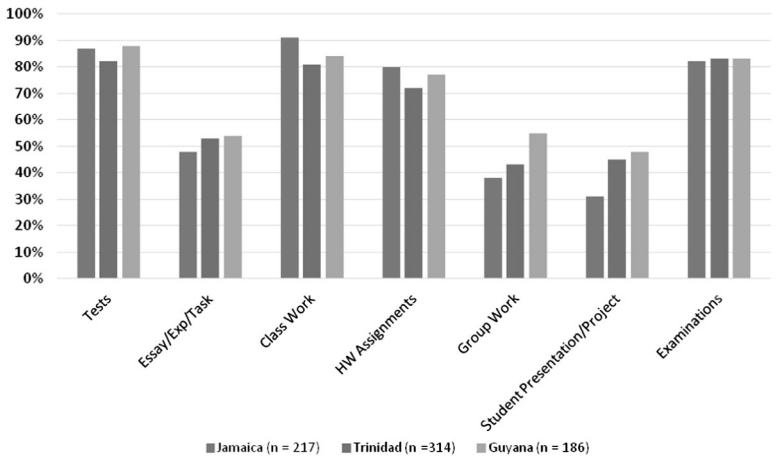

Fig. 3 Comparison of Teachers' Perceptions of Evaluation Methods in Guyana, Jamaica, and Trinidad (% always/often used)

teachers to determine the final mark. The mean weightings provided by sample teachers in the three countries were tests (20 per cent), examinations (50 per cent), assignments (13 per cent), class work (10 per cent) and homework (7 per cent). Except for the weightings, similar findings were found in reform studies in China, Sierra Leone and the Philippines (Joong et al. 2012a,b, 2013a,b, 2019).

Integration of Technology

Survey results show that most (85–95 per cent) sample teachers used the Internet in planning their courses. In open-ended responses in the survey, sixteen Trinidad and Tobago teachers, twenty-five Guyanese teachers and thirty Jamaican teachers described technology as a major change. However, only 15 per cent of the sample teachers and students claimed that technology was always/often used in their classes. One key similarity found was that even with the laptop/tablet programmes implemented in the three countries, only about 10 per cent of the sample teachers would always/often make use of technology/Internet in their classrooms. This finding confirmed studies by Briggs and Blair (2016) and Kamalodeen and Chaitoo (2015) that laptops were rarely used in academic classes. In Trinidad and Tobago with the eCAL programme, twenty-three sample teachers had comments similar to the one below, which confirmed Briggs and Blair's (2016) finding in their study. "With introduction of laptop, students' performance has declined. Students use laptop for entertainment (Social media, Youtube), distractions in classes." However, there were several positive responses by respondent teachers in the surveys, for example, "There is now the move towards the use of technology in education, use of multimedia, and so on, to make lessons interesting" and "The acquisition of technology has improved the availability of resources."

Teachers' Strategies with Special Needs Students

Sample teachers were asked to answer specific questions related to special needs students. Results are shown in tables 1 and 2.

Results indicate that in an average class, most sample teachers had an average of six to eight behavioural students, three to four students with learning disabilities, two to four gifted students and one physically disabled student. These numbers are similar to those estimated in the National Policy on Student Support Services in Trinidad and Tobago (2004). A handful of teacher respondents, in open-ended responses in the survey, voiced their concerns for students with special needs.

Table 1. Mean Number of Students with Special Needs in Each Class.

Category	Jamaica $n = 217$	Trinidad $n = 314$	Guyana $n = 196$
Learning disabled	4	3	4
Behavioural	8	6	6
Gifted	2	2	4
Physically disabled	1	1	2

Table 2. Strategies used for students with special needs.

	Jamaica (%)	Trinidad (%)	Guyana (%)
Extra time for tests/assignments	27	25	51
Inclusion	33	18	39
Withdrawal	17	5	3
Accommodation	30	30	29
Special education teachers	11	4	14
Modification	NA	NA	25

Some of the sample teachers comments were: "Too many special needs students cannot cope;" "Curriculum is very intense for slow learners;" and "Too many students exhibit frustration." Most of the special needs students were integrated into regular classes in the three countries. Strategies used included provision of extra help, extra time for assessments and assignments, inclusion, accommodation, withdrawal, special education teacher, and programme modification. These strategies used by sample teachers in Guyana and Trinidad and Tobago match the outcomes in its Education Sector Paper 2014–2018 (MOE, N/D), Anderson's (2017) study in Jamaica, and the National Policy on Student Support Services in Trinidad and Tobago (2004), respectively. Results are similar to the integration of students with special needs in our China and Philippines reform studies (Joong et al. 2012a, 2013b, 2019).

Teachers' Satisfaction and Areas of Implementation in Reform Implementation

Sample teachers were asked if they were satisfied with how they had implemented the reform. On average, in the three countries, 70 per cent

of the sample teachers were satisfied, 3 per cent were dissatisfied and 22 per cent were in-between. When asked in what areas they would like to make improvements, on average, a majority (57–67 per cent) of the respondent teachers said they would like to make improvements in technology, about 40 per cent would like to make improvements in teaching strategies and one-quarter of the respondent teachers would like to make improvements in curriculum planning, student assessment and classroom management, respectively. These results confirmed teachers' perceptions of secondary reforms in the three countries as 40 per cent of the sample teachers would like to make improvements in teaching strategies.

Comparison of Students' Voices in the Three Countries

Comparison of sample students' self-descriptions are shown in table 3. There were equal numbers of male and female sample students in Jamaica, whereas the female sample students outnumbered their male counterparts in Trinidad and Tobago and in Guyana. The lower enrolment of male students was accounted for in studies by Bailey (2004) and Jha and Kelleher (2006).

On average, sample students self-reported that they spent two hours on homework per day and they were absent for four days per term in all three countries. When asked to whom they would go to discuss school marks and course difficulties, most would first go to their parents, then friends/classmates, rather than going to their teachers and guidance counsellors (see figure 4). Epstein (2001) opined that comprehensive parental involvement, including parenting, communication and involvement in home learning activities, are most beneficial to all stakeholders in the school system. Perriel's (2015) findings were that parental involvement in their grade 9 children's education had a positive impact on their academic achievement in Jamaica. Regarding postsecondary aspirations, a majority of the sample students (63–83 per cent) in the three countries

Table 3. Description of sample students.

	Jamaica ($n = 659$)	**Trinidad ($n = 740$)**	**Guyana ($n = 624$)**
Female (%)	50	56	59
Male (%)	50	44	41
HW (hours/day)	1.8	2.2	2
Absences/Term	4 Days	4 Days	3 Days

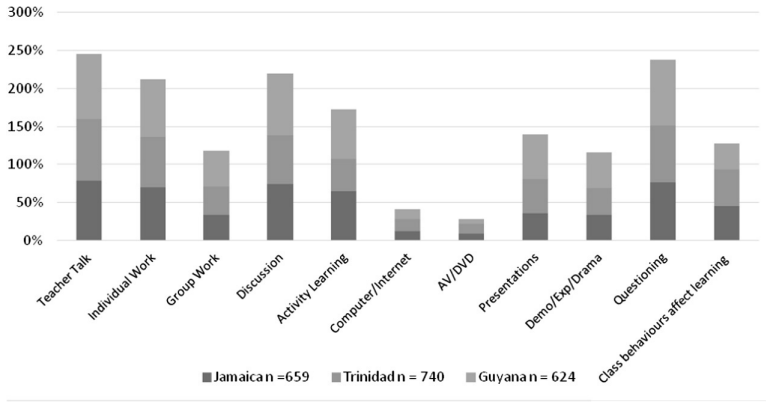

Fig. 4 Comparison of Students' Perceptions of Teaching Methods always/often used in English in Jamaica, Trinidad and Guyana

would like to attend university/college after completing secondary school, while 10–28 per cent of the students preferred to go to work, and a handful of sample students would join an apprenticeship programme. In Caribbean countries, education is generally regarded as a basic requirement for socioeconomic transformation, including human resource development, and hence the overall development of a nation (Tsang et al. 2002).

Comparison of Students' Perceptions of Teaching Methods in Mathematics and English Classes

Figures 5 and 6 show comparisons of students' perceptions of teaching methods in English and mathematics classes in the three countries. By comparing the length of the colour codes for each country for each strategy, we can see that there is strong agreement between the students' perceptions on how often certain strategies were used in English and mathematics classes in the three countries. It appears that teacher talk is a predominant strategy used by most teachers, followed closely by discussions, questioning and individual desk work, all of which are teacher-directed pedagogies. As for activity-based lessons, on average, over half of the sample students in both of these subjects claimed that their teachers always/often had activities in their classes. In general, sample students in Jamaica and Guyana claimed that they had more activities in both subjects than those in Trinidad and Tobago. About a third of the students in all three countries claimed that their teachers always/often used group work and student presentations in their English classes and to a lesser

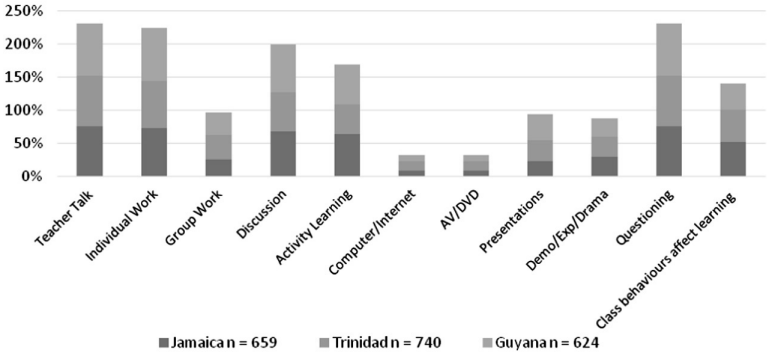

Fig. 5 Comparison of Students' Perceptions of Teaching Methods always/often used in Math in Jamaica, Trinidad and Guyana

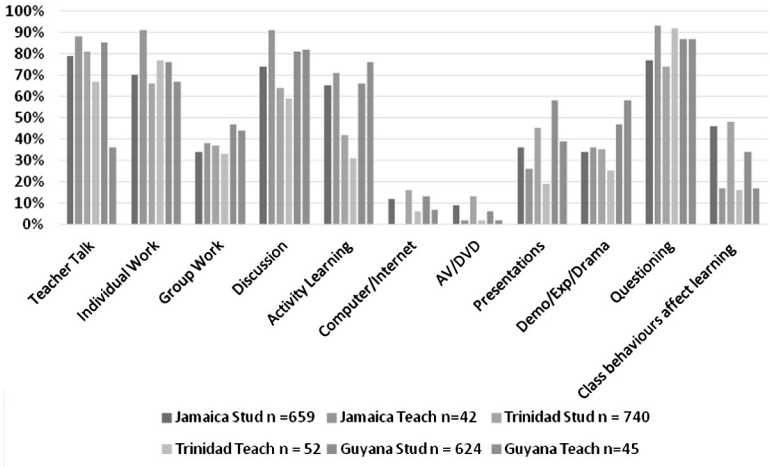

Fig. 6 Comparison of Students' and Teachers' Perceptions of Teaching Methods always/often used in English in Jamaica, Trinidad and Guyana

extent in mathematics classes. Sample students in Guyana claimed that they had more student presentations and drama skits in their English classes than in Jamaica and Trinidad and Tobago at 55 per cent and 40 per cent, respectively. As for integration of technology, only 10–20 per cent of sample students claimed that computers were used by teachers in the four subjects. Similar results were obtained in students' perceptions of teaching strategies in science and social studies classes. The graphs are not shown. A noted result is that between 30 per cent and 40 per cent of the sample students in all three countries claimed that their teachers always/

often used demonstration/experiments in their science classes. Another noted result is that sample students in all three countries claimed that discipline is a problem in both mathematics and English classes. On average, about 40 per cent of the sample students claimed that the behaviour of other students in their classes was making it difficult for them to learn, especially in mathematics classes. An alarming similarity is that about 40 per cent of the sample teachers in all three countries also claimed that they always/often had classroom management problems.

