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Teacher Education within a Global Context

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Volume 2, Issue 1

EDITOR'S COLUMN

This issue of the WFATE Journal is an open submission issue with a focus on teacher preparation in a global setting. It has been a delight to work with our President, Mireia Montane, and the Board of the World Federation of Associations of Teacher Education. It is great to have professionals who are thoughtful and creative and who trust the process to work well. My thanks to the members of the Board of Directors (listed below),

Maxine Cooper, Jenene Burke, and Joan Steward along with many of their colleagues in Australia are preparing for the fifth biennial conference of the World Federation of Associations for Teacher Education (WFATE) to be held in Melbourne, Victoria, Australia, from 9th-11th July 2018.

While respecting the particularities of cultures, places, and spaces for education we will explore together each other's contemporary experiences in teacher education. What are the challenges and opportunities? How can we contribute to building the necessary research evidence, wisdom, and commitment to meet the complexities of teacher education in an ever-changing world? How can we share insights and learn together so that innovative teacher education is available for all communities?

The theme of the conference is: Transformative Teacher Education in Local and Global Contexts. The four sub-themes that will be explored are:

- 1) Social Justice, Inclusion and Diversity in Education
- 2) Transformative Teacher Education
- 3) Pedagogy and Curriculum
- 4) Policy and Partnerships in Teacher Education

The conference will continue the WFATE focus on the shaping of global research and development networks building on the research working groups already established. The groups from the previous Barcelona conference, WFATE 2016, will meet at the conference and new participants may choose to join in to the ongoing work of these groups.

We will celebrate the WFATE 2018 conference in the southern hemisphere for the first time and learn to creatively and critically explore the transformations in teacher education in a local and global context. Melbourne is a multicultural city located on the banks of the Yarra River, near the entrance to Port Phillip Bay. Melbourne is city of diversity and complexity with a wonderful variety of restaurants, street art, arcades and laneways, amazing parks and gardens, art galleries and theatres for all. So please put this date in your diaries and plan to join us in Melbourne, Australia from 9th to 11th July 2018.

For more information about the World Federation of Associations of Teacher Education, please go to our website: <http://www.worldfate.org>.

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Non-THEMATIC ISSUE

CALL FOR PAPERS

Journal of the World Federation of Associations of Teacher Education



The WFATE has begun to develop special interest groups related to our mission and goals. Papers, research reports and policy analyses related to knowledge generation and to the special interest group themes would be most welcome.

The upcoming conference theme: Transformative Teacher Education in Local and Global Contexts. This is a focus that should provide a rich area to explore.

The four sub-themes that will be explored are:

- 1) Social Justice, Inclusion and Diversity in Education
- 2) Transformative Teacher Education
- 3) Pedagogy and Curriculum
- 4) Policy and Partnerships in Teacher Education

NOTICE TO CONTRIBUTORS:

The Journal of the World Federation of Associations of Teacher Education is an electronic educational research and development journal. **All articles are peer reviewed.** We publish articles focusing on empirically driven research in major areas of education, carefully developed issue analyses, and clearly focused development articles.

To be reviewed, manuscripts must conform to the publication guidelines available on the website. The WFATE journal does not have a copy editor. Thus, authors are responsible for ensuring that their submissions meet the specified criteria. Since the Journal of the World Federation of Associations of Teacher Education is an electronic journal, special formatting guidelines must be followed to ensure the readability of the paper by reviewers using a wide range of word-processing software. In addition, the guidelines ensure the accurate rendering of the article on our Web site, irrespective of readers' platforms and systems, should it be accepted for publication. Articles of approximately 5,000 to 8,000 words are preferred.

Papers are due by January 1, 2018 for publication in spring 2018.

(WFATE) Fifth Biennial Conference



Hosted by **Federation**
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World Federation of Associations for Teacher Education (WFATE) Fifth Biennial Conference
9th – 11th July 2018 in Melbourne Australia

At ACU Melbourne Campus, Victoria, Australia

Transformative Teacher Education in Local and Global Contexts

Venue: ACU, Melbourne Campus, Victoria, Australia

Jenene Burke and Maxine Cooper
Federation University Australia



The fifth biennial conference of the *World Federation of Associations for Teacher Education (WFATE)* will be held in Australia, hosted by Federation University Australia (FedUni) at the ACU Melbourne Campus from 9th -11th July 2018. The overall theme of WFATE 2018, *Transformative Teacher Education in Local and Global Contexts*, will explore four enduring sub-themes that have been selected to offer universal appeal to teacher educators over the three days of the conference: Theme 1 - Social Justice, Inclusion and Diversity in Education; Theme 2 - Transformative Teacher Education; Theme 3 - Pedagogy and Curriculum, and Theme 4 - Policy and Partnerships in Teacher Education. While respecting the particularities of cultures, places, and spaces for education, delegates will explore together each other's contemporary experiences in teacher education. What are the challenges and opportunities? How can we contribute to building the necessary research evidence, wisdom, and commitment to meet the complexities of teacher education in an ever-changing world? How can we

share insights and learn together so that innovative teacher education is available for all communities?

The conference will continue the WFATE focus on the shaping of global research and the development of professional networks by building on the research working groups that are already established. Meetings of the groups from the previous Barcelona conference, WFATE 2016, will be held and new participants are welcome to choose to join in the ongoing work of these groups. The research working

groups 'Synthesis document' (WFATE, 2016) from the Barcelona conference provides a list of the fifteen working groups and the general ideas, challenges and recommendations for each that have been developed by the working group participants (pp. 8-35).

The conference will offer opportunities for teacher educators to connect and engage in a rich community of practice that will cater for a range of special interests and provide opportunities to share research and practice in a variety of formats, such as oral presentations, workshops, symposia and poster presentations.

Education students are strongly encouraged to participate in the conference, however the final day of the conference has been designated as "Higher Degree and Education Student day" and Teacher Education students are particularly encouraged to attend on that day, and to present research posters and deliver 'lightning' presentations to share their work with their colleagues.

The WFATE 2018 Executive Planning Committee combined with the WFATE board, matches international experience with local teacher education expertise and knowledge. FedUni is leading the team of eight teacher educators from four partnering Australian universities, all located in the State of Victoria and is pleased to partner with Deakin University, Australian Catholic University and Victoria University in the planning of this event.

As an added bonus, the city of Melbourne is expected to be a highly desirable destination for teacher education conference-goers in July 2018 with a collaboration of three major conferences taking place in the city over an eight-day period. From 4th – 6th July (in the week prior to WFATE 2018), the *Australian Teacher Education Association* (ATEA) annual conference will, for the first time in its history, partner with the Teacher Education Forum of Aotearoa New Zealand (TEFANZ) biennial conference under the theme, *Teacher Education In and For Uncertain Times*. The WFATE conference team is working closely with the ATEA/TEFANZ conference committee to ensure a seamless teacher education conference experience in Melbourne provided by the two conferences over the period from 4th - 11th July 2018. We extend a warm invitation to teacher educators from across the world to engage in what promises to be a week of significant local, national and international interest in 'Marvellous Melbourne', a city which was recently (for the seventh consecutive year) named the "world's most liveable city" by the Economist Intelligence Unit's (EIU) liveability survey (Chalkley-Rhoden, 2017). Take the time to look at Visit Victoria at <http://www.visitvictoria.com/Regions/Melbourne/Things-to-do>.

Details and contacts

World Federation of Associations for Teacher Education (WFATE) Fifth Biennial Conference:
Transformative Teacher Education in Local and Global Contexts 9th – 11th July 2018

<https://federation.edu.au/faculties-and-schools/faculty-of-education-and-arts/events/world-federation-of-associations-for-teacher-education>

World Federation of Associations for Teacher Education (WFATE) <http://www.worldfate.org/>

ATEA/TEFANZ conference: '*Teacher Education In and For Uncertain Times*' 4-6 July 2018

<https://atea.edu.au/>

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Chalkley-Rhoden, S. (2017, 16 August). World's most liveable city: Melbourne takes top spot for seventh year running. ABC News. Retrieved from: <http://www.abc.net.au/news/2017-08-16/melbourne-named-worlds-most-liveable-city-for-seventh-year/8812196>
World Federation of Associations for Teacher Education (WFATE). (2016). Fourth Biennial International Conference Innovation in Teacher Education within a Global Context: Synthesis Document. Accessed March 20, 2017, from: http://worldfate.org/docpdf/Barcelona_Conference_Synthesis.pdf

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DEVELOPING INTERNATIONAL PARTNERSHIPS FOR TEACHER EDUCATION THROUGH DIGITAL PLATFORMS: POSSIBILITIES FOR TRANSFORMATIONAL PARTNERSHIP

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ABSTRACT

As a vital element of continuing teacher professional learning, the development of international and global competencies in teachers, and subsequently in their students, has drawn considerable interest worldwide. In an increasingly globalised world, digital technologies now provide the potential to connect teacher educators and their students across countries and contexts to collaborate in teaching and learning projects and research.

As teacher educators from two universities at opposite ends of the globe the authors set out to establish an innovative collaboration between their two institutions in Teacher Education. The literature draws from three intersecting fields: First, internationalisation and globalisation in teacher education; second, the use of online learning platforms in continuing teacher education, and third, transformational partnerships in Teacher Education.

In this paper a case study is examined to consider the possibilities, potential benefits and challenges in setting up the international partnership in Master's level teacher professional development online programs. The case study is positioned within the context of the growing global push for internationalization and globalisation of teacher education in the professional learning and preparation of teachers. The concept of "dispersions" as dimensions of virtual teams, as well as the principles of transformational partnerships, are used to describe and explain some of the challenges the teacher educators confronted in establishing their partnership. The ways in which the online environment mediates the process of transformational change is a key theme. The authors reflect on and describe the initial phase of their attempts to establish a transformational collaborative partnership. They also outline the future plans for this partnership that emerge from their work as a virtual team. The knowledge generated in this research enables us to more deeply understand the complexities involved in such partnerships

and provides insight into how teacher educators might approach international teaching collaborations.

DEVELOPING INTERNATIONAL PARTNERSHIPS FOR TEACHER EDUCATION THROUGH DIGITAL PLATFORMS: POSSIBILITIES FOR TRANSFORMATIONAL PARTNERSHIP

Introduction and background

Higher education providers increasingly seek to establish creative and innovative partnerships which provide opportunities to foster student learning and generate new research knowledge. In a globalized world, seeking opportunities to connect students across countries and contexts is facilitated by digital technologies, and enables academics to collaborate on research and teaching projects. Teaching knowledge, skills and values that collectively develop ‘global competence’ is therefore vital to enable people to thrive in a twenty-first century world (Devlin-Foltz, 2010). From a teacher education perspective, according to Devlin-Foltz, internationalization serves to prepare modern teachers to teach with global perspectives, and crucially, that teachers are able to help their students to “learn about the world, from the world and with the world” (p. 113). The challenge for teacher education is to ensure that teachers are prepared for teaching in an increasingly globalized world. Devlin-Foltz recognizes that many teacher educators are forming ‘forward-looking’ connections with colleagues in other countries and seeking to collectively respond to such challenges.

Aims

In this paper, we employ case study research to describe and discuss the establishment of a transformational collaborative partnership in Masters level teacher education programs in two universities that utilizes digital learning platform. Federation University Australia (FedUni), is a multi-campus university located in regional Victoria, Australia while the University of the Highlands and Islands (UHI) consists of 13 higher education partner providers situated in the north of Scotland in the United Kingdom. We also outline the future plans for this partnership that emerges from our preliminary planning. This case study is focused on our work in two degree programs, the Master of Education Studies (MEdStud) which is offered at FedUni, and the Master of Education Critical Enquiry (MEd CE) which is offered at UHI. Both programs are delivered predominantly online and are designed as qualifications that enable teaching professionals to engage in continued professional learning that is grounded in their professional practice. A focus on ongoing teacher education and the generation of new knowledge about teaching practice is evident in both programs. Our case study concentrates on the key question, ‘what are the possibilities, challenges and potential for joint practice and innovation in Masters level teacher in-service education courses in a cross-country collaboration using digital learning and communication platforms? The notion of digital dispersions as dimensions of digital teams (Zigurs, 2003) provides a useful analytical framework through which to explore the case study.

The Literature

The literature reported on in his paper draws from two intersecting fields that are pertinent to the study - one field is internationalization in teacher education, and the other is the use of online learning platforms in teacher education.

Internationalization in teacher education.

Devlin-Foltz (2010) insists that a ‘twenty-first century education must be a global education’ (p. 115). For Ochoa (2010), there are two important elements in the acquisition of global perspectives by teachers. The first lies in providing exposure to international experiences for teachers and the second in integrating global education into teacher education. Devlin-Foltz concurs with Ochoa, further asserting that in teacher education a teacher’s global knowledge must be deepened, that teacher educators need access to internationally focused professional development, that international experiences at home, overseas and online should be made available to pre-service and in-service teachers, that world-language opportunities for teachers should be enhanced, that internationally-focused research in teacher education requires support and that a globally-oriented teacher education culture should be aided financially (Devlin-Foltz, 2010).

In a globalized world the expansion of networks across social, cultural and geographical boundaries becomes possible and is embedded in higher education policies which seek to create opportunities for students and staff to develop understandings of themselves as connected to others in the world. Internationalization of the curriculum has become policy in many universities with Leask (2009) describing internationalization of the curriculum as “the incorporation of an international and intercultural dimension into the content of the curriculum as well as the teaching and learning arrangements and support services of a program of study” (p. 209). Zimitat (2008) further advocates for internationalization as a scaffold for developing students’ critical thinking that can instigate them to challenge accepted viewpoints and understand how their discipline is shaped. A focus on internationalization of the curriculum is embedded within university policies, with our two institutions aiming to develop staff and students as global learners and citizens. These local policies place emphasis on building collaborative links between international communities, particularly with those in regional areas (FedUni, 2015b; UHI, 2015).