Comparison of Teachers' and Students' Voices in the Three Countries

Comparison of sample teachers' and students' self-reporting of teaching strategies always/often employed by teachers in English, mathematics, science and social studies in the three countries is shown in figures 7–10, respectively. In Figure 7, the first set of six bars compares sample students' and teachers' perceptions of how often teacher talk is used in English classes in Jamaica, Trinidad and Tobago, and Guyana, respectively. The next set of six bars compares their perceptions of how often individual work is used in English classes and so on. Other than teacher talk in Guyana and student presentations in Trinidad and Tobago, there are few discrepancies (up to 10 per cent always/often used) between the sample teachers' and students' perceptions of the use of teacher-directed strategies in English classes. As for student-centred activities, about two-thirds of both samples in Jamaica and Guyana claimed that

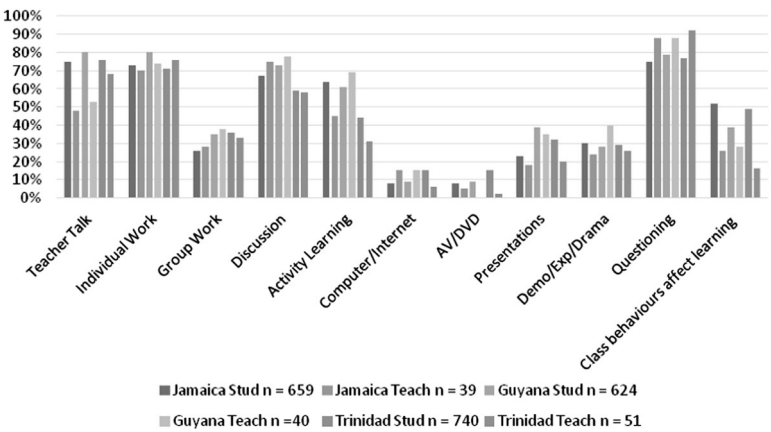

Fig. 7 Comparison of Students' and Teachers' Perceptions of Teaching Methods always/often used in Math in Jamaica, Trinidad and Guyana

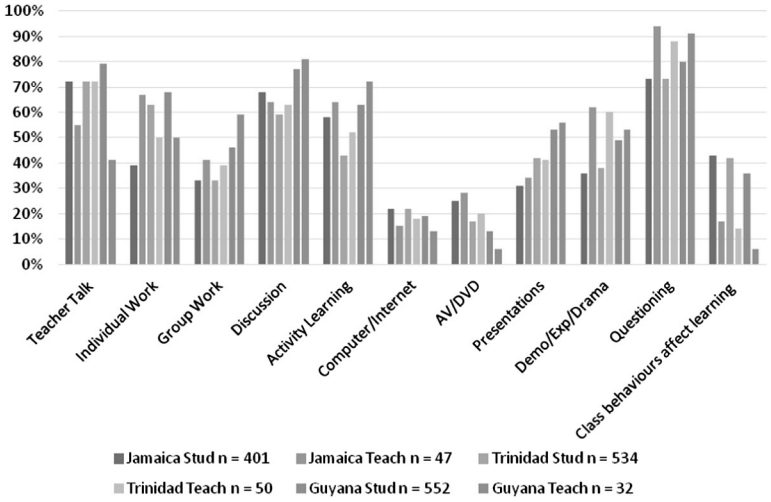

Fig. 8 Comparison of Students' and Teachers' Perceptions of Teaching Methods always/often used in Science in Jamaica, Trinidad and Guyana

activity-based learning was always/often used as compared to one-third of both samples in Trinidad and Tobago. Group work is always/often used by a little more than one-third of both samples in English classes in the three countries. In figures 8 and 9, except for one or two discrepancies that were mentioned in sections above, discrepancies in teaching strategies between both samples are quite small in mathematics and science classes in the three countries as the six bars in each strategy are almost equal in length. As for social studies classes, the largest discrepancy in teaching strategies comes from sample Jamaican teachers. Other discrepancies are quite small in the three countries.

To sum up, both sample teacher and student respondents claimed that sample teachers were using a variety of teaching strategies including both teacher-directed methods and student-centred activities (activities, group work, demonstrations, experiments and role playing), and both individual and group work and student presentations. However, as mentioned above, only about 15 per cent of the sample students and teachers claimed that the computer or the Internet is always/often used in their classrooms.

Comparison of Students' and Teachers' Voices on Classroom Management

The most significant result in figure 8 is that about half of the sample students in Jamaica and Trinidad and Tobago and close to 40 per cent of the

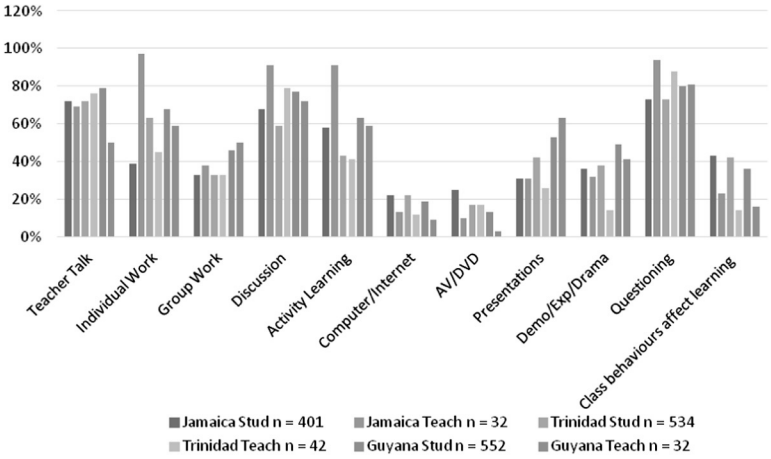

Fig. 9 Comparison of Students' and Teachers' Perceptions of Teaching Methods always/often used in Social Studies in Jamaica, Trinidad and Guyana

students in Guyana claimed that other students' behaviour was making learning difficult in their mathematics classes. Three times as many respondent students as teachers claimed that classroom management issues existed in mathematics classes in the three countries. Classroom management issues are equally poor in English, science and social studies classes (see figures 9–11) in the three countries with similar discrepancies between sample teachers' and students' responses. Lochan (2010 citing Freiberg, Huzinec, and Templeton 2009) had similar findings at three

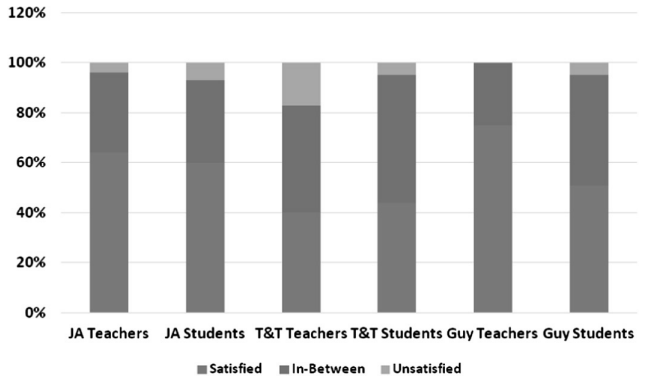

Fig. 10 Comparison of Teachers' and Students' Perceptions of CSEC Exam System in Guyana, Jamaica and Trinidad

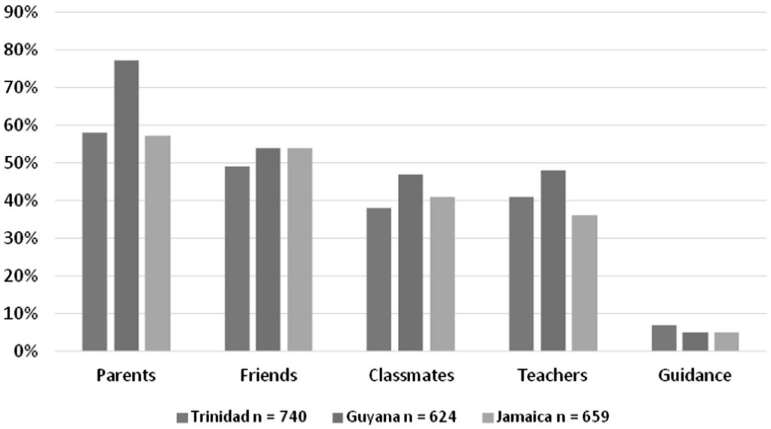

Fig. 11 Whom do Student Ask for Help?

primary schools in Trinidad. A great deal of classroom time is spent trying to keep order, reducing teaching time, which can negatively impact student performance (Lochan 2010). The behaviour of other students in the class as well as teachers' pedagogical approach, which involves mostly talking, were reasons for negative behaviour disrupting regular class routines (Lochan 2010). Results from our reform studies in China, Sierra Leone and Philippines (Joong et al. 2012a, 2013a,b, 2019) also indicated discipline as a major concern in their classrooms.

Comparison of Students' and Teachers' Voices on CSEC Examinations

Respondents' perceptions of CSEC examinations (see figure 11) are divided; a simple majority of sample teachers and students in Jamaica and a majority of sample teachers in Guyana were satisfied with the CSEC examinations. A majority of sample teachers and students in Trinidad and Tobago and a simple majority of the Guyanese students were satisfied with them. Most of the remaining respondents had indifferent perceptions about the high-stakes CSEC examination.

School-based assessment (SBA) or independent study project counts for 30 per cent of the CSEC marks in certain subject areas, for example physics, additional math and tech subjects. De Lisle (2015) said, "SBA is more often than not an internal component of external high-stakes public examinations. Therefore, SBA scores, even when generated within classrooms, are inevitably used for high-stakes, summative purposes. (80)"

The following are typical comments from sample teachers in open-ended responses:

"CSEC exam has been simplified to accommodate our students and yet the failure rate has increased over the years."

"SBAs are a joke as most are copied from previous students or completed by professionals, they should be replaced/removed."

Students' Attitudes, Interests, Capabilities, Behaviours and Special Education

Among two hundred teacher respondents who replied to these open-ended questions in the survey, about half claimed that their students "lack basic numerical and literacy skills." Fifty sample teachers claimed that "student attitude toward education has been on a downward spiral," "negative" or they had "poor study habits" or "are lazy." Forty-one sample teachers claimed that their students "lack interest and motivation." On a positive note, fifteen sample teachers said their "students are eager to learn" in their courses. As for student behaviours, forty teacher respondents complained about the "breakdown in discipline, decline in behaviour." A few teachers claimed that cell phones and the Internet are distractions. Typical comments are as follows:

They are generally well-behaved in class. Though, there are a few who tend to lose concentration in listening to the teacher.

Students are becoming less focussed in their studies due to unabated use of gadgets in classrooms. Performance in classroom is worsening due to these distractions.

Classroom Observations in the Three Countries

For triangulation purposes, the researchers conducted classroom observations at three conveniently selected sample schools in each country, focusing on curriculum planning and teaching and student evaluation strategies. Classroom observation data corroborated most of the quantitative findings in figures 2, 3 and 5–10 (Terrell 2012).

Student resources consisted mostly of textbooks and worksheets. Some textbooks were shared. All teachers had access to the Internet and computers in the staffrooms, which they often utilized while preparing for their lessons. Teachers used predominantly teacher-directed lessons (teacher talk, white board work, PowerPoint presentation, discussion and questioning) in classroom observations. This was followed by

individualized and small-group work. Typical observations on teacher-directed lessons are as follows:

- A discernible pattern is observed in mathematics classes in Trinidad. Objectives were written on the board, followed by examples from textbooks/handouts. Students then practise individually or in pairs rather than investigate or apply skills/concepts. Formative assessment is limited to lower-level questioning, and student involvement is limited to sharing responses obtained for practice questions. Oral consensus is the indicator for the teacher to proceed. The teacher remains at the front of the classroom for most of the lesson and sometimes students are engaged in off-task behaviours. The teacher concluded the class with assigning practice questions. Similar patterns were observed in Jamaica.
- In an observed mathematics class in Jamaica, the teacher demonstrated rotation transformations of triangles using the Geogebra software and a data projector. In Guyana, all grade 9 Mathematics students were required to complete a performance assessment on transformation geometry individually for 30 per cent of the final grade. A rubric was used for grading.
- In science classes, the teacher usually wrote notes on the board with explanations. The teacher occasionally demonstrated the concept taught. The teachers rarely asked the class to perform experiments and to write lab reports. When asked why, most teachers said that with the introduction of SBAs in CXC examinations, students are rarely asked to perform experiments. Other problems were the lack of equipment, preparation time and time for marking lab reports. Occasionally the teacher showed a YouTube video using a data projector.
- In English classes, the teacher usually wrote questions related to readings on the board. Students were given time to read individually in class for 20 minutes and then answer questions in class. The teacher then took up questions with whole-class discussions. Occasionally, role plays were performed by students after reading.
- In social studies classes, the teacher usually gave a handout or assigned textbook readings with questions on the board. This was followed by class discussions.

Typical observation on student-centred (SCL) lessons are as follows:

- In a grade 10 physics class in Trinidad and Tobago, the teacher demonstrated Hooke's law. Groups of students took measurements and proceeded to construct graphs to prove the law.

- In grade 11 woodworking, students in both Jamaica and Trinidad and Tobago were required to complete an SBA for 30 per cent in designing and constructing a chair with specifications from the CXC. A portfolio was also requested. Rubric assessment was used for evaluation. Clothes and textile and food and nutrition classes had to perform similar SBAs.

The above classroom observations confirmed most of the findings in the surveys. Noise levels in the classroom can be high in the observed classes or from neighbouring classes, which confirmed findings from students' surveys that behaviours from classmates are interfering with student learning.

Discussion on Research Questions

Perceptions of Students and Teachers of the Secondary Reform in Secondary Schools

This mixed methods study draws attention to the SCL secondary reform that has had direct impact on teachers and, in turn, on students and parents in Guyana, Jamaica, and Trinidad and Tobago. An analysis of the results of this study indicates that teachers in the three Caribbean countries have dedicated themselves to the education of students and have made the necessary changes to adopt some of the reforms. In general, a majority of the teacher respondents were satisfied with the reforms. Some teachers are still struggling with transitioning. Within teaching practices, most teachers claimed that they were using a variety of teaching methods, although teacher-directed strategies (teacher talk, individual work, discussion and questioning) still dominated. Participant students indicated that their teachers predominantly used teacher-directed strategies, but they also used student-centred strategies. Results of the surveys (figures 7–10) indicated that sample teachers always/often used activity learning, group work, student presentations and experiments/skits. Layne, Jules, Kutnick, and Layne (2008), who conducted a study on group work in Trinidad and Tobago, recommended that both teachers and pupils need to move away from traditional pedagogic methods and consider group work strategies.

Even though all three countries introduced laptop/tablet programmes, survey results and classroom observations indicate that laptops/computers were used mainly for information technology (IT) subjects in all three countries (Briggs and Blair 2016;

Kamaloodeen and Chaitoo 2015). There were small conflicting perceptions of how often student-centred strategies were used, mostly in mathematics.

Some teachers had difficulty changing former teaching praxes. These findings are in accordance with respective recent education policies in Trinidad and Tobago (MOE 2018), Jamaica (MOEY & I 2016), and Guyana (MOE, N/D). As for student evaluations, both sample teachers and students claimed that traditional tests, class work, homework, performance tasks and examinations were used most often. Sample teachers also pointed to the negative effects resulting from societal changes in open-ended questions in the survey. These effects included poor attitudes, low student motivation and classroom management issues. Classroom management needs improving as new modes of teaching and transitioning create new situations for students to deviate from expected behaviours. More in-service training in classroom management and activity-based teaching strategies as suggested by respondent teachers can impact classroom management success and is a reform requisite. Similar findings and conclusions were found in previous secondary reform studies in China, Sierra Leone and the Philippines (Joong et al. 2012a,b, 2013a,b, 2019). Sample teachers also indicated that there was inadequate support in terms of resources, especially in rural areas. Studies by the World Bank (1996), Jennings (1999), Tsang et al. (2002), De Lisle (2009), Lashley (2019) and Williams and Staulters (2014) had similar findings related to the lack of resources in the Caribbean.

Results of the study indicated sample teachers had a handful of students with special needs integrated in their classes. Provisions were made by teacher respondents in meeting the needs of special needs students in mainstream classes in accordance with inclusion policies in Guyana (MOE, N/D) and Trinidad and Tobago (2004). They include accommodation, modification, extra-time and special education teachers. In Guyana, Fraser (2017) recommended, "There should be greater implementation of the Persons with Disabilities Act (2010)" (85). On a positive note, the Ministry of Education (2020) in Trinidad and Tobago implemented its ISP recently. Perhaps other Caribbean countries will follow. Results and conclusions in this study are similar to the integration of students with special needs in our China and Philippines studies (Joong et al. 2012a, 2013b, 2019). More in-service training would help teachers to apply accommodation/modification strategies.

Implementation of Secondary Reform, In Particular, SCL

Schweisfurth (2011) said that "student-centred education (SCL) has been a recurrent theme in many national education policies in the global South" (425). SCL was promoted internationally by UNICEF (2009) as a response to the challenge of delivering quality education and improving student outcomes. A number of Caribbean scholars (e.g. Jennings 1999; Roopchand and Moss 1998; Bailey 2004; MacKinnon and MacKinnon 2010) have claimed that SCL could be one of the solutions to the problem of student underperformance in terms of CSEC successes. In light of several of the open-ended comments made by sample teachers on their students' attitudes and behaviours, SCL is what is needed at this time.

The reasons SCL policies failed that are applicable in this study include the nature of reform and its implementation; lack of materials and human resources; and interactions of divergent cultures (Schweisfurth 2015). Similar challenges were found in our previous study (Joong and Hutton 2012b) on secondary reforms in Jamaica and by Jennings (2017) in her review of interventions in schools' curricula including SCL to achieve quality in learning in the Commonwealth Caribbean. Additional challenges found in the Caribbean countries were inadequate professional development support and high student–teacher ratios (Jennings 2017). Several teachers claimed "increase in pupil/student-to-teacher ratio," that "demands are too many," and "reduction in discipline" in open-ended responses and classroom observations. These challenges also account for noisy classrooms. It is very difficult to conduct SCL instructions in these settings. There were similar findings in our studies in Sierra Leone and the Philippines (Joong et al. 2013a, 2019).

On the high-stakes examination system, results of this study indicate that both samples in the three countries were either satisfied or felt indifferent in their perceptions of the high-stakes CSEC examinations (see figure 11). Livingston et al. (2017, 18) pointed out the effects of the examination system on SCL implementation in the Caribbean. They said, "Lack of change to examination systems alongside policy calls in some countries to implement more learner-centred pedagogical approaches is confusing and frustrating for teachers. This holds many teachers back from introducing new pedagogical approaches because they are concerned about the implications for their students' results" (Livingstone et al. 2017, 18). A few sample teachers mentioned the effects of "teaching to the test"

on SCL implementation in open-ended responses. A significant result in this study, even though it is not one of the research questions, is that high-stakes CSEC examination testing does influence reform implementation, in particular, SCL and integration of technology in the Caribbean. The high-stakes examination system was found to be a persistent problem with the secondary reforms in Sierra Leone and China also (Joong et al. 2012a, 2013a,b), as "teacher respondents claimed that there was little room for introducing activity-based learning and other experimentation" (Joong 2012a, 280).