While some academics have identified the expectation that teachers involve their learners in “the process of acquiring knowledge of their own cultures as well as other cultures” (Dooly & Villanueva, 2006, p. 223), there is minimal attention to this element of generic teacher preparation enshrined in the Australian Professional Standards for Teachers (AITSL, 2014a). For example, the graduate level standard 1.3 requires that teachers “demonstrate knowledge of teaching strategies that are responsive to the learning strengths and needs of students of diverse linguistic, cultural, religious and socio-economic backgrounds” (AITSL, 2014a). The statements

at proficient, and highly accomplished career stages refer similarly to requisite knowledge and design of teaching strategies. The standards neglect to mandate other elements of teaching related to global competence. Leading teachers are further expected to be able to evaluate and revise learning and teaching programs in diverse student communities. National initial teacher education program standards in Australia (AITSL, 2014b) only require that teacher education programs ensure that PSTs are able to “appreciate diversity of students and communities” which demands a low level of engagement with issues related to cultural diversity by student teachers. The national research agenda for initial teacher education (ITE) in Australia (AITSL, 2015), which describes the research priorities for ITE in Australia, places no importance on any element of internationalization in teacher education. Given the growing emphasis in the international literature on the importance of preparing teachers to teach with global perspectives, and competently teaching knowledge skills and values that develop students global competence (Devlin-Foltz, 2010; Dooly & Villanueva, 2006; Leask, 2009; Ochoa, 2010; Zimitat, 2008), this negligible presence and low importance evident in the Australian teacher education standards seems to be somewhat short-sighted and inadequate.

Online learning platforms.

Access to digital technologies in rural areas has revolutionized the delivery of distance education programs in teacher education (Jung, Galyon-Kermidas, Collins & Ludlow, 2016) and this is particularly pertinent to both of the institutions involved in this study, as both offer online Master’s level teacher education to significant numbers of teacher students from remote and rural areas. We see that the anticipated development of global citizens is aided by the continual enhancement of digital technologies that facilitate collaboration and partnerships across borders and time zones. We are mindful that, for our students, the quality, depth and type of thinking and engagement that is fostered through digital technologies is of central importance to their learning within an internationalized curriculum.

Technology can be used to create and connect a vibrant community of practice within an online learning space (Coker, 2015) enabling social interaction between teachers in a cultural site (Cole, 1998). Teachers immerse themselves in a given learning experience by their virtual, rather than their physical presence. In an online teaching space, social presence theory suggests that it is beneficial for student learning that they are aware of others who are using the space as this awareness supports the development of a learning community (Coker, 2015; Cui, Lockee & Meng, 2012). The adoption of a critical enquiry approach to modify and develop online learning in teacher education has been shown to be effective in increasing student participation and depth of learning (Coker, 2015). Using digital technologies to mediate a teacher educator partnership pushes the authors of this paper into new, unfamiliar and challenging territory. The lessons that we learn from the experience may benefit others who seek to form similar partnerships.

Context of the study

As teacher educators from two universities at opposite ends of the globe we set out to establish a collaboration between our two institutions in teacher education. Despite the geographic distance there are some striking similarities between the two institutions, notably between the

demographics of cohorts of students, with large proportions of students from regional and remote areas and low socio-economic backgrounds. In FedUni 75% of students come from a rural or regional area (FedUni, 2015c) and in UHI 74% of the student body come from the rural communities in the north of Scotland where the colleges of the UHI partner providers are based (UHI, 2015, p. 12). Eighty per cent of FedUni students are the first member of their family ever to attend university and 75% are classified as coming from an 'equity group' such as indigenous or low socio-economic background (FedUni, 2015c). There are strong similarities between the educational philosophies of both universities, with a commitment to augment and transform local regional communities embedded in the individual strategic goals and values of both institutions. For FedUni the focus is on flexible access enabled by technology, while UHI provides access to education particularly through the use of video conference technology and is the largest user of that technology in Europe. The strategic plans of both institutions seek to build collaborative relationships that are of mutual benefit at the local, national and international level (FedUni, 2015a) while working towards achieving, 'a transformational impact on the prospects of our region, its economy, its people and its communities' (UHI, 2015, p. 2). It was this strength of similarity between the institutions which led to the exploration and establishment of a partnership between the institutions, initiated by a chance meeting between two Deans at a conference in the UK. That meeting later resulted in the signing of a Memorandum of Understanding between the two institutions in April 2015 with the aim developing of a series of faculty-based projects across the two universities. In September 2015, teacher education staff were able to hold their first meeting in Scotland. At that meeting the authors of this paper identified opportunities for collaborative delivery and learning enhancement of programs for ongoing teacher education, and are now investigating the possibilities for establishing connections between staff and students across both education faculties, linked content in teaching modules, and joint activities for the teachers undertaking our respective teacher education degrees.

Online contexts for teacher professional learning

The online context in which our partnership is developed both facilitates and mediates (Wertsch, 2007) the learning process. Technology embodies interaction (Dourish, 2001) as the medium through which action takes place. Social presence (Kehrwald, 2008; Slagter van Tryon & Bishop, 2012), the ability to process, evaluate and adapt socially to each other may play a mediating role in the development of partnership practices. The use of e-mails and video conferencing meetings to communicate, act as a mediating artefact, in shaping the interactions through which a transformative partnership will develop. In this study we have examined the ways by which technology has mediated the development of our partnership.

Conceptual framework: Transformational partnerships for learning

In developing a partnership that fosters opportunities for cross-country collaboration for ongoing teacher education, careful consideration of the nature of the partnership that is established and an exploration of the processes academics use when they set out to establish such a partnership is required. We sought to develop a transformational partnership for ongoing teacher education that was characterized by "a moral dimension in which the partners come together to pursue common purpose and create the possibility of generative growth and change" (Butcher, Bezzina & Moran,

2011, p. 31), rather than a transactional partnership which usually meets the specific needs of only one partner (Butcher, et al., 2011; Teitel, 2008). Teitel (2008) insists that partnerships are transformative when deep and lasting change and renewal and comes from engagement between partners, facilitated by a desire to learn from each other and a willingness to deeply consider changes in practice, while each partner retains their own identity. Transformational partnerships are guided by several principles outlined by Butcher, Bezzina and Moran (2011) and we have used these to frame our work: working out a shared purpose; leading collaboratively; relating on a basis of trust; ensuring appropriate and adequate resources; and remaining open to learning and change.

The Methods/Methodology

We utilize a case-study methodology in this research. A case study has been described by Miles and Huberman in Punch and Oancea (2014) as “a phenomenon of some sort occurring in a bounded context” (p. 148). While a vast array of phenomena can be considered as the focus of a case, Brewer and Hunter (1989) confine these to a list of six ‘units’ that can be studied, namely individuals, attributes of individuals, actions and interactions, residues and artefacts of behaviour, settings incidents and events, and collectivities. Case study allows us to understand the case in depth, in its complexity and within its context (Punch & Oancea, 2014). Five characteristics attributed to case studies are that cases are bounded, that the case needs to be focused and clarified, that cases are holistic, conducted in real-life contexts that produce in-depth accounts, and that multiple data sources and collection methods are usually utilized (Punch & Oancea, 2014).

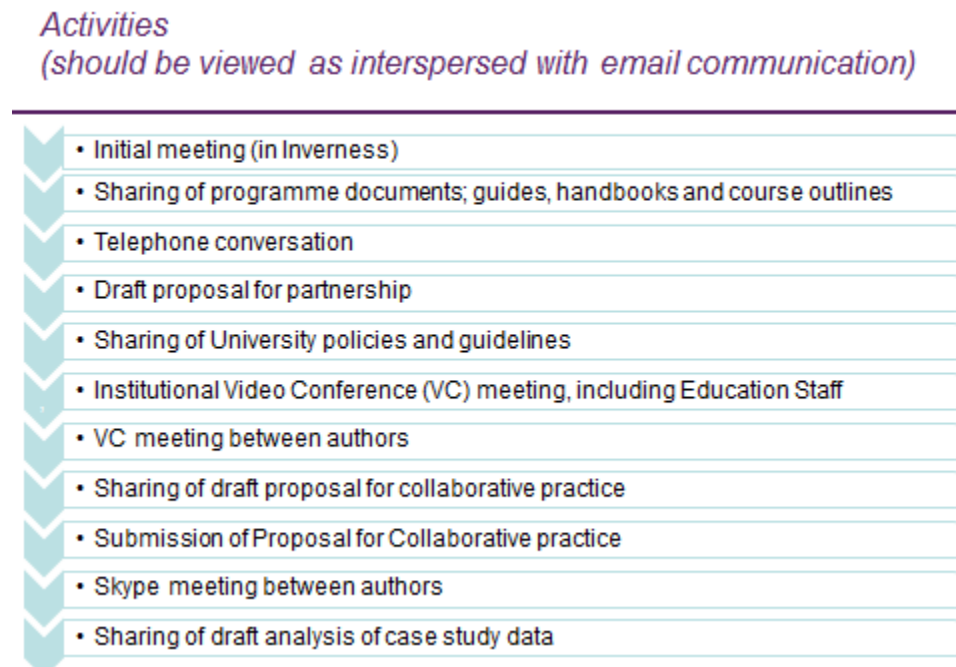
As generalizability of the research is of concern in case study research it is necessary to point out the uniqueness of this study, where we are attempting to understand this collectivity as a particular case in its complexity and context - to develop an in-depth understanding of the case - rather than draw parallels with similar situations. The situated nature of practice in regards to the use of digital technology enables a reflexive stance as participants are utilizing the digital tools through which the programs are presented (Finlay, 2012). The aim of our case-study is to examine the possibilities, challenges and potential associated with setting up a learning collaboration between a teacher education program in Australia with one in Scotland.

Data generation and analysis

We utilize, as data, the university documents that we shared and annotated as we sought to identify commonalities and points of difference between our ongoing teacher education programs and searched for opportunities to have innovations in collaborative learning and teaching practice. This data was analyzed through the use of critical discourse analysis (CDA), as an interpretative tool (Rogers, 2004). In this context, we used a sociocultural approach to learning (Rogoff, 1995) and collaborative practice (Wertsch, 1985). This provided the group with a structure in which to use CDA to analyze discourse, as recorded on paper, and activity, what we developed together, simultaneously (refer Figure 1: Activities as sources of data). Wertsch (1995) saw development and learning in terms of the appropriation and mastery of physical and psychological tools as part of participation in collective and individual activities (Vygotsky, 1978; Wertsch, 1985). We

sought to capture the strategic activity of individuals as we worked together and collectively problem solved (Wertsch,1985). A sociocultural approach to CDA (Rowe, 2004) enabled us to address the focus of CDA through transformation of practice or activity, in this study through the addition of collaborative activity. The combination of a sociocultural approach with CDA allowed us to consider collaborative activity as it developed within the discourse. In this way our analysis considered the ways in which the discourse in each document informed the next set of activities, both individual and joint. In that way we were able to identify and consider our co-constructed actions within an analysis of our situation and the identity of individual programmes. Our individual participation in this process of distributed meaning making was supported through an analysis of the ways in which text and activity were mediated through each interaction and across the timeline of the activity as outlined in Figure 1: Activities as sources of data.

Figure 1: Activities as sources of data



Analysis and Discussion

The data analysis was undertaken using three foci to support our understanding of the way in which our collaborative action and partnership developed: Focus One, considering possibilities for collaborative and innovative activity in the delivery of ongoing teacher education programs; Focus Two, recognizing the challenges we faced in developing such activities; and Focus Three, identifying the potential outcomes of these activities for students, programmes and the University partnership. The data sources that were drawn on are provided in parentheses in the text below.

Focus One: Possibilities for collaborative activity

The possibilities of collaborative activity were evident in the notes we each made at the initial meeting in Inverness, Scotland. At the end of an hour-long discussion of the programmes each

University offered we had identified similarities in the student cohorts that were enrolled in our Masters programmes: teachers working in rural areas, often in small schools, who utilized Masters programmes to develop their practice. Both institutions targeted the students graduating from our initial teaching qualifications and there was equality in the size of the M.Ed cohorts in each University. The initial similarities led us to search for more in the way we taught, through online and blended learning provision, and the mixture of University and sessional staff used to teach in both programmes. Individual notes from this discussion emphasize a growing sense of possibility, through the highlighting of the similarities and notes indicating a sense of joint future action, “practitioner research in schools, key to both!” [meeting notes]. The analysis of core documentation in the programmes supported that reflection with a focus on the development of skills in “analysis and inquiry, leadership and policy contexts” [program handbooks] was a shared emphasis in our programs. A follow up telephone conversation between two of us took the sense of possibility and converted it into an initial proposal to UHI for education staff to collaborate within the wider institutional partnership between the two Universities. In that paper we acknowledged the similarities we had found and proposed “international online seminars to support knowledge and understanding on these programmes” [draft proposal for partnership]. The writing of a proposal supported the continued consideration of possibilities, through institutional support, but for a time refocused our discussion onto institutional possibilities, and the necessity of fitting our activities into a shared strategic plan:

Collaboration is a key theme, knowledge exchange and internationalism. We are developing modules which give local teachers access to international contexts. Can we aim high and go for international delivery next year? [draft proposal for partnership]

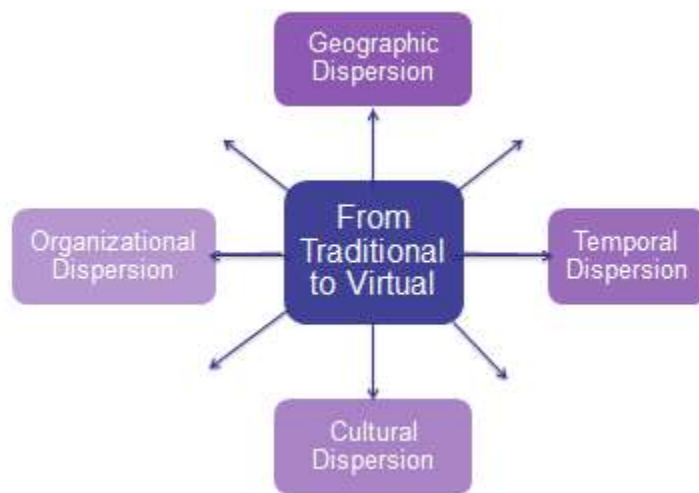
The push to seek separate institutional support for collaborative work within the University partnership moved our discussions towards outcomes for each programme. This focus was enhanced in the joint institutional video conference between staff from both universities where a range of possible developments were discussed for a number of faculties. The outcome of this meeting was a recommendation for Education, “to provide opportunities for students in both places to engage with each other throughout their studies with particular regard to critical reflection” [draft proposal for collaborative practice]. This supported an emerging theme in our email discussions of teacher enquiries, “an online blog or magazine (type of thing) with some spaces for conversation” [email communication] which is the collaborative activity that we eventually decided to develop.