Schweisfurth (2015) claimed that SCL has potential as a framework for quality education, but implementation is problematic in low-income countries. Findings of the study clearly show that SCL can be effectively implemented in the three Caribbean countries. Altinyelken (2011) had a similar finding in his study for Turkey and Joong et al. (2012a, 2013b, 2019) in their studies in China and the Philippines. However, SCL reform initiatives must be planned with full knowledge of the reform process and its complexity. This planning was not done by the ministries in the three countries in clearly stating that SCL is one of the key reform initiatives in recent policies. It has to be implemented from the ground up, starting with primary schools. Jamaica is trying to do this in its introduction of NSC grades 1–9 in 2016. Results of this study indicate that teachers' beliefs about students' and their own roles and lack of skills hinder the use of SCL implementation in sample schools. As a result, although sample teachers perceive themselves as performing SCL teacher roles at a moderately high level, they still adopt traditional roles in the classroom. This implies that in-service training will enhance teachers' understanding of SCL and impact their roles and functions. For SCL to become a reality in classrooms, it is essential that teachers undergo additional in-service training, including action research, that has the potential to change their SCL practices.

Recommendations

Findings in this study clearly show that SCL can be effectively implemented in the three Caribbean countries. Reform initiatives must always be planned with full knowledge of the reform process and its complexity. Teachers' beliefs about students' and their own roles and lack of skills hinder the implementation when coupled with contextual barriers – namely large classes, lack of resources and in-service training, all of which must be addressed.

Achieving the SCL policy goals requires even more government support; this includes computer and Internet access, new textbooks, science equipment and supplies, and in-service training. School-related variables are equally vital in the teaching–learning process. Varied and appropriate instructional materials are needed to make instruction and studying more motivating and encouraging, and to make the jobs and responsibilities of stakeholders easier in meeting SCL objectives in secondary schools in all three countries. For SCL to become a reality in classrooms, it is essential that teachers undergo continuous in-service training, including reflection, observation and action research, that has the potential to change their beliefs about teaching and learning (de Vries, van de Grift, and Jansen 2014; Lin, Chuang, and Hsu 2014).

Even though it is not one of the research questions, an important by-product of this study is that students' and teachers' perceptions can be used to determine whether reform initiatives have been achieved, for example SCL and integration of technology. However, further study has to be performed on that topic. Finally, the government must continue to disseminate information on SCL reform initiatives and successes and build support among parents, communities and all other key stakeholders. It is also hoped that the findings and recommendations from this study will assist stakeholders in designing curricula, in adapting exemplary teaching strategies and in implementing quality assessment strategies. Educational leaders and educators in all jurisdictions will benefit from reviewing the education reform efforts of these three Caribbean countries.

Conclusion

Arguments in support of comparative study as identified by Crossley and Broadfoot (1992) apply to this study. These include identifying the similarities and differences in the reforms, observing educational and social issues in different cultural contexts, and establishing theories and strategies with respect to teaching and learning. Comparison and analysis of the perceptions of the teachers and students in the implementation of reforms in the three Caribbean countries provided insight into ways to improve teaching and learning, in particular, SCL, in other jurisdictions. There is a strong history of commitment to basic education in the Caribbean, especially among administrators, parents and teachers. There are real

challenges posed by increasing student enrolment, the exploding growth of knowledge and technology, the mounting forms of distraction facing students' learning, and the differences in students' interests and approaches to learning.

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Mixed Methods Research: Exploring Its Complexities and Challenges

Loraine D. Cook[1], Canute Thompson[1], Steve Weaver[2], and Leemoy Weaver[3]

[1]School of Education, The University of the West Indies, Mona, Jamaica
[2]The UWI School of Nursing, Mona, Jamaica
[3]Sociology, Psychology & Social Work, The University of the West Indies, Mona, Jamaica

Abstract

This paper describes findings from interviews and the extant literature to synthesize a working definition of the concept of mixed methods research (MMR) and present an evolutionary perspective of this pragmatic research approach. It brings to bear the thoughts of research luminaries such as Professor John Creswell and Professor Anthony Onwuegbuzie, both of whom are cutting-edge international MMR experts (and both are past presidents of the Mixed Methods International Research Association). Guided by interviews with Professors Creswell and Onwuegbuzie, the various definitions of MMR, its historical evolution as the third research paradigm, elements of its philosophical foundation, and how it contributes to solving society's problems are all brought to bear on the discussion. The paper interweaves thoughts on MMR, placing it at the centre of an evolutionary trend in research that strives to produce richer quality data while recognizing the inherent challenges in understanding our reality. Finally, this manuscript is designed to be a reference tool for researchers seeking to understand the basic definitional and philosophical dimensions of MMR.

Keywords: mixed methods research; definition; philosophy.

Mixed Methods Research: Exploring Its Complexities and Challenges

Mixed methods research (MMR) is described as the third research approach (Johnson, Onwuegbuzie, and and Turner 2007), along with the

Caribbean Journal of Mixed Methods Research 1, 1 (2020): 167–190

quantitative (first wave) and qualitative approaches (second wave). The quantitative approach, which emerged out of the postpositivist tradition of the 19th century, still maintained global recognition and a priori acceptability up to the middle of the 20th century (Johnson, Onwuegbuzie, and TurnerOnwuegbuzie, and TurnerOnwuegbuzie, and Turner 2007). Between the 1970s and the 1990s, qualitative research began to emerge, and while it initially struggled to gain the same recognition as the quantitative approach, it began to hold its own by the end of the 20th century. Finally, mixed methods began to rise in prominence shortly after the turn of the century (Creswell 1999; Johnson, Onwuegbuzie, and TurnerOnwuegbuzie, and TurnerOnwuegbuzie, and Turner 2007) and it has been popularized by researchers such as John Creswell, Kathleen Collins, Jennifer Greene, Burke Johnson, Michael Fetters, Anthony Onwuegbuzie, Abbas Tashakorri, Charles Teddle, Vicki Plano Clarke, John Hitchcock and Nataliya Ivankova. This methodology emerged as a natural evolutionary approach as it dealt with the ongoing tension between quantitative and qualitative research methods. It created a natural avenue for both types of research approaches to find common ground and its struggle was not as intense because researchers were seeking ways to strength the quality of their results and welcomed a methodology that allowed a position of relatively equal standing in a world where the power of quantitative research was recognized but the power of the qualitative approach was powerful in finding and solving intense social problems. Many researchers saw the inherent power of combination of the methods leading to a reduction of tension and easy acceptance of this new approach.

An interesting aspect to the mixed methods approach is that it represents the consolidation of techniques scholars had been using, without necessarily calling it by that name, for decades. Indeed, Creswell and Onwuegbuzie suggest that MMR has existed as a research approach for centuries (J. Creswell, personal communication, 20 November 2017, and A. Onwuegbuzie, personal communication, 21 November 2017). Creswell points to the simple practice of medicine in which a physician in examining a patient undertakes a quantitative examination such as testing the patient's blood pressure and if an adverse finding is made, conducts qualitative research by asking the patient about eating, sleeping and work habits. Hence, some contemporary work in mixed methods entails recognizing and labelling approaches being mixed so that scholars might be able to take advantage of them, whereas other mixed methods might be somewhat new.

In discussing the usefulness of MMR, it is important to keep in mind that quantitative research and qualitative methods have both strengths and weaknesses. By combining these two research methods in a given study, each complements the other by offsetting the other's weaknesses. Mono-method researchers may have a bias towards one aspect of a research problem and thus distort what they record and report (Johnson and Christensen 2017). By engaging in MMR, the researcher potentially will collect richer data and is more likely to uncover unexpected contradictions and verifications and thus gain a more comprehensive understanding of the issue or the problem being investigated (Johnson, Onwuegbuzie, and and Turner 2007).

The integration of qualitative and quantitative methods frequently results in superior research, according to Professor Onwuezbuzie (personal communication, 21 November 2017). Professor Creswell's comments from a radio interview illuminate the above statement:

> I think that hopefully I can raise the level of understanding and appreciation for qualitative research; you know I think that if you are a quantitative researcher and you're used to doing surveys and experiments and you have an opportunity to gather some qualitative data you'll never go back to just doing quantitative research. You see the level of detail, you see the personal stories, suddenly the *p*-values and effect size is the quantitative outcomes come more of a surface picture and qualitative gives you more of an in-depth picture and putting those two pictures together is really the mixed methods agenda so that's been my sense so far. I'm still learning (personal communication, 20 November, 2017).

Defining MMR

MMR is popularly defined as the integration of quantitative and quantitative research approaches in a single study that allows the researcher to draw "interpretations based on the combined strength of both sets of data to understand" (Creswell 2015, 2). Johnson, Onwuegbuzie, and Turner (2007) record nineteen different definitions of MMR, of which five definitions were purposely selected for discussion (see table 1). Though there are commonalities shared among these definitions, there are also significant variations. Four of the five authors of the definitions selected (Bazeley, Caracelli, Newman and Mertens) referred to the label MMR in their definition, while one author (Shulha) focused on collaborative MMR. All the authors, including Shulha, agreed that MMR involves the use of more than one research approach. However, three authors (Caracelli, Newman and Mertens) agreed that MMR is a combination of quantitative research and qualitative research, while Bazeley's and

Table 1: Definitions of MMR.

Pat Bazeley:

I tend to distinguish between mixed methods and multimethod, although if I need a generic term, I used Mixed methods. Multimethod research is when different approaches or methods are used in parallel or sequence but are not integrated until inferences are being made. Mixed methods research involves the use of more than one approach or method of design, data collection or data analysis within a single programme of study, with integration of the different approaches or methods occurring during the programme of study, and not just at its concluding point. Note that I am not limiting this to a combination of qualitative and quantitative research only, but more broadly, combinations of any different approaches/methods/data/analyses.

Valerie Caracelli:

A mixed method study is one that planfully juxtaposes or combines methods of different types (qualitative and quantitative) to provide a more elaborate understanding of the phenomenon of interest (including its context) and, as well, to gain greater confidence in the conclusions generated by the evaluation study.

Isadore Newman:

Mixed methods research is a set of procedures that should be used when integrating qualitative and quantitative procedures reflects the research question(s) better than each can independently. The combining of quantitative and qualitative methods should better inform the researcher and the effectiveness of mixed methods should be evaluated based on how the approach enables the investigator to answer the research question(s) embedded in the purpose(s) (why the study is being conducted or is needed; the justification) of the study.

Lyn Shulha:

By collaborative mixed method research, we will mean the purposeful application of a multiple person, multiple perspective approach to questions of research and evaluation. Decisions about how methods are combined and how analyses are conducted are grounded in the needs and emerging complexity of each project rather than in preordinate, methodological conventions .... Within this context, methods can be "mixed" in a variety of ways. Sometimes, one method serves another in validating and explicating findings that emerge from a dominant approach. On other occasions, different methods are used for different parts of the issues being investigated, and in an independent way. In more complex cases, the methods and perspectives are deliberately mixed from the beginning of the process. The resulting interaction of problem, method, and results produce a more comprehensive, internally consistent, and ultimately, more valid, general approach. What sets the most complex forms of collaborative mixed method research apart from other forms of inquiry is that its findings depend as much on the researchers' capacities to learn through joint effort and to construct joint meaning as on their expertise in conventional data collection and analysis techniques.

(*Continued*)

Table 1 (*continued*)

Donna Mertens:

Mixed methods research, when undertaken from a transformative stance, is the use of qualitative and quantitative methods that allow for the collection of data about historical and contextual factors, with special emphasis on issues of power that can influence the achievement of social justice and avoidance of oppression.

Source: Johnson, Onwuegbuzie, and and Turner 2007, 119–21.

Shulha's definitions extend beyond the two approaches. Bazeley stated, "Note that I am not limiting this to a combination of qualitative and quantitative research only, but more broadly, combinations of any different approaches/methods/data/analyses" (119). Shulha, in explaining her approach, stated, "By collaborative mixed method research, we will mean the purposeful application of a multiple person, multiple perspective approach to questions of research and evaluation ..." (121). All five authors either explicitly stated or suggested that MMR should be implemented within a single study. Bazeley's and Shulha's definitions allow for MMR to include mixing research methods within the research paradigm, that is mixing within the quantitative or qualitative approaches. These five definitions vary in levels of specificity (Johnson, Onwuegbuzie, and and Turner 2007); therefore, it is critical that each researcher assess them and decide on the most relevant definition for their investigation.

There are various points in the research process where the mixing or integration of the two research approaches can take place. At first glance, Mertens' definition seems to restrict the mixing of research approaches to the data collection stage; however, a closer look suggests that mixing can occur around the philosophical framework of the research. The philosophical framework provides the assumptions, principles and values that will guide the thinking and practice of the researcher (Johnson, Onwuegbuzie, and Turner 2007; Mertens 1998). Hence, Mertens, for example, argues that the MMR researcher can take a transformative stance. In so doing, the MMR researcher is not only guided by pragmatism, but also by a transformative world view. This transformative world view, according to Mertens, can potentially contribute to the social transformations needed to improve the quality of life for people (Mertens 2020, CJMMR). This suggests a mixing of world views, which is discussed in more depth later in this paper.

Bazeley, on the other hand, though she highlights the relevance of this type of mixing when dealing with methods and data analysis in research, seemed to agree with Caracelli, Newman and Shulha that mixing can

Figure 1: MMR on a continuum
Source: Johnson and Christensen 2017, 32.

occur at all stages of the research process. She explained, "mixed methods research involves the use of more than one approach to or method of design, data collection or data analysis within a single program of study, with integration of the different approaches or methods occurring during the program of study, and not just at its concluding point" (see table 1). Also, mixing within a single study can occur on a continuum, ranging from partial mixing to complete mixing (Johnson, Onwuegbuzie, and TurnerOnwuegbuzie, and TurnerOnwuegbuzie, and Turner 2007; Johnson and and Christensen 2017). Mixed research could be "with an equal emphasis on qualitative and quantitative" (the centre of the continuum) or mixed research with an emphasis on qualitative or quantitative research (see figure 1) (Johnson et al. 2017).

Finally, mixed methods researchers' orientation is reflected in their definitions (Johnson, Onwuegbuzie, and TurnerOnwuegbuzie, and Turner-Onwuegbuzie, and Turner 2007). Does the MMR approach have a top-down or a bottom-up approach? The top-down approach/orientation occurs when the researcher starts with a philosophical framework that guides the investigation process. In discussing this issue, Morgan (2007) notes that the top-down approach, that is starting with ontological assumptions about the nature of reality, imposes "constraints on any subsequent epistemological assumptions about the nature of knowledge" (57). On the other hand, according to Tashakkori and Teddlie (2010), most "mixed methods studies have been aparadigmatic in nature (we have called this a bottom-up approach to MMR)" (814). In other words, the research questions drive the investigation and not a philosophical assumption (Johnson, Onwuegbuzie, and TurnerOnwuegbuzie, and TurnerOnwuegbuzie, and Turner 2007). Newman's definition indicates a bottom-up approach, while Mertens's definition reflects a top-down approach (see table 1) (Johnson, Onwuegbuzie, and TurnerOnwuegbuzie, and TurnerOnwuegbuzie, and Turner 2007).

Potential Advantages of MMR

MMR offers several advantages. Caracelli (cited in Burke, Onwuegbuzie and Turner) states that "a mixed method study ... provide[s] a more

elaborated understanding of the phenomenon of interest (including its context) and, as well, greater confidence in the conclusions generated by the evaluation study" (see table 1). Johnson, Onwuegbuzie, and Turner (2007) explain "expansion intent" by stating that a mixed methods researcher's purpose could be to "expand the breadth and range of inquiry by using different methods for different inquiry components" (116). For example, a teacher-researcher in a high school might observe that her students are usually late for class after returning from lunch. As a researcher, the teacher makes the decision to examine this problem. A quick discussion with the class suggests that the lunch line in the canteen moves slowly and there is some degree of disorganization in the canteen. Following this informal discussion, the teacher talks with a few other students outside her class. These students suggest that, in addition to the disorganization of the service in the canteen, the food does not arrive on time; it is delivered while the students are on their lunch break. Selected teachers also share other additional issues concerning the canteen. Because the school has over a thousand students, thirty-two teachers and other staff members, the teacher-researcher develops a questionnaire using the information collected informally or through formal interviews, with the intent to conduct a survey to ascertain the degree to which other members of the school community are experiencing the same or similar problems with the canteen. When the data collected from the survey are analysed, the results show that the problems with the canteen are prevalent. To expand the quantitative results, the teacher-researcher asks a few individuals who participated in the survey to take part in a 30 minute interview during which the researcher records their experiences in the line while they wait to be served. These stories, the teacher-researcher hopes, would give the school board a more in-depth understanding of what the students experience in the canteen and the anxiety that this adds to their school experiences.

In the process of seeking to gain a comprehensive understanding of an issue or problem, the MMR findings can be cross-checked using quantitative and qualitative data. Shulha, in her definition, stated "Within this context, methods can be 'mixed' in a variety of ways. Sometimes, one method serves another in explicating findings that emerge from a dominant approach... The resulting interaction of problem, method, and results produces a more comprehensive, internally consistent, and ultimately, more valid general approach" (see table 1). This involves collecting both types of data roughly at the same time, analysing both types of data separately and comparing the two sets of data to find convergence or

divergence (Wisdom and and Creswell 2013). The use of two methods to enhances the validity of the research process was further supported by Bouchard (1976), who noted that "convergence of findings by two methods with different weaknesses enhances our belief that the results are valid and not a methodological artifact" (268).

Illustrations from Past Practices in the Evolution of MMR

Though Creswell and Clarke (2011) stated that the seminal period of MMR historically began in the 1950s through the work of Campbell and Fiske in 1959, Onwuegbuzie (personal communication, 21 November 2017) and Maxwell (2016) concurred that MMR started centuries ago. Onwuegbuzie (2017) stated that "mixed methods can be traced back to Socrates and Aristotle. We always claim that Aristotle would have been a mixed methods researcher as he always talked about getting much out of your data as possible." Onwuegbuzie also cited a study that investigated the cause of cholera by John Snow in the 1830s and 1840s as an early example of integrating quantitative and qualitative data. Snow used whatever research tools were available in the pursuit of a solution to a life-threatening problem facing a nation. Snow's study of the cholera outbreak in Britain revealed that it was not air but contaminated water that caused the disease. Snow used maps to highlight the pumps that supplied water to various communities where inhabitants experienced high death rates from cholera. He also used statistics to measure the quality of water from various sources and demonstrated their association with communities that had experienced the cholera outbreak. In addition, he used stories from various people to strengthen his point. For example, Snow described how he went about informally collecting qualitative data:

> I inquired of many persons whether they had observed any change in the character of the water, about the time of the outbreak of cholera, and was answered in the negative. I, afterward, however, met with the following important information on this point. Mr. Gould, the eminent ornithologist, lives near the pump in Broad Street, and was in the habit of drinking the water. He was out of town at the commencement of the outbreak of cholera, but came home on Saturday morning, 2nd September, and sent for some of the water almost immediately, when he was much surprised to find that it had an offensive smell, although perfectly transparent and fresh from the pump. He did not drink any of it. Mr. Gould's assistant, Mr. Prince, had his attention drawn to the water, and perceived its offensive smell. A servant of Mr. Gould who drank the pump water daily, and drank a good deal of it on

August 31st, was seized with cholera at an early hour on September 1st (Snow 1854, 99–100).

Maxwell (2016), in discussing the early beginnings of combining quantitative and quantitative strategies in a single study, noted that this practice in the natural sciences predates its use in the social sciences. Maxwell discussed Galileo's study of heavenly bodies using a telescope and stated the following:

For example, in 1609 he trained his telescope for the first time on the moon, and observed previously unsuspected features, ones that he believed were not very different from those on the earth: Measuring the length of the shadows cast into craters and by mountains at a time when the relative positions of the sun, moon, and earth were known, he was able to estimate the depths of the moon's declivities and the height of its protuberances and to begin a three-dimensional description of the moon's topography (Kuhn 1957, 221). Similarly, Galileo showed that sunspots were actually features of the sun, rather than planets passing in front of the sun, by using both observational description of their origination, disappearance, and changes in shape, and measurement of their apparent velocity and mathematical calculations that demonstrated that their movement was only consistent with their being on the sun's surface (14).

This is an example of Galileo combining observation and measurement to arrive at a scientific conclusion in the 15th century.