Focus Two: Recognizing challenges

As we examined the structure of each M.Ed programme we considered shared teaching as a possibility, but as that conversation deepened we began to recognize the challenge of collaborative activity, in particular the programme timelines; “that would get around the mismatch of academic dates” [email communication]. The video conferencing meeting between the authors emphasized for all of us the depth of the challenge we faced with time, at that point an 11 hour gap between the two countries. This led to the creation of a joint timeline to demonstrate the connections and discontinuities between our programme dates and university semesters. The

discussion about time and the task to find “matching spaces” [email communication] in our programmes brought us back to the way we were working as a beginning partnership, through an online environment; communicating by email and holding meetings through video conferencing or Skype. We were working as a virtual team, collaborating through online platforms in the follow up to the initial face-to-face meeting. Zigurs (2003) proposed that virtual teams work differently from traditional face-to-face teams as they are dispersed in a number of ways, (geographic, cultural, temporal, and organizational) which influence interaction. In reflecting on the ways in which technology had mediated the development of our partnership Zigurs’ framework for virtual teams (Figure 2: Dimensions of Virtual teams) (Zigurs, 2003, p. 340), highlights some of the key factors that influenced us.

Figure 2: Dimensions of Virtual teams. (Adapted from Zigurs, 2003, p. 340).



Dimensions of virtual teams in teacher education

Geographic and cultural dispersion. While our partnership is itself geographically dispersed, with institutions being located on opposite sides of the world, the institutions are also geographically dispersed in different ways. One institution is split across three established Higher Education campuses while the other is spread across thirteen academic partner colleges, the colleagues here being geographically disparate from each other. Similarities and differences can be found in the geographical dispersion of teaching students and teachers studying at each of the institutions. Both cover large geographical regions with remote and rural areas as well as urban hubs. The nature of rurality is different in each country and this is one of the potential strengths of the partnership as shared enquiries have the potential to deepen understanding of local contexts. This understanding relates to cultural dispersion and in our initial discussions similarities between the approaches to pedagogy and the similar cohorts of students were identified. Indeed it was apparent that not only were the educational values of both institutions similar but that the education staff in each university also held similar educational values. We did recognize that in any of the partnership work we developed we were likely to discover implicit and subtle differences between the cultural values and beliefs of both the institutions and the students and tutors involved, which may not have been perceived in our initial interactions. An

example of such a cultural dispersion is the use of the term ‘teacher training’ in Scotland, when the preferred term in Australia is ‘teacher education’.

Organizational dispersion. In regards to organizational dispersion those involved in the partnership are situated within different areas of their institutions and a range of other staff members are likely to become involved as we move forward. Organizational dispersal is evident when we compare the program structures of the MEdStud (at FedUni) and the MEd CE (at UHI); the MEdStud consisting of 120 credit points over two years or 240 credit points for three-year qualified teachers, the Med CE being comprised of 180 credit points over three years. In addition, the two institutions are organized differently; the Australian institution being an established Educational institution with a long history of provision. The Scottish institution is much newer to the field of Teacher Education being in the third year of initial teacher training delivery and the first of a professional Masters specifically for teachers. The traditional Australian institution has relied predominantly on face-to-face delivery with the recent introduction of a few online modules and is slowly moving towards blended and, to a lesser extent, online delivery. The newer, and younger, Scottish institution has quickly established online delivery and a blended approach to teacher training due to the geographical dispersal of students. Digital platforms typically adopted in each institution differ. Using video conferencing and the university virtual learning environment, and e-portfolio platform, a number of innovative digital approaches have been developed quickly. Here the potential for a transformative partnership can be seen as the institutions complement each other in regards to delivery and experience.

Temporal dispersion. Temporal dispersion was perhaps the most interesting aspect of the study as time played a pivotal role in numerous ways. Time zones are recognized as being both “an advantage and a difficulty” [email communication]. Initial collaborative writing progressed surprisingly quickly as texts, emailed across the globe at the end of the working day, were emailed back substantially developed by the next morning. This ‘round the clock’ writing allowed the team to meet tight deadlines for partnership proposals. Meeting in real time through video conferencing was possible with a nine hour time difference - the Scottish group at the beginning of their day and the Australian group in their early evening. From October to April, however, the time difference stretches out to 11 hours making it impossible to schedule a video conference within office hours. The impact on what we consider to be ‘family time’ is unavoidable. Temporal dispersion also plays out in the variation in seasons and climate between the north and south global hemispheres. In the most extreme example Australia can be in the grip of summer heatwave and bushfire conditions when Scotland is enveloped in winter snow and ice. In Australia the academic year begins in late February, whereas in Scotland the academic year starts in August. Semester breaks don’t always match up and so any student collaborations need to take place within respective semesters and around lecture breaks to ensure student availability. Supporting student learning at particular and timely points in their program of study becomes a complex and important consideration. While the use of digital technologies can mediate climate differences (people can work at their computers and devices regardless of the weather), organizing learning experiences and meetings in real time, given seasonal differences, is more difficult and forces us to rethink traditional notions of working hours.

Focus Three: Identifying potential outcomes

As explained previously, transformational partnership principles (Butcher, Bezzina & Moran, 2011) have been used to frame our work. The underpinning ‘moral dimension’ in which we sought a common purpose, and ‘the possibility of generative growth and change’ and overarching principles, appear to be a comfortable fit for our group. One test of a transformational partnership, that we will seek evidence for in the future, is that the partnership offers benefits to each of the teach reduction programs (that are not necessarily identical) and leads to lasting change and renewal in each institution (Teitel, 2008).

The first and second transformational principles, ‘working out a shared purpose’ and ‘leading collaboratively’ were brokered by our respective Deputy Vice-chancellors who supported the scoping visit to Scotland, and following visit to Australia, established the broader learning partnership and chose the particular individuals who attended the initial face-to-face meeting. Collaborative leadership has become possible, in our partnership, because of the shared collegiality that quickly developed, and the tasks related to the project were then accorded high priority by the authors of this paper. The third principle, ‘relating on a basis of trust’ seemed to develop with little effort, from the collaborative leadership and has become a mutually accepted element of the transformational partnership for the participants. Principle four ‘ensuring appropriate and adequate resources’ has been enabled within the institutional partnership. Finally, and perhaps most importantly, ‘remaining open to learning and change’ has shaped our collaboration to this point and will continue to be important as we implement and trial our ideas. The idea, floated at the outset of the program, that we could provide a space for students at both institutions to engage with each other in critical reflection related to their studies, seems very possible. Drawing on our analysis of our three foci we decided on an action to shape the initial phase of our partnership by establishing virtual connections across both education faculties through joint activities for the teachers undertaking our part-time teacher education degrees. This action involves the establishment of an education Blogspot, which will enable us to use technology to mediate and shape our partnership over time.

The Education Blogspot: Antipodean Connections (Figure 3: Screenshot of the Education Blogspot) will be the first iteration of an online space to develop connections between the two universities. This will provide a space for staff and students at both universities to post blogs, such as case studies, reflections and enquiries. Potential and timely opportunities for students to contribute have been plotted on a shared calendar to address an element of the temporal dimension of virtual teams (Zigurs, 2003) by highlighting the programs at each university against student progression through the program (organizational dimension). It is intended, that as connections develop, the posted case studies could be used within module activities at both universities, requiring learners to reflect on and compare the two contexts. This would provide a frame from which students could be socially present (Coker, 2015; Cui, Lockee & Meng, 2012) to reflect on their own local context within the learning community. Working from this, connection could progress to shared enquiries or through linking student cohorts. Case studies could focus on areas such as curriculum, assessment, school organization, what it means to be a teacher in Scotland or Australia and could involve comparison of the respective teaching standards. These relationships would then support specific joint tasks for teacher students in later

modules and provide a space to share the inquiry/enquiries carried out as part of both programmes. Areas such as rural and remote education may also prove to be of interest to the students in both locations.

In the first instance, the blogspot would simply open up a shared online space. It could be a general Education resource which could be used in a variety of ways depending on the student, course or group and on how the lecturers in each institution choose to utilize and shape it.

Figure 3: Screenshot of the Education Blogspot



In this paper we have explored possibilities, generated from our analysis of data, to illuminate understanding of the potential of our particular cross-country collaboration in teacher education and of such partnerships in general. In particular we examined the challenges that we have faced in making these plans and how we could seek to enable the teaching and learning process across our institutions. With reference to Zigurs' (2003) work on the dimensions of virtual teams we have considered the ways in which the online environment has mediated the process of transformational change and how it will serve to support our partnership in the future. The knowledge generated in this research will enable us to more deeply understand the complexities involved in such partnerships and provide insights into the way teacher educators might approach international teaching collaborations within an internationalized curriculum (Leask, 2009; Zimitat, 2008). The ability of our partnership to affect transformational change, and how the online environment mediates this change, will inform future enquiry and we will seek evidence to consider if it is possible to enact online collaborative delivery in program offerings between the two institutions that is transformational to both institutions.

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PRE-SERVICE TEACHERS' REFLECTIVITY OF ELEMENTARY CHILDREN'S STRESSORS AND RESILIENCY IN EARLY FIELD EXPERIENCES

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ABSTRACT

Today's child faces multiple life stressors. Being able to adapt to stressors effectively is called resilience. In this qualitative study, ten elementary teacher candidates observed and reflected upon children in pre-student teaching field experiences and gained not only an awareness of stressors and resiliency, but also considered how children's literature supported resiliency. Written data sources were the participants' weekly observations/reflections, teaching procedures of read alouds targeting resiliency for focal students, and self-reflective responses to given prompts. A theory-driven thematic analysis using Henderson and Milstein's model of teacher environmental supports of resiliency showed that the participants reflected most often on aspects of setting clear and consistent boundaries, meaningful participation opportunities, and teaching life skills. Although the read alouds also reflected teaching life skills, they did so using student-focused procedures. The participants' overall reflectivity revealed they considered the most critical environmental factors needed for fostering a child's resiliency were teachers' providing care, support, and bonding.

PRE-SERVICE TEACHERS' REFLECTIVITY OF ELEMENTARY CHILDREN'S STRESSORS AND RESILIENCY IN EARLY FIELD EXPERIENCES

...Overall, observing Jackson has taught me to watch for the stressors in children's lives. I can't control their home lives, but I can control my classroom... I can explicitly teach positive character traits to help students learn strategies to overcome the challenges they face. Also, it is my goal to build a strong connection with each and every child and make them feel like they are an important part of our class. (Carla, teacher candidate's reflection of pre-student teaching field experience)

Grimmett (1988) argues that reflection leads to consequences. For this candidate, reflecting about the problematic aspects of stressors in a child's life led her to consider deliberate actions. Schön (1987) maintains that such knowledge is constructed through reflective self-conversations which frame one's understanding by making use of particular aspects within the situation in order to go about problem-solving. In her case, she engaged in observing and reflecting about the life stressors her second graders faced daily, as well as their responses to those life stressors.

Some stressors are not as challenging as others but each forces a child to respond (Roberts & Crawford, 2008). When children respond with positive adaptability, even when confronted with constant stress and traumatic experiences (Benard, 1993), their successful reactions are labeled as resilient. While resilience has been found to depend on a complex interplay of psychosocial, genetic, biological, and environmental determinants (Feder, Nestler, & Charney, 2009), Masten (2001) maintains that through studying this phenomenon in children, "many negative assumptions and deficit-focused models" (p. 227) of child development and human psychology have been overturned.

With this shifting focus from a child's observed deficits to a more positive view of child development emphasizing strengths and resilience (Brownlee et al., 2013), the role of teachers in fostering healthy adaptive systems has become significant. Just as the candidate above reflected, Dweck (2006), and others (Tough, 2016) have asserted that teachers can be powerful environmental determinants for their students' development of perseverance and resilience. Ideally, an understanding of child development involving both awareness of identifying positive characteristics of a child, as well as helping the child "withstand the multiple vicissitudes" (Garmezy, 1991, p. 427) he or she may encounter, should occur within teacher preparation programs. Though some examination of social emotional learning (SEL) curriculum within teacher education programs has occurred (Hoffman, 2009), little research regarding fostering teacher candidates' knowledge-in-action (Schön, 1987), or observing and reflecting on their students' resiliency skills in the classroom, is available.

Importantly, children's literature is a pedagogical approach for teacher educators to consider in terms of delivering SEL curricula. Bibliotherapy (books used as a form of awareness/validation) can be used to support children with social and emotional learning challenges (Jaquinta & Hipsky, 2006). Books present children with opportunities to explore their feelings by relating to characters with similar ecological situations. For teacher educators, using books as a means of understanding self and others is valuable methodology for developing pre-service teachers' SEL knowledge (Kremenitzer, 2014). Given the significance of such content in our educator preparation program,

we sought to examine elementary teacher candidates' reflections upon their observations of young children's life stressors in terms of becoming aware of resilience. This was done during early pre-student teaching field experiences. We wanted to know how these candidates' reflectivity might influence actions of selecting children's books for read alouds they believed would lead to positive adaptability (resilience).

Literature Review of the Study

Resiliency and Bibliotherapy

Two key areas of study that framed this study will now be discussed: resiliency and bibliotherapy. Resiliency research has had a fairly long history within the literature (Brownlee et al., 2013); it involves investigating how the presence and utilization of both external and internal resiliency factors impact a child's positive development given challenging life experiences. In studying resilience, Masten (2001) concluded it arises from "ordinary human adaptive processes" (p. 234) with a relatively small set of associative global factors. Important to teachers are the identified factors of "connections to competent and caring adults in the family and community" and "positive views of self" (p. 234). Through caring relations, teachers who capitalize on their children's strengths instead of focusing on their "at risk" nature can encourage their students' competencies to adapt and develop positive coping skills (Breslin, 2005).

Significant studies dominate resiliency research (Garmezy, 1991; Werner & Smith, 1992), whereby models or guides for applying the theory of resilience have evolved (see Jones, 2003). For this study, though, Henderson and Milstein's (1996) model is applicable, for it encompasses what Henderson (2013a) references as a synthesis of the "most potent environmental conditions that show up across the body of resilience literature" (p. 26). These components reflect protective external or environmental factors teachers employ as instructional techniques to promote resiliency. They include: (a) increasing social bonding; (b) setting clear and consistent boundaries; (c) teaching life skills such as cooperation, conflict resolution, resistance and assertiveness skills, communication skills, problem-solving and decision-making skills, and stress management; (d) providing care and support, including unconditional positive regard and encouragement; (e) setting and communicating high expectations; and (f) the providing of opportunities for meaningful participation. Specific opportunities for meaningful participation can include reading books with social-emotional content that provides models of characters solving problems and interacting positively (Doyle & Bramwell, 2006).