Maxwell (2016) also cited W.E.B. Du Bois' work as combining quantitative and qualitative research strategies. Du Bois, in the 1800s, was an African-American sociologist, historian and civil rights activist who carried out an urban ethnography on the plight of African-Americans. According to Maxwell (2016), in Du Bois's publication *The Philadelphia Negro* (1899), he utilized ethnography, social history and descriptive statistics to identify social problems present in the African-American community. Maxwell noted:

The book contains many numerical tables, interspersed with observations, quotes from interviews, and excerpts from documents. Du Bois noted that even ''the best available methods of sociological research ... are liable to error from the seemingly ineradicable faults of the statistical method, to even greater error from the methods of general observation'' (2-3), and argued that ''the use of both of these methods, which has been attempted in this study, may perhaps have corrected, to some extent, the errors of each.'' (Maxwell 2016, 15)

Maxwell (2016) noted that in contemporary literature the integration of qualitative and quantitative research can be found in the following disciplines: geology, planetary astronomy, palaeontology and biology. He also noted that archaeologists used both qualitative description and

quantitative measurement. Maxwell discussed the following implications of his investigations on earlier studies, which combined quantitative and qualitative in a single study:

- The studies reflected a very small degree of paradigm wars. Maxwell noted: "The first implication that I draw from these studies is that much of the broader range of research that I discuss shows little evidence of the paradigm conflicts that have been a hallmark of the recent history of self-identified MMR in the social sciences" (19).
- The studies he discussed were undertaken without declaring any specific philosophical framework. Maxwell states: "Second, these studies do not support the view that mixed methods research requires a specific foundational 'paradigm', or that particular approaches to research are based on distinct, internally coherent philosophical positions" (20).
- The studies were undertaken without any specific set of MMR typologies that are sometimes presented as prerequisite knowledge for the carrying out an MMR study. Maxwell wrote: "A third implication of the studies I have discussed is that, despite the systematic and in-depth integration of qualitative and quantitative approaches and data in many of these studies, there is almost no use of, or attempt to develop, typologies of ways to combine these approaches, or even a conceptualization of this integration as a type of research" (20).
- Maxwell observed that these earlier studies involved a team of researchers collecting and analysing data. In Onwuegbuzie's example (personal communication, 22 November 2017), this was certainly the case. Snow depended on other professionals to produce the maps, test the quality of water, and so on. Maxwell notes: "A fourth implication of these studies is that most of them exhibited the close involvement of the researcher or team with the collection and analysis of both the qualitative and quantitative data, rather than seeing these as separate 'strands' of the research" (20).
- The integration of research approaches was typically carried out for the purpose of initiation and triangulation. Maxwell states: "It typically involves both triangulation and what Jennifer Greene called initiation, which involves using differences in the implications of the two sorts of data to develop deeper and richer understandings" (20).
- The write-ups focus on results and interpretations rather than how the data used to generate the findings were actually obtained (Maxwell 2016, 21).

MMR as a Community of Practice

MMR has evolved into a research community where research experts are actively engaged in the collective activities of formalizing MMR practices, that is combining qualitative and quantitative in a single study or a series of studies to generate knowledge and principles that facilitate efficient and effective replication of strategies and techniques used by researchers. Onwuegbuzie noted that the time has come to formalize the practice of combining quantitative and qualitative in a single study. He noted,

> . . . it has been around a long time. It is just now being formalized, and so, for some people, it was just a matter of showing them what you are doing is mixed. Now, given that, hopefully if you look at some of the tools people are writing you can then really maximize its potential. So, rather than doing it in a casual manner, etc. it will be more formalized and both answer more complex questions (personal communication, 21 November 2017).

Through shared learning and mutual collaboration, these expert researchers develop distinctive practices and languages that foster the group identified as mixed method researchers (Denscombe 2008). However, MMR, as with qualitative and quantitative research methods, has its own inconsistencies and variations. For instance, the definitions put forward by some MMR experts focus on combining quantitative and qualitative research in a single study. Other authors, such as Bazeley, do not identify quantitative and qualitative as the necessary research approaches for conducting mixed methods. Bazeley states, "Note that I am not limiting this [definition] to a combination of qualitative and quantitative research only but more broadly, combinations of any different approaches/methods/data/analysis" (Johnson, Onwuegbuzie, and TurnerOnwuegbuzie, and TurnerOnwuegbuzie, and Turner 2007, 119). Also, there are variations in the integration formula in MMR. Fetters and Freshwater (2015) expressed integration as $1 + 1 = 3$; "that is qualitative + quantitative = more than the individual components" (116). Fetters (2018) noted that Onwuegbuzie challenged the above formula by quantitatively expressing integration as $1 + 1 = 1$. This formula according to Onwuegbuzie "represents the full integration of qualitative and quantitative components at all stages of the mixed research process" (Onwuegbuzie and and Hitchcock 2019, 1), whereas Fetters (2018) added four other formulas to this integration discourse, which suggests that MMR is dynamic and continually evolving.

The presence of the community of research experts allows for these contradictions and discrepancies to facilitate discussions which allow

for agreement and differences to arrive at a consensus in bringing clarity to these issues. It is in differences that continued growth in the community is facilitated. As Teddlie and Tashakkori (2010, 776) noted, if the MMR community is to grow, "it must stay open to new ideas in the theoretical, methodological, and applied domains."

However, although there are differences within the community, there are commonalities that define them as different from others. Within this MMR community, there are critical attributes, or as Teddlie and Tashakkori (2012) note, "a core set of conceptual and methodological ideas" that will strengthen the connection of networks within the MMR community. They also identified nine core principles which are listed below that are considered critical and set MMR apart from the other two research approaches (quantitative and qualitative).

Methodological eclecticism: Methodological eclecticism describes research that is not restricted to mono-methods but draws upon a variety of techniques from both quantitative and qualitative methods to achieve authentic results.

Paradigm pluralism: A variety of research paradigms can be used in MMR. MMR is not restricted to one paradigm. For example, postpositivism in the quantitative and constructivism in the qualitative can be combined in MMR to provide assumptions that guide the data collection process and interpretation of results.

Iterative, cyclical approach to research: A core attribute of MMR is that it is both iterative and cyclical, which includes both inductive and deductive logic. Teddlie and Tashakkori (2012, 781) stated, "The cycle may be seen as moving from facts or observations (grounded data or results) through inductive logic to general inferences (theory or abstract generalizations), then from those general inferences (or theory) through deductive logic to tentative predictions or hypotheses related to outcomes or results."

Set of basic "signature" research designs and analytical processes: This attribute of MMR involves a unique set of designs and analytical structures that sets it apart from quantitative methods or qualitative approaches. Teddlie and Tashakkori (2012) stated, "We call them 'signature processes' because they define mixed methods in relation to QUAL or QUAN research; that is, they are unique to MMR and distinguish this approach from the other two" (782).

Focus on the research question (or research problem): MMR researchers are encouraged to focus on the research question or problem to determine the methods and not focus on the methods as the starting point.

Emphasis on continua rather than a set of dichotomies: This allows for a variety of methods in a single study (as discussed earlier).

Emphasis on diversity at all levels of the research enterprise: MMR can simultaneously address confirmatory and exploratory questions in a single study, whereas in a mono-method, a single approach can only address one.

Tendency towards balance and compromise that is implicit within the "third methodological community": The integration of both quantitative and qualitative research approaches in a single study suggests a negotiation in the integration of the two approaches such that the strengths of both approaches are maximized and the constraints are minimized.

Reliance on visual representation: Teddlie and Tashakkori noted that "the analytical designs lend themselves to visual representations which can simplify the complex interrelationships among the elements inherent in mixed methods" (11).

These critical attributes define the MMR community and distinguish it from qualitative or quantitative approaches. John Creswell and Tony Onwuegbuzie reinforce the above attributes in the following excerpts:

Prof. John Creswell: Mixed methods is simply the idea of collecting quantitative data, like a survey, and collecting qualitative data, such as focus group, and rather than just keeping those two databases separate, to think about whether there would be some advantage to begin bringing them together, integrating the two databases to gain additional insight. So, for example, you could do a survey project on a health-related topic and come up with very interesting statistical results, *p*-values, confidence intervals, etc. But we don't know why those results might have occurred, so we follow up qualitatively by gathering quantitative data. What we do is add qualitative data into quantitative data and have a complete understanding of the problem. That is what mixed methods is, it is mining data further beyond just analysing the two databases separately and around that little, simple idea has developed an entirely new methodology for doing research (personal communication, 21 November 2018).

Prof. Tony Onwuegbuzie: There are lots of nuance definitions of mixed methods but, in general, it involves combining in some way or mixing qualitative techniques, such as interviews, focus groups, observation, photographs etc. with quantitative techniques which involve generation of numbers, typically within the same framework. So, the same study will involve collecting both qualitative data and quantitative data. The really nice thing about mixed methods is that it typically allows you to answer more complex questions. You are getting much more out of the information that is out there and end up producing real quality, what we call inference interpretation (personal communication, 22 November 2017).

Creswell's and Onwuegbuzie's definitions of MMR highlight the basic tenets of MMR which are integrating two databases, qualitative

and quantitative, in the same study or a series of studies, to answer complex questions in order to gain a more elaborative insight on the issue or problem being studied.

When Creswell's and Onwuegbuzie's definitions are compared with the definitions in table 1, similarities and differences are evident. However, as Johnson et al. noted below, it is important, in spite of the differences, to have a consensus on what the core tenets of MMR are. The differences in definition are natural and should be viewed positively because researchers are inherently different and their research projects will demand varied approaches. Johnson, Onwuegbuzie, and Turner (2007) explain:

> Homogeneity and heterogeneity can be seen in the definitions shown in table 1. On the one hand, we hoped to find some consensus about the core of mixed methods research, and we did. On the other hand, heterogeneity also is natural and should be valued positively, because mixed methods research can include a large group of researchers and a large number of research projects. In short, we view agreement *and* difference in the definitions as good for this emerging research paradigm and recommend that readers examine the definitions for both of these characteristics (123).

Key Elements of MMR's Philosophical Foundation

Pragmatism is a critical element of MMR's philosophical foundation. There are other paradigms that are used, for example the transformative paradigm, dialectic pluralism and critical realism; however, pragmatism is the most widely used paradigm among MMR researchers. Pragmatism, dialectic pluralism and critical realism are examined as examples of paradigms in MMR.

Pragmatism

Johnson and Onwuegbuzie (2004) suggest that the philosophical pragmatism of MMR is firstly found in its use of both quantitative and qualitative research approaches to uncover reality and causation as well as solve problems. In this regard MMR is neither purely quantitative nor purely qualitative, nor does it represent a reworking of one as against the other but practical use of both. Onwuegbuzie noted that MMR facilitates using the strengths of the qualitative approach to compensate for the weaknesses of the quantitative approach, and vice versa (personal communication, 22 November 2017). Thus, in MMR, the researcher is adopting a pragmatic approach that combines the advantages of two other available approaches.

This practice of combining the advantages in the qualitative and quantitative approaches, as explained by Onwuegbuzie and Creswell (personal communication, 21 November 21 2017 and 22 November 2017), is what Datta (1994) and Maxcy (2003) describe as MMR's primary philosophical pragmatism, namely a fusion of approaches. This fusion of approaches represents a search for common ground rather than conceiving of research approaches as being a binary choice between one and another approach. In this regard, MMR represents a distinct alternative.

Secondly, the pragmatist view overcomes the seeming contradictions between objectivism (positivism) and subjectivism (interpretivism/constructivism) "because resolving paradigm differences is not required for using a variety of methods. Rather, in this [paradigm], it is responsiveness to the context that grounds methodological decision making" (Greene, Benjamin, and GoodyearBenjamin, and GoodyearBenjamin, and Goodyear 2001, 28). Tashakkori and and Teddlie (1998) expanded this discussion, stating that pragmatism recommends "using whatever philosophical and/or methodological approach works for the particular research problem under study" (5). In MMR, the researcher in examining the problem to be studied recognizes that neither a qualitative nor a quantitative approach can lead to the discovery of knowledge necessary to solve the problem. The starting point then of this philosophical pragmatism is that epistemologically, some problems only lend themselves to be solved using MMR and neither one of the other approaches would be adequate. Thus, in casting a general epistemological net at a set of problems there would be some that can only be meaningfully pursued using MMR. Creswell expands on this issue of the epistemological orthodoxy of MMR thus:

> I was working with the Boston Health Commission. They did a major national survey a major citywide survey and they got some very confusing results. So, we began the conversation about following up qualitatively to help understand those results in more detail and they said yes, we could probably make some sense if we did some interviews. We talked to some people. So, here's where the outcome of that particular health survey might have been better had they started with the idea of collecting qualitative as a follow-up and then switching it around to think about well can we start qualitatively in a project. So my friends at Global Health, for example, you can't just drop a western-style instrument into Rwanda, you've got to talk to the community people, you got to understand their culture, you got to understand their beliefs and then you look to a western style instrument to modify them so that the qualitative initial data collection can help you find better instruments and culturally sensitive instruments so that when the people fill out the instruments they can actually relate to what is going on. Those are important outputs of improving the instruments following up on surveys to understand better why those results occurred. These are important outcomes. These are just two

examples of the mixed methods projects (personal communication, 21 November 2017).

Creswell's illustrations speak to the role of qualitative research approach in assessing and adapting a quantitative instrument into another context, and how such processes can modify the instrument into something more relevant and sensitive to the needs of the participants. Adapting an instrument using a qualitative approach also gives the researcher preliminary insights into the beliefs and way of life of the participants.

While MMR's philosophical pragmatism may be said to represent a kind of new orthodoxy, there is yet a third way in which it is philosophically pragmatic and that is the principle of convenience or desirability. As Creswell expresses it,

> You can collect qualitative data before the experiment begins. If you are having trouble getting participants or subjects to enter the experiment you can interview them and find out what would encourage them to come to the experiment. That's a study right out of the *British Journal on Mixed Methods Research*. So, we have seen a lot of applications in the field of evaluation. You want to evaluate a program that has come into a community. You could do a survey and gather some information but if you also combine that with talking to people about how this program has been received, accepted, used, what would encourage them to participate in this program into their community, you're going to have better useful information for decision-making (personal communication, 21 November 2017).

Creswell's illustrations speak to the role of the qualitative research approach in informing the adaptation of a quantitative instrument, thus enriching its usefulness and making it more relevant in another context. This approach supports the critically important principle by which qualitative research is governed, namely cultural sensitivity. It is also tied to the ethical underpinning of MMR, which emphasizes egalitarianism.

Several scholars in MMR stress the importance of paradigms, which is central to understanding MMR's pragmatism. Teddlie and Tashakkori (2003) identified the paradigmatic foundations as being a critical issue for MMR. There are many definitions of paradigms, such as those offered by Mertens (2005) and Neuman (2006), which speak to assumptions that guide and direct thinking. But Denzin and Lincoln (2008) offer a compelling definition: "The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a paradigm . . . All research is interpretive; it is guided by the researcher's set of beliefs and feelings about the world and how it should be understood and studied" (22).

When this definition is placed within the context of MMR's pragmatism, it exposes the fact that MMR does not have a neutral

epistemological, ontological or methodological starting point. Rather, it has a definitive world view which supports the idea that some problems have a better chance of being understood if one methodology as against another is employed.

Dialectical Pluralism

The second key element of MMR's philosophical foundation is dialectical pluralism (Johnson 2015). Dialectical pluralism is a process philosophy of MMR. This process is predicated on the assumption that there are multiple perspectives, methodologies and approaches that may inform different researchers' world views and each of these multiple tools deserves to be respected and validated (Johnson 2011a). MMR's dialectical pluralism is also based on what Greene (2005) describes as interactive combinations, with mixing occurring at three levels – methodology, methods and paradigms. Dialectical pluralism affirms, validates and values opposing points of views. This philosophical perspective effectively ends the paradigm wars (Onwuegbuzie and and Johnson 2006) not because it is said that MMR has won the "war" but rather because it is recognized that with MMR there are many philosophical and methodological paradigms and world views that deserve respect. In making this acknowledgment, mixed methods researchers are not merely pleading with other researchers for tolerance towards MMR, but they are making the case that MMR offers distinct advantages in facilitating a deeper understanding of the phenomena under investigation.

The assertion of contrasts and multiple perspectives arises from the point of view that the ability to understand a problem and to arrive at workable solutions firstly requires dialogue and secondly affirmation of differences. After the foundational importance of dialogue and differences (thus dialectics) has been established, the places of stakeholders, citizens and essentially "others" are given their collective preeminence. The output of this combination of multiple inputs is what Onwuegbuzie and Frels (2015) would describe as a thick and value-laden set of insights that is socially and scientifically useful and more widely accepted.

In applying the principles of dialectical pluralism to focus group discussions (FDGs), Onwuegbuzie and Frels (2015) suggest that one of the many reasons research MMR results are more widely accepted and useful is that participants are empowered. There is sometimes an implicit researcher superiority in research – whether qualitative or quantitative

– which sometimes positions participants as subjects. In MMR, while that tendency also exists, the philosophical emphasis on pluralism provides a reader space for an egalitarian approach in which the researcher and the researchee are seen as engaged in a mutually enlightening process that is predicated on the principle of shared power.

Critical Realism

The third element of MMR's philosophical foundation is critical realism. Critical realism embodies a constructivist epistemology which contends that it is impossible to define reality with absolute certainty and completeness. The reality this view holds lies in part outside perception (Maxwell and Mittapalli 2010) and there are multiple perspectives on a single event or object (Healy and Perry 2000). The implication of critical realism for MMR is that despite the fact that MMR can entail believing in employing the most appropriate methodological tools that a situation is deemed to demand, while relying on the broadest cross-section of stakeholders, the critical realist philosophy affirms that the outputs should not be deemed as complete fact, comprehensive reality and absolute truth. Thus, MMR's philosophy of critical realism asserts that findings are tentative and are at best approximations of the actual reality (Maxwell and Mittapalli 2010).

MMR and the Caribbean Experience

MMR was first introduced to the School of Education, UWI Mona, in 2013, through a graduate MMR course. This third research approach evolved into a community of researchers who sought to formalize MMR as the third research approach in the Caribbean region. The team was made up of researchers from the Caribbean islands, including Barbados, Jamaica, and Trinidad and Tobago, and expanded to include various fields and disciplines. This team consisted of graduate students, lecturers, and administrators from the faculty of social sciences, specifically government, human resource development, and faculty administrative office; faculty of humanities and education, specifically school of education and Caribbean Institute of Media and Communication; and medical sciences, specifically nursing and faculty office. From 2015 to the present, the activities included three regional conferences that attracted international MMR experts and presenters and several MMR workshops, which were facilitated by international experts such as Anthony Onwuegbuzie, John Creswell, Jennifer Greene, Burke Johnson, John

Hitchcock, Norman Peladeau, Nataliya Ivankova, Kathleen Collins, Elizabeth Creamer, Cindy Benge and Peggy Shannon-Baker, among other distinguished MMR experts. Through these activities, the team brought together Caribbean researchers into an MMR community through the Mixed Methods International Research Association – Caribbean Chapter (MMIRA-CC), which was launched at the second regional conference in 2017. In addition, doctoral students receive mentorship from international and regional MMR experts and are able to develop research that is recognized among the MMR international community.

Furthermore, the above activities expanded into a team researching to ascertain the extent to which MMR articles were published over eighteen years (1996–2014) in the Caribbean. The study revealed that the most popular research approach published within this period was qualitative (53 per cent), followed by quantitative (34 per cent), mixed methods (8 per cent) and multimethod (3 per cent) of 146 articles published in three selected Caribbean journals (Cook et al., 2019). After 2014, MMR has gained popularity among Caribbean researchers, and this is evident in the increased number of presentations at the regional MMR conferences during the period 2015–2019. In the inaugural Caribbean regional MMR conference (2015), thirty-six research papers were presented with twenty-one by Caribbean researchers. In the subsequent conferences, there were thirty-eight research papers presented, of which thirty-one were by Caribbean researchers in 2017, and in 2019, forty-seven of the seventy-three research papers presented were by Caribbean researchers.

From these papers presented at the conferences, it can be gleaned that MMR is used by Caribbean researchers to help understand various geographical, social, economic and medical issues affecting Caribbean people. For instance, Balkaran (2015) assessed the vulnerability of tourism-related livelihoods to tropical cyclones in Negril, Jamaica. The author declared a sequential exploratory MMR design, collecting data in two phases with the qualitative component conducted first, followed by the quantitative component. The qualitative phase involved semistructured interviews with key informants and people whose livelihoods were dependent on the tourist industry in Negril. The qualitative allowed for an in-depth exploration of the underlying factors that contributed to the vulnerability within Negril. Balkaran also adapted the Tourism Livelihoods Vulnerability Index (TLVI) that was "then used to Survey people working in three important areas – Accommodation, Craft and Water Sports/ Tours. These data were analyzed to generate vulnerability scores for livelihood and gender groups" (26-27).

A second example is a paper presented by Prout (2017), who used an MMR approach to examine "diet and health-related quality-of-life among persons on dialysis" (51) who live in Trinidad. The study had three phases; phase one utilized a case-control study. In phase two, Prout used FGDs to collect data from persons on haemodialysis. In phase three, the researcher conducted a lifestyle intervention to improve the health related quality-of-life of participants; this intervention was guided by issues identified in phase 1 and 2.