Developmental bibliotherapy is an appropriate process for teachers to use, according to Stamps (2003). Bibliotherapy allows teachers to choose literature to foster the ability of their students to find resolutions to their stressors or concerns. Relevant to teacher educators and bibliotherapy is Kremenitzer's (2014) qualitative research in which a piloted SEL curriculum for pre-service teachers resulted in transformative influences on both children and teachers. Additionally, Haeseler's (2009) study revealed how the strategy of using books facilitated coping mechanisms by requiring pre-service and graduate students to create books to help children cope with various stressors. Haeseler's results indicated that the participants "experienced a healing process when creating their books" and felt that the book project "helped mend childhood wounds" (p. 116). Unfortunately, few other examinations of teacher candidates' awareness of resiliency skill development relative to using children literature were observed in the literature.

Research indicates that, while teachers are in key positions to provide social and emotional support for students, they may lack the training to do so (Baum, Rotter, Reidler & Brom, 2009). Research also suggests that an SEL curriculum should not focus on strategies to “fix the kid” (Bernard, 1993, p. 45). Rather it should emphasize positive actions strategies, such as supportive emotional relationships between children and teachers. Further, it should include environmental supports, like meaningful opportunities to engage in children’s literature (Kremenitzer, 2014). Thus, the purpose of this study was to investigate teacher candidates’ reflectivity on children’s life stressors and how, despite adversity, the development of young students might be enhanced by environmental factors in the classroom through the use of children’s literature.

Design and Purpose of the Research

The study took place during the fall semester of 2013 at a mid-sized, midwestern university. Because the study was *exploratory* in nature and the participants’ awareness of children’s life stressors and observed resiliency behaviors as relative to environment was self-reflective, a qualitative design was used (Creswell, 1998). Such qualitative methodology was selected because the purpose was to gather descriptions of the participants’ reflectivity of resiliency in schools. Because the participants’ observing/reflecting took place during an early phase in their teacher preparation program, these descriptions were thought to offer valuable feedback to teacher educators in the University’s preparatory program. Specifically, the study sought to examine these research questions:

“How do elementary pre-service teachers’ perceptions of a young child’s stressors and adaptations inform their reflections of children’s resiliency relative to a classroom environment?”

“How does such reflectivity influence the pre-service teachers’ selection and planned read alouds for facilitating the focal child’s adaptability (resilience) to his/her perceived life stressor?”

Methodology of the Study

Participants

Using a sample of convenience, the study involved ten White elementary education teacher candidates, consisting of nine females and one male. (Throughout the article, pseudonyms for the teacher candidates and their focal children are used.) Each was completing a pre-student teaching field experience focused on social studies and literacy pedagogy. Previously, in their programs of study, the participants had completed introductory coursework pertinent to child development, diversity, and children with special needs. Such courses were foundational and did not include particular methodology. However, this specific field experience required candidates in their junior year to observe, participate in, and teach six social studies and literacy lessons, including a multicultural read aloud drawn from students “funds of knowledge” (Moll, Amanti, Neff, & Gonzalez, 1992, p. 133) in kindergarten through grade five settings. Placements during a 13-week experience involved settings in the state’s largest school district of 50,000 students, which was made up of 78% economically disadvantaged students (Kansas State Department of Education, 2013-2014). Garmezy (1991) noted that poverty conditions increase potential stressors for children. Teacher candidates in this particular program of study reflected upon children’s life stressors of homelessness and lack of resources, as well as parental divorce and incarceration.

As requirements of the credit-no credit course, the participants chose a focal student exhibiting (life) stressors, submitted written journals reflecting on their observations/experiences with the student, prepared (but did not administer) a read aloud lesson for the student, and submitted an overall written response of the experience. The read aloud was not actually implemented because the participants had limited training in SEL. The researchers felt that it would be unethical for teacher candidates to bring to the surface emotionally-charged topics with their focal children without adequate SEL training and with a somewhat limited time to interact with the children. To illustrate such a situation, Opal perceived her focal student's behaviors as indicative of a need for professional therapeutic support. Stamps (2003) suggested that teachers can effectively use books to help children cope with various stressors, but she argued that individuals who are adequately trained should deal with serious emotional concerns. Explorative studying of pre-service teachers' planning, reflectiveness of the planning, and its impact on pedagogical training were deemed to be helpful for teacher educators, even if implementation of the read alouds did not occur.

Candidates' participation in the study was solicited at the beginning of the semester; they were assured that, although they were required to do the assignments, their participation in the study was entirely voluntary, and their participation or lack of participation in the study would not influence grades for any of the assignments or their academic standing in the course.

Materials and Procedure

The following is a summary of the procedures and materials involved in the study.

1. In August 2013, the teacher candidates were presented with introductory content relative to the probability of life stressors in a child's life. Stressors were defined as behavioral or emotional responses to academic or social challenges with examples of "playmates refusing to play, sibling rivalry... [and] a parent's unemployment, military deployment, or incarceration" (Roberts & Crawford, 2008, p. 1). Added illustrations relative to a child's academic issues were given, such as fears and anxieties relative to less than perfect assignment scores or inefficient problem-solving skills (Iaquinta & Hipsky, 2006). Next, the significance of resilience-based research was provided, with resiliency defined as the capacity to adapt in the face of adversity (a perceived stressor). This straightforward definition of resilience was deemed appropriate for the purposes of this study; Masten (2001) makes the argument that "resilience is an inferential and contextual construct" (p. 228), and it is quite complex with criteria that are often elusive. In other words, how a child adapts to stressors is multi-faceted and determining causal relationships can be problematic. Candidates were shown effective coping strategies, guidelines for selecting appropriate children's literature, and were given opportunities to view and evaluate recent publications of children's picture books (see Table 1).

Table 1 *Sample Bibliography of Recent Publications of Children’s Picture Books Relative to Resiliency Content*

Title of Picture Book	Author of Picture Book
<i>Sometimes We Were Brave</i>	Pat Brisson
<i>Gumption</i>	Elise Broach
<i>Ten Rules You Absolutely Must Not break if You Want to Survive the School Bus</i>	John Gandits
<i>Making the Moose Out of Life.</i>	Nicholas Oldland
<i>A Storm called Katrina</i>	Myron Uhlberg
<i>Sally Sore Loser: A Story about Winning and Losing</i>	Frank Sileo
<i>Flood</i>	Alvaro Villa
<i>Sammy in the Sky</i>	Barbara Walsh
<i>Mr. President Goes to School</i>	Rick Walton
<i>A Place where Hurricanes Happen</i>	Renée Watson
<i>Scaredy Squirrel Goes Camping</i>	Melanie Watt

2. Following content of Malchiodi and Ginns-Gruenberg’s (2008) *Creative Interventions with Traumatized Children*, the pre-service teachers viewed a demonstration of how to perform an effective read aloud procedure for addressing a social emotional learning objective. Such aspects as book appropriateness or relevance to a child’s current situation and ways to engage the imagination and senses were modeled. Malchiodi and Ginns-Gruenberg’s (2008) list of possible questions during the reading of a book were offered as possible discussion starters. Candidates then collaboratively viewed picture books and considered potential teaching procedures to address varied childhood stressors and talked about potential coping strategies, questions, or follow-up activities.

3. In September, within their field experience settings, each participant chose a “focal student” –a child in the classroom whose situation was observed and perceived to reflect life stressors. Participants were asked to explain how the child’s stressors were perceived to be influencing the child’s ability to adapt or why help with resiliency might be an appropriate intervention. They were then instructed, on an on-going basis, to observe, reflect upon the student, and write to the prompt, “What did you observe?” Participants were asked to reflect on the child’s strengths and challenges by considering such aspects as his or her personality, learning styles, behaviors, and achievement. During the 13-week field experience, five weekly written observations and self-reflections of this focal child were submitted and read by one researcher who responded with comments (“WOW! Look at your list of positive student assets!”) and questions (“Have you talked to your teacher about this observation?”). As an example, Carla, the teacher candidate whose reflection was highlighted at the beginning of the article, selected Jackson, a child in foster care, because of his current home instability and how she perceived this life stressor to impact his perseverance of academic skill learning. She observed that Jackson exhibited frustration and what she labeled as a “*lack of maturity*” when working independently.

4. In addition to written observations/reflections, each participant chose a children’s picture book that appeared to be appropriate for the child’s social-emotional strengths/needs. Participants then

designed teaching procedures of a particular resilient strategy relevant to his or her focal student's perceived stressor(s) (see Table 2).

Table 2 *Teacher Candidate Directions for Planned Read-aloud*

(1) Locate a children's book that targets/showcases SEL content and then develop a read aloud "plan" for how you might share the book as a strategy for building resiliency with a particular focal child.	
(2) Evaluate the book using Malchiodi and Ginns-Gruenberg's (2008) recommendations for books dealing with stress. Show at least two pieces of evidence to support the book selection (in writing).	
	Is the book understandable for the focal student's cognitive, social and emotional level? How?
	Are the picture and text engaging? How?
	Can the focal student relate to the text and illustrations without too much anxiety? How do you know that?
	How is the story relevant to the focal student's needs?
	How does the literature reflect or show "lived-through" experiences for coping that the focal student could relate to? In other words, how does the protagonist/main character solve his or her problem?
(3) Write "procedures" for the read aloud. Include pre-reading, during reading, and after reading questions. This plan should include a way for the child to respond (drawing, writing, acting out, etc.) to the read aloud. Make sure your questions "draw out" the targeted resilience strategy.	

5. In December, at the conclusion of the field experience, participants responded in writing to given prompts to show reflectivity of their awareness of childhood stressors and resiliency: "What did you notice about YOU as you observed this particular child? What did you reflect upon as you wrote procedures for the read aloud? What does this mean in terms of your being an effective teacher?"

Analysis of the Data

Data sources for the study included the participants' (a) weekly written observations/reflections about individual focal children, (b) written teaching procedures for a read aloud of a self-selected book (book analysis and criteria for selection, questions during the read aloud, and a task for responding to the literature), and (c) final self-reflective written responses to given prompts.

To begin the data analysis, each researcher read, reviewed, and reread all the written reflections, read aloud procedures, and final responses as a means of describing the participants' awareness of stressors for the children, as well as how one might foster or support their adaptability and the teaching of resiliency. The researchers analyzed each data source separately and began with the candidates' written self-reflections/observations during the field experience. A theory-driven analysis relative to Henderson and Milstein's (1996) resiliency model provided examinable structures to be related to the candidates' reflectivity of resilience in the classroom. To do this, the idea unit as the unit of analysis was employed (Chafe, 1987), and the researchers individually, and then collaboratively, categorically coded and aggregated each idea (Creswell, 1998) in

relationship to Henderson and Milstein's (1996) environmental conditions. According to Chafe (1987), an idea unit is a unit of intonational and semantic closure in oral or written texts. Patterns reflective of Henderson and Milstein's (1996) external teaching protective factors told of the candidates' awareness for how a child's resiliency was supported in the classroom: (a) increasing social bonding; (b) setting clear and consistent boundaries; (c) teaching life skills; (d) the provision of care and support; (e) setting and communicating high expectations; and (f) the provision of opportunities for meaningful participation. Additionally, the candidates' reflectivity revealed what Schön (1987) refers to as "reflection-in-action" (p. 26) or an action performed in the moment. For example, one of the candidates selected a focal third grade student with stressors she considered as behavioral and attention challenging responses. In a particular reflection, she wrote: *My CT [cooperating teacher] and I had to address his behavior several times over the course of the day ... I find sitting next to him helps...* Reflectivity or 'reflections-in-actions' are actions generated and tested through on-the-spot experimenting (Grimmett, 1988).

Collaboratively, the researchers coded the idea units as being relative to an *awareness of the importance of setting clear and consistent boundaries in terms of student behavior*. Yet, the idea unit showed more than the candidate's awareness; it also demonstrated her acting upon or implementing an external protective factor. In Henderson and Milstein's (1996) model, being consistent in implementing behavioral expectations is done so with an attitude of caring—something that the teacher candidate appeared to be showing with her physical proximity. Thus, patterns of both *observations of or noticing* particular environmental factors and the reflection-in-action of such "noticings" became apparent within the data analyses. When overlapping of idea units occurred, the researchers collaboratively determined categorical membership/coding of ideas. To check for categorical membership accuracy and inter-rater reliability, the researchers reread the written reflections again and collaboratively determined if the coding reflected actual excerpts in the participants' reflective responses. Similar procedures occurred when the researchers reread and collaboratively analyzed the participants' read aloud procedures and final reflective written responses. Numerical summaries of these helped to point out trends/patterns.

Trustworthiness involved multiple inter-rater checks between the two researchers of the coding methodology (Creswell, 1988). Additionally, the analyses of the three data sources provided triangulation for corroborating the evidence (Creswell, 1988).

Results of the Study

Question #1

The first question was: "How do elementary pre-service teachers' perceptions of a young child's stressors and adaptations inform their reflections of children's resiliency relative to a classroom environment?" The following results are presented in terms of the participants' reflective written responses.

A summary of findings is shown in Table 3, which indicates (numerically) that 69% of the participants' written observations/reflections reveal *awareness of* how external factors observed in the classroom fostered resiliency skills in children. Thirty-one percent of their reflections indicated a reflection-in-action (Schön, 1987) or acting upon their constructed knowledge of the child's perceived life stressor and what they considered for his/her resiliency. Most often, the teacher candidates' observations reflected awareness of how teachers facilitate resiliency skills

for their students through setting clear and consistent boundaries (25%); the provision of opportunities for meaningful participation (17%); and teaching life skills (14%), such as how to cooperate together, problem-solve, and make decisions. While the participants most often *reflected* upon observed environmental conditions within the classroom, their written reflections did reveal the frequency with which they generated an action to foster a way to adapt (resiliency) to the focal student’s challenge by personally providing care and support (9%); social bonding (7%); and offering opportunities to meaningfully participate in academic and social activities (7%).

Table 3 *Participants’ Reflections of Resiliency Fostering Behaviors Relative to Focal Children*

Teacher behaviors	Awareness		Reflection- in- action	
	Number	Percentage	Number	Percentage
Increasing social bonding	1	1	12	7
Setting clear and consistent boundaries	40	25	7	4
Teaching life skills (cooperation, conflict resolution, resistance, assertiveness, communication skills, problem solving, decision making, stress management)	22	14	5	3
Providing care and support	19	12	15	9
Setting and communicating high expectations	2	1	0	0
Providing opportunities for meaningful participation (unconditional positive regard and encouragement)	27	17	11	7
Totals	111	69%	50	31%

Note: N=161 idea units. Percentages are in boldface. The teacher behaviors are based on Henderson and Millstein’s (1996) Model of Fostering Resilience.