In the third example, Usher (2019) used a mixed methods explanatory sequential design to investigate "Belizean teachers' and principals' perceptions of clinical supervision and the influence of a structured supervision model on teachers' mathematics pedagogy" (33). The study involved a survey questionnaire administered to 240 teachers and 23 principals. Following the statistical analysis of the quantitative data, a multiple case study was conducted that involved three schools with three principals and six mathematics teachers to gain a deeper understanding of clinical supervision and its influence on teachers' mathematics pedagogy.

In the final example, FongKong-Mungal, Jackman, and Marshall (2017) used a convergent MMR approach to examine Barbadian teachers' perspectives on child-centred classroom practices. This study presented at the conference was a component of a more extensive study based on an initiative of the Ministries of Education to incorporate Child-Friendly Schools programmes in Eastern Caribbean countries, which was supported by UNICEF. The component involved data collected "to assess the status of implementation of child-friendly programmes in a selection of schools in Barbados" (34). They surveyed 137 teachers with close- and open-ended questions and used nonparticipant observations of 112 classrooms in sixteen schools. FongKong-Mungal, Jackman, and Marshall noted that the use of a mixed-methods design "allowed for data triangulation to provide a more holistic, comprehensive view of the phenomenon" (34).

A foundational principle of MMR is the integration of multiple sources to glean information and insights. This foundational principle is predicated on MMR's dialectical pluralism, which affirms, validates and values multiple points of view, as Onwuegbuzie and Johnson (2006) posited. Caribbean countries are considered developing economies that have geographical, social, economic and medical issues (UN 2016). Therefore, multiple sources of information and ways of collecting and analysing data must be consulted to gain insights about the experiences of Caribbean people.

Conclusion

In this paper, we described the evolution of MMR before the work of Campbell and Fiske (1959), whose article is typically seen as formalizing the use of multiple research methods in a single study. However, using Maxwell's (2016) contribution, we can broaden the historical utilization of combining quantitative and qualitative methods in research dating back to Galileo in the 17th century. By the 19th century, sociologists such as W.E.B. Du Bois formally integrated quantitative and qualitative research methods in his seminal work, *The Philadelphia Negro* (1899), in identifying social problems associated with the African-American community. The widespread acceptance of integrating quantitative and qualitative methods as a singular research approach was formalized in the 20th century as "mixed methods research" being the third research approach through the activities of a community of research experts such as John Creswell, Jennifer Greene, Abbas Tashakkori, Charles Teddlie, Burke Johnson, Anthony Onwuegbuzie and Michael Fetters. With the help of these experts, the Caribbean is now building a community of MMR practitioners who are communicating, supporting and collaborating in pursuing the continued application of MMR to bring about social and economic transformation in the Caribbean.

Based on the activities during the last seven years in the Caribbean, the most active MMR researchers are tertiary education academics. The MMR community must now expand to engage governments and private sectors to appreciate the role of MMR in helping them to understand complex issues that are unique to our Caribbean experiences that can now influence policies that are more relevant to our people.

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THESIS ABSTRACT

How Beliefs Shape the Use of Technology among Jamaican Secondary Teachers

(Unpublished PhD thesis, University of the West Indies, Mona, 2019)

Tashane Kenesha Haynes-Brown

School of Education, Faculty of Humanities & Education,
The University of the West Indies, Mona, Jamaica

Despite growing attention to teachers' use of information and communication technology (ICT) in teaching, there remain stark differences in teachers' use of ICT with the majority reflecting traditional, teacher-centred practices. Differences in teachers' use of ICT are often correlated with differences in teachers' beliefs. Consequently, the purpose of this explanatory sequential mixed methods study was to examine how teachers' beliefs account for differences in teachers' use of ICT. The quantitative data were obtained by surveying 248 teachers in 10 schools. The structural equation model confirmed the existence of a positive significant relationship between the teachers' Espoused Pedagogic Beliefs, ICT Beliefs and Use of ICT and a significant relationship between Level of Professional Involvement and the teachers' Espoused Pedagogic Beliefs. This model explained 50% of the variance in teachers' use of ICT. A subsample of eight teachers with differing alignment in their beliefs and use of ICT from three distinct ICT school environments was selected for the second phase, which employed a case study approach. Data were collected using semi-structured interviews, video-recorded classroom observations, observation checklists and video-elicitation interviews. When the quantitative and qualitative data were integrated, they revealed that for four of the eight teachers observed, their ICT teaching styles were consistent with their espoused beliefs. However, for the other four teachers their ICT teaching styles were inconsistent with their espoused beliefs. Most of the teachers whose ICT teaching styles were identified as teacher-centred considered their use of ICT to be learner-centred and believed that their ICT teaching styles supported their espoused learner-centred beliefs. These findings signal the need for professional development activities to provide more opportunities for teachers to

Caribbean Journal of Mixed Methods Research 1, 1 (2020): 191–197

reflect on their beliefs and practices as well as the need for teachers to have a clear understanding of how to use ICT in learner-centred ways.

Keywords: information and communication technology; Pedagogic Beliefs; Technology Beliefs; Teaching styles; Jamaica.

THESIS ABSTRACT

Formative Assessment in Jamaican Classrooms: Towards a Model for More Effective Implementation

(Unpublished PhD thesis, University of the West Indies, Mona, 2019)

Clavia Williams-McBean

School of Education, Faculty of Humanities & Education,
The University of the West Indies, Mona, Jamaica

Formative assessment has been heralded as germane to effective teaching and learning. However, despite an increasing global trend of a pedagogical shift from behaviourism to constructivism, teachers' classroom assessment strategies have remained largely traditional and summative. This multi-phase mixed methods study investigated the extent to which formative assessment was being used in Jamaican secondary schools and explored how formative assessment may be more effectively infused into the teaching of English in Jamaican secondary schools. Data generated through a survey of 1,088 secondary school teachers and corroborated through semi-structured interviews, observations and experimentation with thirty-two secondary school teachers from the five types of secondary schools in Jamaica were analyzed using ANOVA, exploratory principal component analysis, standard multiple regression, ANCOVA and the general inductive approach. Results showed that secondary school teachers predominantly used traditional assessment tools and strategies for formative and affective purposes despite school type, but the formative assessment practices were largely ineffective. They also showed that formative assessment improved student achievement in English in both internal and external examinations, and if formative assessment is to be effectively infused into the English classroom, steps have to be taken to encourage the formative use of summative tests and greater use of alternative assessment tools and strategies by classroom teachers. The greatest consideration must be given to assessment factors, specifically national and schools' assessment policies and negative student behaviour. The findings have implications for all the stakeholders in education, including the Ministry of Education, teacher training institutions and the Caribbean Examination Council.

Keywords: formative assessment; English Language; English literature; mixed methods; multi-phase; secondary schools.

THESIS ABSTRACT

Exploring Changes in Teacher Efficacy of In-Service Secondary School Teachers during a Diploma in Education Programme in Trinidad and Tobago: A Mixed Method Study

(Unpublished PhD thesis, University of the West Indies, Mona, 2019)

Sharon Jacqueline Jaggernauth

School of Education, Faculty of Humanities & Education, The University of the West Indies, St. Augustine Trinidad and Tobago

This study explored how the teacher efficacy of secondary school teachers changed during a ten-month in-service professional development programme at a university in Trinidad and Tobago. A multiphase sequential convergent mixed methods design was adopted that was underpinned by the critical realism philosophical framework. The study consisted of two distinct phases that sandwiched the qualitative phase within the quantitative phase. In the quantitative phase, participants were surveyed at the start and end of their programme, and analysis of data from the first survey was used to identify participants for the qualitative phase. Data from the quantitative phase were used to explain and elaborate the quantitative findings from participants' perspectives and provide deeper understanding of the research issue. The qualitative phase built on the quantitative phase and integration of quantitative and qualitative data occurred at the levels of analysis and inference.

Teacher efficacy was measured as a linear combination of three dimensions of teacher efficacy: classroom management, student engagement and instructional strategies. Data for the quantitative phase were collected from 188 in-service secondary school teachers at the start and end of a ten-month teacher certification programme, using the long form of the Tschannen-Moran and Woolfook-Hoy (2001) Teacher Sense of Efficacy Scale. The scale mirrored the factor structure and reliability measures of the original developers and other users globally.

Repeated measures multivariate analysis of variance revealed that participants reported significantly stronger teacher efficacy by the end of the programme that was not associated with their gender, school type, years of teaching experience, and curriculum major.

A sub-sample of three mathematics teachers was selected from the participants for in-depth study, to identify the experiences that provided strong sources of efficacy-strengthening information they associated with the programme, and how these sources of information were associated with changes in their teacher efficacy. Data collected from the researcher's observations of participants' teaching practices were quantitized through frequency counts and revealed evidence of increasing occurrences of behaviours in the three efficacy domains associated with highly efficacious teachers. Data collected from written plans for instruction and assessment, other artefacts produced for instruction, and post-teaching reflections were analysed by quantitizing the occurrences of planning and reflective actions associated with highly efficacious teachers across the three domains. Qualitative analysis of participants' words and non-verbal behaviours during post-teaching conferences, their reflective journals during the programme and exit interviews upon completing the programme supported the increase in their reported teacher efficacy scores by the end of the programme across the three dimensions of teacher efficacy and the findings from observational data. Qualitative analysis of participants' exit interviews, reflective journals and other artefacts they produced revealed five sources of efficacy-strengthening information that participants associated with their experiences during the programme: mastery experiences with critical analysis and social persuasion, vicarious experiences with critical analysis, critical self-reflection, learning in a professional learning community of practitioners and school-based experiences. These sources of efficacy-strengthening information initiated changes in participants' teaching practices as they experimented with new strategies, experienced success with them or observed colleagues experience success. This process encouraged participants to adapt these strategies to their particular school contexts, which improved their effectiveness as teachers and catalysed further changes in their teacher efficacy over time.

This study directly addressed the paucity of teacher efficacy research in Trinidad and Tobago and the wider Caribbean. It highlights the need for deeper understanding among teacher educators about the critical role of teacher professional development in strengthening teacher efficacy, and consequently, teacher effectiveness. It also provided directions for future teacher efficacy in Trinidad and Tobago that use appropriate research methods. For example, mixed methods approaches can be utilized to develop and validate a contextually and culturally relevant teacher efficacy scale for use in Trinidad and Tobago and the wider Caribbean. They can also be utilized to explore the long-term effects of professional development on participants' teacher efficacy over time, and the relationship between changes in teacher efficacy and student learning outcomes. Such approaches can also provide greatly needed insight into how teachers' task analysis, content knowledge and school environment might be associated with their efficacy.

Keywords: teacher efficacy; teacher professional development; in-service secondary school teacher; convergent mixed methods research; data integration.