Responses Reflective of Henderson and Milstein’s Model of Resiliency. While Table 3 offers numerical information, the following descriptions exemplify qualitative responses reflective of Henderson and Milstein’s (1996) model of resiliency, as well as provide categories summarizing how the participants most often reflected upon their own actions or ways to elicit adaptations for what they perceived as stressors for their focal students.

Setting clear and consistent boundaries. In this study, the participants identified elementary students they observed as facing life stressors; they perceived these stressors as areas in need of adapting or resiliency development. As Baum, Rotter, Reidler, and Brom (2009) point out, children do not always talk about what is bothering them; they display symptoms, such as behavioral and emotional avoidance or intensified emotional sensitivity. The teacher candidates noticed and then reflected on behaviors—such as crying, talking back to the teacher, pushing chairs or “*throwing a fit and slam(ming)*” into chairs. They also noticed when a focal child showed an inability to focus on a task, sit in a chair, or sit on the rug. In their observations, these behaviors indicated stress. The children were struggling with recognizing and solving problems in

the classroom setting (Jaquinta & Hipsky, 2006). Garnezy (1991) argues that students' cognitive and social competencies can be enhanced by the efficiency of classroom management techniques. In Henderson and Milstein's (1996) model, the external protective factor of setting clear and consistent boundaries for behaviors communicates how teachers implement school procedures and clarify behavioral expectations to build students' resiliency with an attitude of caring rather than punishment.

Marlene's focal student, for example, was observed to respond by what others had labeled as "*a serious behavior disorder... [such that] many different people came into the class to observe him...*" Her reflections communicated how school personnel worked to determine a plan for effectively setting and monitoring his behavioral expectations to help him adapt and problem-solve in social situations. Frequently, candidates described classroom structures employed to encourage social competencies. Marlene began to notice changes when her *acting upon* teaching social skills increased: "*I told him it wasn't respectful to make faces at people*" and she ignored his facial responses when she asked him to do something or attend to a given task. As she began to become more cognizant of this third grader's behaviors, she reflected that "*the more praise you give Evan, the more cooperative he is when you ask him to do something.*" In this way, her awareness led to reflection-in-action (Schön, 1987) problem-solving as she "*gained new knowledge about him every time.*" A similar emergence of awareness from other candidates led to a more focused reflecting on the development of the child—and less on the child's problem or stressor (Breslin, 2005). For example, Amanda wrote, "*I found myself becoming more and more interested in learning how Tom's mind operates. I wonder what triggers his outbursts.*"

Provision of opportunities for meaningful participation. Benard (1993) states that meaningful involvement and participation is a "fundamental human need—the need to have some control over one's life" (p. 47). This protective strategy or component in Henderson and Milstein's (1996) model, thus, emphasizes students' needs for responsibility as well as opportunities to solve problems, make decisions, and set goals. Bruce (1995) operationalizes it by suggesting that children can be meaningfully engaged in brainstorming, critical thinking, and social learning processes.

For the teacher candidates in this study, their focal students' engagement in academic tasks was frequently reflected upon as meaningful opportunities to promote resilience. Examples from Brooke's reflections of a third grader include, "*... he focused very well during math this morning... Sometimes the teacher uses him to help others...*" Recognition of this child's math and leadership strengths may have facilitated his positive self-concept. Breslin (2005) notes "children's self-concepts result partly from the expectations others have for them" (p. 50).

As the participants' interactions with the focal students increased, due in part to teaching social studies and literacy lessons, their reflections revealed how they individually initiated meaningful experiences for students. To explain, Amanda's fifth grade focal student, in her words, "*is a pretty smart student who lacks confidence in what he is doing. Every time that he finishes a problem, he wants someone to come by and check it out... He really strives for praise.*" She noticed his competitiveness and considered that as way to motivate and possibly increase his self-image: "*Tom was moving slow... not motivated to do anything...my solution to this was to try and make it [the learning] a safe race.*" Using Tom's or any child's interests and varied ways of fostering his or her positive self-concept can build resiliency (Benard, 1993). Similarly, Brooke's

noticing of her focal student's quest "*to problem solve and be competitive*" led her to act upon his perceived strength in her consideration of increasing his social interactions in the classroom.

Teaching life skills. Henderson (2013b) suggests that new life circumstances or changes in situations require new "life skills" (p. 9). Teachers facilitate such life skill development by helping students communicate, listen, and assert themselves appropriately. The participants' reflections showed both their awareness of how life skills were elicited in the classroom setting as well as how they fostered such social skills through positive relationships and interactions with students. To illustrate her perceived awareness of the second grade classroom teacher's emphasis on a student's need for self-control in social settings, Carla shared her reflective thinking about Jackson, in terms of a change in seating arrangements on the carpet:

Jackson moved from the middle to the front...which is good because he is sometimes a distraction for others. From what I observed, he does better in the front. He is more engaged in the lessons. One thing he is working on is blurting out. With his new engagement, he is eager to participate and is trying to gain self-control.

At times, the teacher candidates' reflections described how their reflectivity generated actions to facilitate a student's perceived need for life skills. Amanda, for example, reflected that prior to an implemented social studies lesson which included a game, she explained, "*this is a game*" to help prepare Tom for the activity. Communicating such academic or social expectations can often foster a student's adaptation to a change in setting (Henderson, 2013b).

Provision of care and support and increasing social bonding. A central concept in Henderson and Milstein's (1996) model is that teachers and schools are powerful sources of protective shields for children in their efforts to overcome adversity. Benard (1993) argues that caring teachers who strive for supportive relationships with their students use that key protective shield to build their students' abilities to adapt and show resiliency. The participants' reflections not only showed observations of this environmental condition, but also how they actually provided such care and support. For example, in an early reflection Bailey wrote about the power of her relationship with Zach in terms of academic and social support in the classroom.

Zach and I are growing closer every week... this morning he greeted me with a hug and a smile... [and with] so much to share about Halloween...but the bell rang, so he could not share with me. I felt bad because he got upset that no one listened to him. I sat down and told him that sometimes we have to wait to tell people things until later. He didn't like that, but he did accept it...

Oftentimes, descriptions of care and support complemented the candidates' reflectivity for *why* they acted upon a perceived need for social bonding with students. Brooke acknowledged that academic support for her focal student promoted "*good bonding time.*" She reflected that her CT noticed the power of Brooke's relationship with the child and asked her to provide more "*one on one time*" for him because he "*respects me and I handle him well.*" To the researchers, Brooke's thinking showed how positive interactions occurring between her and her focal student reflected a sense of comfortableness that not all adults in the classroom felt toward the child.

Question #2

The second question was: “How does such reflectivity influence the pre-service teachers’ selection and planned read alouds for facilitating the focal child’s adaptability (resilience) to his/her perceived life stressor?” Following are analyses of the candidates’ read aloud procedures and final reflections of observing focal students in classroom settings in relationship to Henderson and Milstein’s (1996) model of resiliency.

Reflective Responses to Designed Read-aloud Procedures and Overall Prompts of the Experience.

Designed read-aloud procedures. Henderson (2013b) suggests that books can be effective tools for SEL content, and it was evident from the participants’ reflecting on book selections how they might utilize a book for teaching resiliency relative to life stressors they perceived their focal children faced. Table 4 shows that 78% of the candidates’ read aloud procedures and book selections centered on teaching a particular life social skill, like self-control, managing emotional outbursts, sharing, or perseverance.

Table 4 *Participants’ Reflected Awareness of Teaching Resiliency via Selected Children’s Books*

External Factor Component	Student Grade Level	Perceived Stressor and Focused Resilient Strategy	Selected Book for Focused Resilient Strategy
Teaching Life Skills	3	(1) One-on-one teaching of appropriate social behaviors, like sharing time with others	(1) <i>Holler Loudly</i>
	5	(2) Support of self-control of social/emotional outbursts	(2) <i>Throwing Tantrums</i>
	K	(3) Self-control/blurting out/interrupting	(3) <i>It is Hard to be Five: Learning How to Work my Control Panel</i>
	2	(4) Using imagination to relieve stress of family situation	(4) <i>Where the Wild Things Are</i>
	3	(5) Social skills/defiant behaviors	(5) <i>Being a Good Citizen: A Book about Citizenship</i>
	2	(6) Problem-solving/self -control	(6) <i>Stand Tall Molly Lou Melon</i>
	2	(7) Perseverance/frustrated with academic skills learning	(7) <i>I Can Be Anything</i>
Provision of care and support	1	(8) Teacher advocate –challenging home situation; seeks negative attention	(8) <i>Mr. Lincoln’s Way</i>
Provision of opportunities for meaningful participation	3	(9) Small groups and partner activities where assertive interactions promote positive self-concept	(9) <i>Incredible You! 10 Ways to Let your Greatness Shine Through</i>

Note: One participant did not submit a read aloud assignment.

In planning the read alouds, the participants' procedures focused on engaging the child with open-ended questions that they considered interesting to the child, connective of the child to a character or situation in the book, or of help to the child in exploring or inquiring about his or her social learning. Tough (2016) maintains that, when teachers create environments that allow children to experience a sense of relatedness, children are more likely to feel motivated to display positive academic behaviors (e.g., focusing one's attention longer and considering problems and decisions more carefully). Although the participants were prompted by assignment guidelines, their procedures still reflected what Henderson (2013a) explains as meaningful opportunities whereby students engage in solving problems and thinking critically.

To illustrate, in planning the read aloud procedures for *Holler Loudly* (Smith, 2010), Brooke considered the protagonist as relatable ("*The character in the story is always loud, disruptive, and does not listen to others*"), the illustrations as suggestive of emotions ("*Why do you think the illustrator drew his mouth SO BIG?*"), and her questions as guiding ("*How do you think the people feel about Holler's actions?*"). Monica considered the rhythm, humorous illustrations, and particularly the vocabulary of "*It's Hard to be Five*" (Curtis, 2007) as "*similar to something a little boy would say.*" Bailey asked specific questions, like "*Who believes in Eugene? Why do you think Mr. Lincoln believes in Eugene?*" to help Zach see that teachers can be advocates for him, just like in *Mr. Lincoln's Way* (Polacco, 2001). Vanessa's reflection conveyed how she purposefully chose a book by reflecting on Felix's cognitive and social resources and how she thought he would engage with the literature:

I think Felix would enjoy this story... [and] relate to being small like Molly Lou Melon [Lovell, 2001]. I think Felix would laugh because he does have a sense of humor... because she is likable and quirky... Throughout the story, she is faced with...issues that she has no control over. Felix is faced with an issue [spine disorder] that he has no control over... He is sharp and would relate to the message that Molly Lou Melon has to say...

Tough (2016) asserts that an environment that fosters SEL competence gives students a sense of belief in them. Amanda reflected that her teaching procedures would encourage Tom to "*feel like he is making this journey on his own; not that I am making him do it.*" Carla reflected on the planned discussion of "*I Can Be Anything!*" (Spinelli, 2010) as focusing on the protagonist's strengths by asking Jackson questions about setting goals, creative problem-solving, and being independent—all within the context of a "*light and easy text.*" After reading *Where the Wild Things Are* (Sendak, 2000) and discussing one's imagination ("*Do you ever imagine things or use your imagination? How can we use our imagination when we are feeling bad or sad?*"), Opal planned drama activities to engage her focal student, as he is engaged "*when he sees monsters, aliens, and dinosaurs.*"

Responses to final overall prompts of the experience. To gather the participants' reflectivity of observing focal children's stressors, looking for environmental factors supportive of resiliency in the classroom, and planning read alouds, we report their written responses to these questions as overall self-reflections of fostering resiliency in the classroom setting:

"What did you notice about YOU as you observed this particular child?"

“What did you reflect upon as you wrote procedures for the read aloud?”
“What does this mean in terms of your being an effective teacher?”

Results of these self-reflections indicate that their most frequent observations (73%) considered how social bonding and providing students with care and support were critical factors teachers needed to consider in building resiliency. Responses such as, “*I took the time to get to know my children,*” or “*I had many one-on-one connections,*” or “*I tried to think of ways to connect with him*” and “*It is about gaining a trusting relationship with the student*” reflected the importance of relationships with students. The importance of knowing their focal students’ perceived stressors and planning actions for their successful adapting was revealed in their planned read alouds: They reflected about the choice of the book (“*This is a great book for Zach because it will show him that someone cares*”) and teaching procedures (“*When I was writing the read aloud, I wanted to do things that the student would be interested in*”). Monica reflected that she “*tried to word things in a way so that [Kyle] would not think something was wrong with him or that he was in trouble.*” Examples of her step-by-step procedures and questions show how her reflection-on-action (Schön, 1987) of Kyle led to her deliberate teaching actions:

Read the title of the book. Tell him he can pretend the book says, ‘It’s hard to be six,’ since he is six years old. Tell him he can pretend the little boy in the book is him, if he wants to ... Ask him, ‘What are some things that you do in school to give your monster [classroom discipline system] a red point? Do you think we can figure out ways to keep your monster from getting red points?’ ... Pg. 12. ‘Is the little boy having self-control now? How?’ ... Pg. 15. ‘Why do you think the little boy is so happy and proud?’ ... Tell Kyle to draw a picture of the things he can do at school to show that he has self-control...

Interestingly, in reflecting upon themselves and what they took from this experience, the candidates noticed that elementary students’ social and emotional strengths and needs required the expectation of clear and consistent behavioral boundaries (14%) because “*Knowing students’ behaviors are very important*” and “*It is important to always be open to new classroom management techniques and behavior ideas.*” Additionally, the participants’ acknowledged teaching life social skills (13%) via specific instructional practices—such as utilizing children’s literature—are important to effective teaching of resiliency. Brooke wrote, “*I have learned that literature can be a powerful tool*” and Vanessa shared, “*I will lift their hearts up with these awesome stories to encourage and inspire them.*”

Discussion of the Study

In this study, elementary teacher candidates in an early pre-student teaching experience reflected upon focal students’ perceived stressors and how the classroom environment supported their students’ resiliency development. Most frequently, the participants’ self-reflections in the classroom revealed awareness of particular environmental factors teachers utilized—setting clear and consistent boundaries, providing opportunities for meaningful participation, and teaching life skills—to foster resiliency. Although a majority of the reflections (69%) indicated an *awareness* of resiliency environmental factors observed, about a third of the self-reflections (31%) described *actions* taken by the participants to promote student adaptability through their personal care and support, social bonding, and offering of opportunities to engage their focal students in meaningful academic and social activities. Thus, reflectivity appeared to spur these actions.

As the candidates' interactions increased with the focal children, they began to reflect upon changing personal paradigms from seeing "*the bad kids, the disabled kids, or the dirty kids*" to seeing children "*who needed someone to believe in them and get to know them*" (Bailey's reflection). According to Henderson (2013a), this is a necessary, though challenging, change for education. Contrasting paradigms are reflected in Marlene and Brooke's observations of students with problematic behaviors. Marlene reflected, "*He is a lot of work in himself!*" while Brooke shared, "*I made sure to set expectations over the day. I built my trust relationship with him, so it [the relationship] got better and he was doing well.*" Paradigms, like Marlene's thinking, support Breslin's (2005) statement that focusing on a child's problems, deficits, or risk factors will tend to "minimize or ignore strengths and competencies a child possesses that could promote adaptation and wellness" (p.47).

After observing and reflecting upon certain students, the participants selected children's books and planned read alouds they felt would bolster the children's adaptability for what they perceived as stressors. Although the designed read aloud procedures most often (78%) depicted the teaching of life social skills or the needs rather than the strengths of the child, all read aloud procedures reflected meaningful procedures (i.e., open-ended and relevant questions; interactive responses like drama, writing, drawing; etc.). These meaningful procedures were aimed at engaging the student based upon his or her observed interests, level of inquiry, and related SEL.

Interestingly, except for the choice of *Mr. Lincoln's Way* (Polacco, 2001), books chosen for read alouds were participant choices and not ones observed in the teaching module. Several of these selections—*Throwing Tantrums* (Berry, 1988), *It's Hard to Be Five* (Curtis, 2007), *Being a Good Citizen* (Small, 2005), and *Incredible You! 10 Ways to Let your Greatness Shine* (Dyer & Tracy, 2007)—are what Roberts and Crawford (2008) describe as supportive literature that is "instructional in tone rather than literary" (p. 2). Such directed SEL content focus may have occurred because the candidates' preparatory phase heavily emphasized lesson design and content delivery; in other words, they may have inferred the pedagogy of children's literature as only a means of explicit teaching of skills (rather than enhancing one's strengths).

In attempting to understand the participants' *reflection-in-action* and *reflection-on-action* (Schön, 1987) of resiliency supports in an elementary classroom and planned read alouds, the researchers considered the participants' limited SEL content preparation. With limited curricular background knowledge about resilience, the participants appeared to construct knowledge of resilience from their classroom observations. They observed children who acted out, showed defiance, or struggled with classroom discipline procedures. The participants viewed these observed behaviors as stressors or obstacles to the students' success (social and academic) in the classroom. Perhaps with additional knowledge of social/emotional and behavioral development of children, the participants may not have considered such aspects "stressors" and considered other factors, like classroom structures, as well. To the researchers, the importance of behavioral stressors was reflected in the frequency with which the participants' reflections pinpointed the setting of classroom expectations. Additional reflectivity of the number of instances of life skills instruction shown in targeted read aloud procedures showed evidence of the value participants appeared to place on classroom behaviors. Interestingly, in six of the nine read alouds, emphases on social skills like self-control, sharing, and problem-solving occurred, suggesting that the participants viewed such behavioral needs as occurring in children of varied ages. These findings point toward

a better understanding of Tough's (2016) claim that educators struggle with motivating, connecting to, and calming down low-income children of any age. His contention of an emerging, effective approach "rooted in the science of adversity" (2016, n.p) for educating such students is relevant.

Even with such attention on teaching and managing behaviors, 73% of the teacher candidates' final reflections revealed critical aspects of effective teaching are providing care and support and social bonding with children. The researchers contemplated that participants' awareness for such environmental aspects reflected existing emphases within their teacher education program for knowing and understanding how a child's contextual factors of home, school, and community relate to his or her learning and achievement. It appeared that gaining knowledge of a child's SEL was related to participants' background experiences of effectively planning and implementing multicultural read alouds for their students. In other words, the participants viewed children's literature as not only a means for facilitating a bridge between a child's cultural home/community situation and school, but also a way to foster SEL.

Limitations

There were several limitations to the study, including (a) a lack of depth for the resiliency-delivered content, (b) the cooperating teachers' overt and/or subtle communications regarding children's stressors and/or reactions to resiliency environmental factors in the classroom, (c) the small, convenience sample of participants, (d) the length of the field experience, and (e) the number of written reflections/observations compiled. The nature of the self-reflections as well as a lack of information regarding the participants' background experiences in terms of resiliency prior to the onset of the study were also limitations.

Implications of the Study and Future Directions for Research

One implication drawn from this study is a need for more research into teaching pre-service teachers about resiliency. While the teacher candidates' reflectivity indicated awareness of childhood stressors and some environmental aspects of effective resiliency enhancement (hypothetically related to the use of children's literature), additional research utilizing larger participant samples and more than one module of social and emotional curricula are necessary. Moving beyond an exploration of the reflections of teacher candidates, it would be helpful to investigate whether and to what extent teachers already use children's literature to strengthen resiliency in their classes. Practicing teachers might be surveyed regarding the perceived need for fostering resiliency, their current level of knowledge regarding teaching SEL content, and the acceptability of learning and using such procedures with at-risk children in their classrooms.

Children come to elementary teachers' classrooms with all kinds of stressors. It is important that teachers, like the pre-service teachers in this study, draw from their children's experiential backgrounds and shift their focused thinking on a child's deficits to examining more closely his or her internal resources. In this report, pedagogical shifts in thinking like Opal's reflection of, "*I felt much sympathy for him,*" to her noting, "*I gave him positive reinforcement and he smiled!*" showed the candidates' SEL and teaching paradigms changing. Moreover, through their reflectivity, they also became aware of how classroom resources, like children's literature, can aid in promoting social and emotional learning. While exploratory, this study's results show teacher

educators the value of fostering beginning teachers' understandings of how to help children adapt to stressors and the need for adequately addressing SEL in educator programs.

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TEACHERS MATTER: PREPARING INNOVATIVE TEACHERS

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ABSTRACT

Today's young people of both undergraduate students, and those entering teacher education programs are digital natives, who grew up in a technology world of computers, Internet, cell phones, and social networking. In contrast to their analog schools and teacher education programs, they seek an education that's creative, engaging, interactive, and collaborative, and most importantly, innovative. In our global society, schools have to prepare students for a competitive international economy. The emphasis on innovation and creativity are fundamental skills for a successful 21st century economy in championing teacher education. The challenge is understanding the increasing complexity and demands of the 21st century, and how we can work together to determine the best solutions to transform our system of education. We need to ensure that all of our citizens have the fundamental knowledge and 21st century skills to continue to educate themselves to navigate the pathways of our democratic society, our capitalistic economy, and life in general.

TEACHERS MATTER: PREPARING INNOVATIVE TEACHERS

The goal of higher education

In higher education, the primary goal is to prepare undergraduate students for the real-world challenges they will experience in their everyday life, in their professional career, and in society (Tsui, 2002). The academic learning in higher education is a type of knowledge that is discipline-specific, however, in the 21st century, academic learning should focus on enhancing the cognitive processes that cultivate creativity and innovation with critical thinking and problem solving (Behar-Horenstein & Niu, 2011). Some employers have confirmed that critical thinking and problem solving, which employ the cognitive functions of associating, analyzing, and reasoning are desired skills in need of improvement of most college graduates (Association of American Colleges and Universities, 2008; New Jersey Commission on Higher Education, 2005).

The Association of American Colleges and Universities (2010) explains that approximately 90% of employers say employees need a broader set of skills than in the past, with higher levels of learning and knowledge in order to meet increasingly complex workforce challenges. It was also noted that only 28% percent of employers believe higher education is doing a good job preparing students for work after college, while 68% say there is room for improvement. Wagner (2012) expounds that critical thinking and problem solving are tenets of being ‘innovation ready’ and should be the goal of higher education, which will add value to the graduate’s job skills in casting value to their profession. In a 2013 interview, Wagner reported to The New York Times columnist and best-selling author, Thomas L. Friedman:

Today, because knowledge is available on every Internet-connected device, what you know matters far less than what you can do with what you know. The capacity to innovate, the ability to solve problems creatively or bring new possibilities to life and skills like critical thinking, communication, and collaboration are far more important than academic knowledge (Friedman, 2013, p. 1).

Innovation

Ferrari, Cachia, and Punie (2009) state “innovation is the application of a process or product and should be a thinking process of creative learning with the implementation of new methods, tools and contexts, which could benefit learners and their creative potential” (p. iii). The implementation of new ideas to create value is how Craft (2005) expresses innovation and further elaborates that innovation can be perceived as the application and implementation of creativity. Varshney (2014) simplifies innovation as the ability to think beyond the boundaries and create something which is different from that which already exists. To be an innovative teacher, it begins with the desire, and the long-term commitment. If the desire and commitment exist, instructing teachers to be creative and innovative can be successful (Berglund & Wenneberg, 2006; Bruton, 2011; Tsui, 2002). Researchers have their definition of innovation, however the grooming of innovation has to start from the teacher education training institutions, where the clinical or student teachers can learn first-hand how to implement innovation, prior to being hired.

Teacher education system

The quality of a nation depends upon the quality of its citizens. The quality of the citizens depends upon the quality of education system and the quality of education depends upon the combined efforts planners, educationists and administration, however, the most significant factor is the quality of the teachers. It means excellent and efficient teachers can change the fate of the nation. A teacher helps a child bring out the hidden capabilities. He/she unfolds what is within, hidden and untapped. He/she makes explicit what is implicit in the students. So teachers' importance in teaching the learning process is very much. (Varshney, 2014, p. 95)

The teacher education system is an important vehicle to improve the quality of school education. The revitalization and strengthening of the teacher education system is a powerful means for raising the educational standards in the United States. According to Varshney (2014), there are many issues that need urgent attention for improving the quality of teacher education programs and one of them is the necessity of innovation in teacher education programs. In identifying the challenges and impacts of globalization, high technology, economic transformation, international competition and local development in the new century, teacher education institutions should have numerous educational reforms (Cheng, 2005).

Regarding educational form, Fischetti (n.d.) presents the following questions:

- 1) How many K-12 schools or colleges of education have transformed their mission statements to reflect the demands of the current era?
- 2) How many have adopted curricula and pedagogy that prepare students to be successful in other than the assembly-line model of schooling?

Learning the application of technology is an example of a current demand, and should be included as part of the transformation. Although teacher education is not a corporate enterprise, technology based companies have responded to the rapid infiltration of technology in society. Gellink (2012) lists examples of mission statements from many of the top 2011 technology-based companies:

- Google: Organize the world's information and make it universally accessible and useful;
- Apple: Bringing the best personal computing experience to consumers around the world;
- Facebook: Give the people the power to share and make the world more open and connected;
- Adobe: Help people express, share, manage, and collaborate on their ideas in imaginative and meaningful new ways;
- Samsung: Devote our human resources and technology to create superior products and service, thereby contributing to a better global society; and
- Netflix: Revolutionize the way people watch movies. (p. 1)

The mission statements are centered in technology and communication, but with emphasis on the concept of development based on innovation. A tremendous opportunity exists for teacher educators to collectively assist in informing colleagues, policymakers, and other constituents by re-establishing and clarifying why quality teacher education programs are essential to teacher and student success. Fischetti (n.d.) describes that new teachers have been well-educated in quality teacher education programs, where they learned a variety of best practices and critically understood the infusion of justice and equity within their work, and yet are often stifled by a school climate and culture that is stuck in a time warp. The result of this negatively impacts their ability to teach in ways that are innovative, current, and creative (Fischetti, n.d.).

Teacher preparation programs

In general, improving teacher preparation in higher education seems to lack a sense of urgency (Crowe, Alken, & Coble, 2013). Wilson (2014) contributes that due to lack of improvements, the criticisms of teacher preparation in the United States still continue to exist. In recent years, initiatives to promote creativity and innovative learners have grown in popularity. Ritchart (2004) explains that “creative teaching practices are effective, and innovative in promoting the acquisition of skills, knowledge, and understanding” (p. 3). Placing clinical or student teachers in schools during their field experiences is considered an experiential learning opportunity in teacher education. The school placements are carefully selected for observation purposes, field-based requirements, internships, and clinical or student teaching. The wisdom of this approach seems obvious and the tradition has remained. The school placement criteria may include an experienced cooperating teacher with five years teaching experience, a diverse school population, a supportive faculty and staff, and a classroom pedagogy that is reflective with what is taught in the methodology courses in the teacher preparation programs. It is the hope that the experiences from the selection criteria will aid clinical or student teachers to learn best teaching practices from experienced, dedicated, and skilled teachers in authentic and diverse contexts.

In contrast, Shantz (1995) reported “many faculties of education design curricula in teacher preparation programs espouse new and innovative methodologies and then place students in field experience situations that are traditional in nature” (p. 339). Traditional teacher preparation classrooms feature lecture-style instruction focused on the dissemination of information. Conventional reward systems for academic performance may tend to favor single correct answers. Such passive forms of learning, where pre-service teachers receive information transferred to them by professors of education do not afford an opportunity to develop the capacity to engage in critical thinking that fosters innovation (Michel, Cater & Varela, 2009). Clinical or student teachers may experience similar situations in the beginning of their school placement. They are motivated in attempting hands on methods in their school placement and become disappointed because their classroom setting is focused on skill and drill teaching. A result is a disconnection between the teacher preparation methodology courses and the real world of teaching, which minimizes the learning experience.

Zeichner (1993) agrees that university teacher preparation courses are disconnected with field experiences causing clinical or student teachers learning to be fragmented, and provides strategies to build a more unified connection. The suggested strategies are based on a dialectical relationship between university scholars, and school practitioners with the goal to restructure the expertise and knowledge from different sources. The strategies are:

- involve experienced teachers in every aspect of teacher education programs for a two year period and provide them with necessary training in teacher leadership;
- bring teachers' work into the university curriculum;
- develop new methods that focus on issues of teaching practice in the field placement schools;
- develop hybrid teacher educators who know both theory and practice; and
- incorporate knowledge from communities into university curriculum and field experiences (p. 7).

The strategies are designed for a dual collaboration between the university scholars that represent the teacher preparation program and the school partnerships to involve educators and administrators. The dual collaboration is described by Dewey (1946) as teaching with an ultimate theoretical driven practice that requires essential experimentation. The experimentation confers Little (1990) requires teacher educators and teachers to share goals, standards, their knowledge base, and should answer the following questions regarding their internal efforts as educators.

- What are effective approaches to building a viable unified teaching and teacher education profession?
- How can we bridge the theoretical and practical worlds for teacher learning?
- How can we integrate the efforts of researching and improving teacher learning and teaching? (p. 7)

In sharing the discourse of the Little's (1990) questions, the teacher preparation program and the school could have more of a congruency of a dialectical relationship in improving future educators.

Challenges of present teacher education programs

The shift in traits sought by employers may explain the gap between faculty and undergraduate student perceptions of desired skills. Hodge and Lear (2011) explored this issue through a quantitative survey to determine what skills faculty members and undergraduate students perceive to be the most important to employers. Faculty identified the top four skills as interpersonal abilities, critical thinking, problem-solving and teamwork. Undergraduate students identified the top four skills as management, interpersonal abilities, teamwork, and time management. The findings demonstrated a mismatch between the work skills employers say are important and those that faculty and students believe employers want. Faculty properly identified critical thinking, problem-solving, and teamwork among the most important skills, but failed to identify the number one desired skill of communications. The faculty also, failed to identify the need for skills in creativity and innovation.

With the need for more creativity and innovation, researchers have often criticized teacher education for being fragmented and narrow (Ozcinar, 2015). Globally, there is a consensus for teacher education needing to be improved to meet the challenges of the 21st century (Darling-Hammond, 2010; Hokka and Etelapelto, 2014; Murray, 2008). The research has reported on the weak impact of teacher education, e.g. on the prior beliefs and attitudes of clinical or student teachers, as well as their day to day work in preparing to become fully qualified teachers

(Brouwer & Korthagen, 2005; Wideen, Mayer-Smith & Moon, 1998). Critics advocate the necessity of real world experiences and a tighter connection between teacher preparation courses and field experiences (Fletcher, Change and Kong, 2008). It has been repeatedly pointed out that, during the transitional phase from teacher education to entering the profession, clinical or student teachers feel that they have not been sufficiently prepared for the demands of the teaching profession (Bezzina, 2007). Especially in cases where the character and practices of teacher education programs are highly research based and scientific, therefore, teachers may find it difficult to apply research-based knowledge into the daily practice of their real world of teaching (Hansen, Eklund, & Sjoberg, 2015; Hiebert, Gallimore and Stiegler, 2002; Westbury et al. 2005).

Pradham (2011) points out limitations in teacher education programs:

- Maximum emphasis is on theoretical and conceptual input;
- No concrete model in transactional strategies with regard meet the need of the individuals;
- Lack of approach and learning materials;
- Lack of involvement of teacher in policy decision;
- Lack of re-current in-service training; and
- Lack of technical resource support for professional development of teachers (p. 19).

Suggested solutions by Pradham (2011) are to develop an integrated course of teacher preparation, which trains clinical or student teachers over a long duration of time to develop competency and efficiency. Teacher in-service programs should be revamped as well as restructured in the present context. To summarize, first it is necessary to emphasize the development of well-prepared teachers. Secondly, teacher educators need to think globally, and break away from traditional paradigms in preparing clinical or student teachers.

The role of the innovative teacher

A democratic classroom is welcomed by innovative teachers (Esquivel, 1995), where everyone has a contribution in the learning in fostering students' independence and empowerment (Woods, 2002). Amabile (1989) stresses the importance of an innovative and nurturing environment for students is to kindle their creative spark, where they feel rewarded, are active listeners, have a sense of ownership, and can freely discuss their learning challenges; where teachers are mentors and promote cooperative learning methods. This is all cumulative in making learning relevant in acquiring classroom experiences from an innovative and nurturing environment. In this innovative and nurturing environment is the teacher, who has the capability to improve and reflect upon their experience with experimentation, including challenges, which become life experiences. In doing so, they develop a perspective that leads to improvement over time that is based on experiential teaching, which comes with experiences (Man, 2006). When grounded in self-reflection from the experiential teaching, challenges can facilitate learning and resilience, and increasing the level of preparation for pursuing new goals.

The principle role of the innovative teacher is teaching and administering guidance of their students not only through classroom instruction, but by personal contact and building the character of their students (Pradham, 2014). The innovative teachers are also expected to promote research, experimentation, and be indispensable in the role of extension of knowledge

and social service. Pradham (2014) further details that highly skilled, value educated and devoted innovative teachers will be the backbone of any new education policy, which can aspire to prepare the United States for future challenges of the 21st century. In an effective approach, the innovative teacher has to listen and experience the feelings, desires and ideas of the students, and to communicate at an equal status. It is through listening that the innovative teachers perceive their students as humanistic. Through this listening process, an “outlook of life-based teaching” can be established (Pradham, 2014, p. 18). The importance of the role of the innovative teacher is with pressure in instructing the curriculum, meeting state and school district standards, and in multiple forms of administering varied assessments (Beghetto, 2005). They must do this while being creative and applying innovative, and engaging teaching methods and formats. According to Simplicio (2000), the professional development training of teachers in innovation is also imperative in ongoing learning and knowledge of new research in educational trends. The duties of innovative teachers have become more complex. In addition to teaching, teachers are required to take up new responsibilities in school management, curriculum planning and development, mentoring new teachers, attend professional development, participate in school based action learning projects, and work with parents, administrators, and community leaders (Boles & Troven, 1996; Cheng, Chow & Tsui, 2001; Fessler & Ungaretti, 1994; Murphy, 1995).

Innovative curriculum

Beginning with K-12 education, there is an emphasis on a standards-driven curriculum that focuses on skills for memory and logic that represent the aptitudes measured by national and state tests (Sisk, 2010). By the time students get to college they are programmed to focus on right answers, not “novelty and nuance” (Ahy, 2009). An intentional focus is to infuse the skills of innovation, communication, collaboration, teamwork, critical thinking, problem solving, and creativity, which innovation is the most important skill, and is deficient in the curriculum (Perkins, 2002; Sisk, 2010). Pradham (2011) also supports innovation as a basis for curriculum, and further explains that it should be constructive in which the teachers and students, incorporate teaching materials to interact in the context of dialogue. The curriculum should offer opportunities that are practical and project based for the clinical or student teacher to get acquainted with real life experiences. It should also emphasize developing global challenges that are faced in society.

Curriculum in teacher preparation programs that develop cognitive abilities and utilizes a pedagogy that fosters critical thinking and problem solving can provide future teachers with the preparation and skills needed to successfully address challenges and seize opportunities in the real world (Behar-Horenstein & Niu, 2011; Tsui, 2002). Action-oriented approaches that coincide with best teaching practices in learning creativity and innovation that simulate real world challenges can encourage experimentation and risk-taking (Nieuwenhuizen & Groenewald, 2006; Noyes & Brush, 2011). The implementation of an innovative curriculum is a dynamic process that provides real world experiences for the clinical or student teachers to actively interact within their teaching. An innovative curriculum motivates the clinical or student teachers interest to learn, be imaginative, prepare to face global challenges, promote positive attitudes, encourage the exploration of novel ideas, which yields them to new experiences (Pradham, 2011).

Joining individuals with different experiences and unique perspectives can result in a combining of creative strengths that can lead to innovation. The collision of different approaches results in a creative opportunity, a process by which individuals learn from the diverse contributions of each other and produces a variety of ideas to exploit an opportunity or find a solution to a problem (Leonard & Strauss, 1997). Effectively, clinical or student teachers participate in their own education when immersed in a conducive learning environment that promotes engagement with others and fosters the transformation of experience into knowledge (Nordstrom & Korpelainen, 2011). Elementary student feedback evaluated in a study by Nordstrom and Korpelainen (2011) determined that student engagement in group work and the preparation of portfolios with unorthodox materials, such as Legos, movies, music, modeling clay and drawings to demonstrate learning, enhanced critical thinking and innovation. The objective was for elementary students to focus collectively on the learning process, rather than trying to achieve a corrective outcome. The research demonstrated that the unconventional pedagogical approach employing student engagement in groups resulted in innovative thinking and behavior.

There should be innovative and interactive pedagogic methodologies to structure a nationwide program of teacher training. Pradham (2011) explains that an innovative curriculum can provide a holistic education that enhances the multiple dimensions of the human personality, and the developmental areas of physical, intellectual, aesthetic, and emotional. There is a need of providing real authentic classroom teaching experiences in teacher preparation programs for the clinical or student teachers, so that they develop competencies, which help them to face challenges of the 21st century.

Characteristics of the 21st century teacher educator

The profile of our 21st century learner has changed. They are digital natives weaned on video games and Web 2.0, and have been described as “marching through our schools, carrying a transformational change in their pockets in the form of powerful multimedia handheld devices” (Chen, 2010, pp. 213). Today’s college graduates need to be “innovation ready” in a society where “what you know matters far less than what you can do with what you know.” (Friedman, 2013, p. 1). Learning is the core criteria of schools – and today it should be strengthened by classroom instruction that works for the 21st century learner. Schools whose curriculum and pedagogy fail to engage our younger generation as active learners are not doing justice to a nation’s development, especially when knowledge has become power in a globalized world.

It is the need for teacher educators to think globally to break away from traditional paradigms and emphasize the creation of well-equipped future educators. Researchers have concluded the goal for clinical or student teachers is to create, improve, or apply innovations for the 21st century (Jonsdottir, Page, Thorsteinsson, & Nicolesu, 2008). Pradham (2011) affirms the present educational scenario of the 21st century has become prone to stressing more on “Quality” than on Quantity” (p. 17). As a result, education has been declared a fundamental right and equity, access and quality has to be ensured for all.

How teachers can be prepared to take up new roles and perform teaching effectively to meet the challenges and expectations from education is crucial to the reform and practice of teacher education and professional development (Cheng, Chow & Mok, 2004). This begs the question, “what kinds of innovation and change should be made in pre-service teacher education to ensure

this preparation?” We live in a world that is continuously changing, and propelling at tremendously fleeting speeds of information. Curous (2017) recommends eight innovative characteristics for the 21st century educator that can serve as a checklist in the preparation of educators. which are provided in Table 1.

Table 1
Eight Innovative Characteristics for the 21st Century Educator

Characteristic	Description	Questions
Visionary	Can openly and clearly apply the vision in teaching.	Does the vision develop learners to lead?
Empathetic	Listening and supporting the students’ experiences and challenges.	Are decisions starting with an empathetic approach?
Models Learning	Shares learning and thoughts in different formats.	Is the process of learning openly modeled?
Open Risk Taker	Tries new ideas and brings back the learning to the school community.	Do you model new ideas openly?
Networking	Has ongoing discourse with the school community to learn new ideas and helps facilitate connections for others.	Does your learning network extend to a global community?
Observant	Observes what other industries are doing and creates a connection to how this can improve learning opportunities in the classroom community.	Are you implementing ideas from outside of education?
Team Builder	Encourages colleagues to attend professional development learning to build community and shared learning.	Do you create diverse student teams with varied strengths and beliefs?
Relationship Focused	Creates opportunities for staff to feel comfortable and valued.	Do you try and connect with your school community?

These eight innovative characteristics can be tailored in the teacher preparation courses and field experiences to best fit the teacher preparation program in preparing future educators. Most curriculums are anchored in methodology in developing pedagogy in guiding purposeful teaching, but is it preparing our future educators for teaching in the 21st century.

The current teacher culture may feel that are in the role of a drillmaster due to the unintended consequences of high-stakes testing, which can narrow the curriculum and instruction to focus on test preparation (Herman, 2004), along with excessive enforcement of attendance policies,

repetitive class and grade-level assignment, and a generally non-supportive environment for low-achieving students (Vasquez Heilig & Darling-Hammond, 2008). Today, the accountability movement continues to limit the opportunity for time in the school day to engage learners in activities that require creativity, innovation, critical thinking, and problem solving. Indeed teachers that are attempting to integrate innovative methods into the curriculum are often isolated from one another and from researchers, curriculum developers, and other advocates of innovation. In addition, academic rigor is traditionally equated with mastery of academic content alone, and the 21st century skill of innovation is perceived as “nice to have” rather than “must have” in education (Kay, 2010).

To meet 21st century expectations, educators therefore need to depart from the ideas and pedagogies of yesterday and become bold advocates to develop the sorts of learning dispositions needed for our learners and their future. This means spending less time explaining through instruction and investing more time in experimental learning. Freire (1970) firmly believes, learning involves a process of inquiry because the teacher should not think for the students or impose personal thoughts on them for “the teacher’s thinking is authenticated only by the authenticity of the students’ thinking” (pp. 77). Dewey (1938) emphasized the role of the student in the educational process and the role of the teacher in guiding the student through a rigorous academic routine that matches both the individual inclination and ability of the child. The rigorous academic routines become the experience that is “educative when useful knowledge develops through cooperative inquiry in an authentic context within a community of practice” (p. 138). The notion that learning involves students as co-creators and collaborative problem-solvers is indeed an important one, and teachers and schools that work to capitalize on the generational characteristics of sharing, researching, evaluating, and collaborating with peers, are more likely to enact and inspire teaching and learning practices that emulate the forms of sharing and social engagement that will flourish in the 21st century.

Professional learning communities

Schools need to build and nurture professional learning communities to enhance the capacity of teaching and learning among all stakeholders, especially practicing teachers, prospective teachers, and teacher educators. Reciprocal learning can be cultivated, by strengthening the professional knowledge and skills of all participants within these communities. Such engagement should more effectively integrate the academic and social efficiency within our education system and, thus, within our society. Futrell’s (2010) seminal point is professional communities also underscore a stronger sense of realism regarding teaching and learning in today’s world from a practical as well as a theoretical perspective.

If educators are to achieve the goal of enhancing the quality of education for all students, schools of education need to be redefined and restructured to reflect the real world of teaching and learning. Professional learning communities can help achieve this goal. For instance, scholarly faculty in teacher education programs could collaborate with school districts to restructure and encourage interdisciplinary teaching of core courses, such as reading, mathematics, science, technology, and English. In addition, members of professional learning communities could emphasize the implementation of technology to enable students to be more research-oriented. Students should be encouraged to work together on special projects that demonstrate their ability to be researchers and apply what they have learned.

These incubators of creativity could also be used in teacher education programs to encourage prospective teachers to develop pedagogical leadership skills to help facilitate innovative change within schools (Futrell, 2010).

Efforts to transform teacher education, and our P-20 system of education, have been part of an ongoing fragmented, incremental movement dating back over 100 years with increased momentum over the course of the past several decades (Furtrell, 2010). The two movements have unfolded sporadically, often pursuing diverse goals and paths. Education reformers need to orchestrate the transformation of a complex, multilayered system of education. Furtrell (2010) clarifies that the American education system has served this nation well, but it needs fundamental shifts in design and quality if we are to continue moving forward socially, politically, and economically.

Conclusion

The restructuring of the teacher preparation process is highly essential for professionalization and empowerment for the clinical or student teachers. Pradham (2011) firmly believes that there should be a grand innovation and an interactive pedagogic methodology in structuring nationwide teacher preparation programs with well-developed teacher learning competencies and strategies to empower future educators in quality teacher preparation programs, which can therefore lead to quality education.

For a progressive reform, teachers and teacher educators are and should be among the principal designers and implementers of the educational transformational process. As transformative leaders, we should also collaborate with critical partners such as scholars from teacher education programs to define what the education system should look like, and the goals to be achieved. Teacher educators need to ensure that the education and preparation acquired by teachers, counselors, and administrators are indeed an integral part of leadership efforts to transform our education system.

In conclusion, if we are not improving our teacher education programs, how can teachers, counselors, and administrators prepare our teacher graduates to be leaders of change within their schools, districts, states, and the nation? Teacher education programs must be transformed to ensure that future members of the profession are prepared to teach, counsel, and lead our schools and communities in the 21st century.

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PRESERVICE TEACHERS' PERCEPTIONS ON SUSTAINABILITY EDUCATION

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ABSTRACT

The paper reports findings of a survey study that examines preservice teachers' perceptions on sustainability education. A total of 59 preservice teachers enrolled in the introductory education course on Current and Contemporary Issues in Education participated in the study. The Sustainability Education Inventory survey was used for data collection. The setting was in a small university based educator preparation provider in the Southeastern part of United States. Research data, including both qualitative and quantitative data, were collected in Spring 2017 semester. Collected data were entered into the computer, coded, and analyzed. Quantitative data analysis includes descriptive and inferential statistics, while qualitative analysis emphasized the trends and patterns emerged from participants' responses. Findings of the study revealed that an overwhelming majority of preservice teachers perceived sustainability education to be important for them and K-12 education. However very little had they the training on that. With their own limited experience in grade schools and college on sustainability, they had offered some ideas on how to start and teach their future students within the sustainable framework. Discussion and implications of the findings for teacher preparation are offered.

PRESERVICE TEACHERS' PERCEPTIONS ON SUSTAINABILITY EDUCATION

Introduction and Literature Review

There have been increasing calls for integrating education for sustainability into teacher education programs and practices. Proponents argue that the very survival of the planet depends on the degree to which teachers can move learners away from unsustainable beliefs and behaviors to those grounded in interdisciplinary approaches to solving community and global challenges. For example, the United States Teacher Education for Sustainable Development Network (USTESD Network), in collaboration with Kappa Delta Pi, International Honor Society in Education, published a white paper in October 2013, calling for reorienting teacher education to address sustainability (McKerown, 2013; Nolet, 2009).

Scholarship related to sustainability education has been located in teacher education. Across teacher education for sustainability scholarship, researchers have articulated the importance of offering continued course experiences that are dedicated to sustainability issues for developing teacher candidates' content knowledge, pedagogical knowledge, as well as beliefs and behaviors towards teaching sustainability issues (Bradbery, 2013; Zong & Salyer, 2015). For example, Nolet's (2009) analytic essay provided an overview of a set of themes that form the basis for what he called sustainability literacy as a new paradigm for the preparation of teachers. These themes include: 1) stewardship of the natural and physical world; 2) respect for limits; 3) systems thinking; 4) economic restructuring; 5) social justice and fair distribution; 6) intergenerational perspective; 7) nature as model and teacher; 8) global citizenship; and 9) importance of local place.

A number of studies across different national contexts have indicated that, in general, teachers and students share a strong interest about issues of sustainability and the environment. Gayford (1998) found that secondary science teachers in the United Kingdom considered education for sustainability to be an important concept and one that needed to be part of a whole-school approach. Furthermore, these teachers saw their role as providing students with skills, abilities and basic knowledge to be able to evaluate information and arrive at reasoned decisions. Taylor, Nathan and Coll (2003) used a qualitative approach to conduct an exploratory study of primary and secondary teachers' attitudes to and knowledge of sustainability education in one region of Australia when sustainability was just being implemented as a required concept for K-12 school curriculum. Based upon analysis of data mainly collected from semi-structured interviews, they reported that the participating teachers were in broad agreement with the concept of sustainability education should extend the natural environmental protection to address issues of globalization, consumerism, and social justice.

More recently, Tomas, Girgenti, and Jackson (2017) used a mixed-methods research design to explore pre-service teachers' attitudes toward education for sustainability in one Australian university. In their study, one hundred participating teacher candidates completed a Likert-style survey at the beginning and end of the unit on teaching sustainability issues. The survey included 35 items that were grouped into five major categories: Self efficacy, familiarity with sustainability issues, perceived relevance of sustainability issues, interest in sustainability issues, and perceived relevance of education for sustainability. In addition to survey data, three candidates were also

interviewed to provide in-depth understanding of pre-service teachers' perceptions. Their analysis of both the quantitative and qualitative data revealed that pre-service teachers held favorable perceptions of education for sustainability by demonstrating readiness and willingness to engage with the topic during their initial teacher education. The authors also reported a significant increase in preservice teachers' self-efficacy and familiarity with sustainability issues after taking a unit titled *Foundations of Sustainability in Education* to study a range of issues such as human population growth, urbanization, water resource management, and global climate change.

In the context of the United States, there are also a growing number of teacher educator scholars who are committed to education for sustainability research and practice. For example, Muthersbaugh and Kern (2012) used a descriptive case study to examine the impact of their own interdisciplinary approach to teaching environmental sustainability using images on participating teacher candidates' perceptions of teaching sustainability issues. The authors discussed the use of images to integrate sustainability topics in different content areas in a 10-week general secondary instruction methods course. Based upon data sources such as pre- and post-survey, preservice teachers' journal reflection, interview responses, and lesson samples, the researchers found that initially only few candidates believed that sustainability education aligned with their content area, after preparing and presenting the integrated lesson, the vast majority found it much easier to demonstrate the connections between the sustainability issues with content areas such as mathematics, history, art, and music. They concluded that an interdisciplinary approach to teaching environmental sustainability using images proved successful and seemed to improve their participants' attitudes toward teaching sustainability issues.

Zong and Salyer (2015) reported two teacher education faculty members' collaborative inquiry in developing an interdisciplinary approach to integrating sustainability into middle level teacher education curriculum in the United States. The two authors, one social studies teacher education faculty and one science teacher education faculty employed a self-study design to systematically research and reflect upon their 3-year curricular and pedagogical innovations to integrate issues of sustainability into method courses. They detailed ways to use two powerful pieces of young adult literature, one a biography, *The Boy Who Harnessed the Wind* by William Kamkwamba and Bryan Mealer, and the second a novel, based on a true story, *A Long Walk to Water* by Linda Sue Park to engage teacher education students in learning about people, places, and perspectives of Africa and sustainability issues related to water and energy. Analysis of students' completed lesson and unit plans indicated the interdisciplinary approach was effective in engaging and empowering candidates in teaching about issues related to global sustainability, such as population growth, global food supply, air and water pollution in emerging global markets, such as China and India.

While the existing body of research on sustainability and teacher education has centered on different approaches being used by teacher educators in upper division courses, often offered during the methods or student teaching semesters (Evans, Stevenson, Lase, Ferreira, & Davis, 2017), this paper aims to study perspectives of teacher education students who are newly admitted into teacher education programs. By examining their experiences with and perceptions on sustainability education, we hope to be able to provide baseline data for effective curriculum and pedagogical decisions throughout teacher education programs.

Research Questions

The following three research questions were used to guide the study:

1. What were preservice teachers' experiences with sustainability education?
2. What were preservice teachers' perceptions on sustainability education?
3. What were preservice teachers' beliefs about teaching sustainability?

Method

Research Setting and Participants

The setting of the study is a small university-based educator preparation provider (EPP) in the Southeastern part of the United States with about 360 preservice teachers and seven teacher education programs including one early childhood education and six secondary education program tracks: English, History, Biology, Chemistry, Physics, and Math. The EPP works with 10 partner schools/districts on field experience and clinical experiences. At the time of the study, the EPP had only undergraduate teacher education programs. The institution as a whole has a 24.3% of Hispanic student population striving for Hispanic serving institution status (25%) but the teacher education candidates in the EPP were predominately white, female, and in their 20s (Quick Facts, 2017; Zhou, 2014; Zumwalt & Craig, 2005). Preservice teachers enrolled in the introduction education course *Current and Contemporary Issues in Education* were invited to participate in the study. A total of 59 preservice teachers consented to participate in the study.

Research Design and the Instrument

The study is a survey study. The self-developed *Sustainability Education Inventory* was used to collect data in the study. The instrument has three parts: Part I: Demographic Info; Part II: Questionnaires; and Part III: Open-ended questions. In Part I, participants respond to provide demographic information such as gender and major. In Part II, there are 10 statements for participants to respond on perceptions of sustainability teaching and learning based on a scale of 1-5 with 1 being strongly disagree, 2 somewhat disagree, 3 neutral, 4 somewhat agree, and 5 strongly agree. All items were positively oriented. Part III has three open-ended questions on perceptions of sustainability teaching and learning. The instrument was reviewed by one individual in the field and two students enrolled in the program for input. Review feedback was used to revise the instrument to its current version used for the study. See Appendix A.

Data Collection and Analysis

Data were collected from 59 participants during the Spring 2017 semester in paper format on site during one of the class sessions. A designated individual with no relationship to the study and approved by the IRB was onsite to collect the surveys. Collected survey were then sealed in an envelope. Collected data were then released to one of the researchers after the final grades were due. Collected data were transferred into the computer as electronic data, which were then coded for data analysis. Due to incomplete data entries, only 55 surveys with complete data were used for analysis. Quantitative data were entered into Excel spreadsheet, coded, and analyzed in SPSS statistics analysis software for statistical measures such as means, percentages, standard deviations, and analysis of variance. Qualitative Data were analyzed for trends and patterns in Microsoft Word software and Microsoft Excel spreadsheet.

Results and Findings

A total number of 59 preservice teachers participated in the study. A total of 59 *Sustainability Education Inventory* surveys were returned. The return rate was 100%. Due to incomplete data, only 55 participants' data were used for data analysis. Factor Gender was coded as "1" and "2" and Factor Major was coded as "3" and "4." The instrument Part II Questionnaire items were subjected to a coefficient of reliability test. A Cronbach's α test yielded .85 ($n=10$; $N=55$). This reliability statistic is considered to be acceptable (.70 or higher) in social sciences (Heppner, Wampold, Owen, Thompson, & Wang, 2016). Part III open-ended questions were analyzed and categorized by counting the frequency of the same ideas/words mentioned in the response.

Part I Demographics

The majority of the participants in the study were female (76.40%) and Early Childhood education majors (70.90%). Among Secondary majors, Biology majors shared the largest piece of the pie (14.50%) and English ranked next (7.27%). There were two English majors and two Math majors respectively. There were no individuals as Physics or Chemistry majors participated in the study (see Table 1).

Table 1 *Participants by Major*

	Early Childhood	Secondary					
	ECE	English	History	Biology	Chemistry	Physics	Math
Sum	39	2	4	8	0	0	2
Percentage	70.90%	3.64%	7.27%	14.50%	0	0	3.64%
Note. $N=55$.							

Part II Questionnaire Items

Questionnaire items in part II of the *Sustainability Education Inventory* were analyzed by using SPSS statistical analysis software package. The number of responses and percentages were summarized below in Table 2. Item 1 and Item 3 had the most "Strongly Agree" responses and the highest percentages, 56.34% and 45.45% respectively. Six items (items 4, 5, 7, 8, 9, 10) had higher level of neutral responses over 25%. It is obvious, majority of participants had strongly agree (5) and somewhat agree (4) responses. A close examination of the results on the questionnaires showed that all items except Items 5, 6 and 7 had 50% or more responses as "Somewhat Agree" or "Strongly Agree." All items had 10% or more ratings as "Neutral" except item 1 with the lowest neutral rating 7.27%. Items 5, 6, and 7 had the most "Disagree" or "Strongly Disagree" rating among the items 23.64%, 21.81% and 29.09%. Items 1 and 3 had the most "Somewhat Agree" or "Strongly Agree" rating 90.91% and 80% respectively (see Table 2).

Table 2 *Statistics of Responses on the Scale of 1-5 by Item*

	n	31	19	4	0	1
	%	56.36	34.55	7.27	0.00	1.82
IT2	n	18	20	11	5	1
	%	32.73	36.36	20.00	9.09	1.82
IT3	n	25	19	10	0	1
	%	45.45	34.55	18.18	0.00	1.82
IT4	n	21	16	15	1	2
	%	38.18	29.09	27.27	1.82	3.64
IT5	n	8	13	21	6	7
	%	14.54	23.64	38.18	10.91	12.73
IT6	n	8	22	13	9	3
	%	14.55	40.00	23.64	16.36	5.45
IT7	n	7	12	20	12	4
	%	12.73	21.82	36.36	21.82	7.27
IT8	n	10	27	15	2	1
	%	18.18	49.09	27.27	3.64	1.82
IT9	n	13	23	16	2	1
	%	23.64	41.82	29.09	3.64	1.82
IT10	n	15	22	15	2	1
	%	27.27	40.00	27.27	3.64	1.82
Note. N=55.						

The analysis results indicated that all items had a mean over 3. Items with highest ratings were item 1 (It is important for young adults to understand environmental issues) and Item 3 (I believe in environmental practices because I believe it will make the world a better place) with an average 4.44 and 4.22 respectively. Item 5 (I was taught by my family and friends on sustainability) and item 7 (I was taught by my community/or religious organizations on sustainability issues) yielded the lowest average of 3.16 and 3.11. The total score of the items were 2072 and the grand mean was 3.77 with a standard deviation of 1.06. See Table 3 on detailed means, sums, and standard deviations by item.

Table 3 *Statistics of Sustainability Education by Item*

	Item1	Item2	Item3	Item4	Item5	Item6	Item7	Item8	Item9	Item10
Mean	4.44	3.89	4.22	3.96	3.16	3.42	3.11	3.78	3.82	3.87
Sum	244.00	214.00	232.00	218.00	174.00	188.00	171.00	208.00	210.00	213.00
STDV	.79	1.03	0.88	1.04	1.20	1.10	1.12	0.85	0.91	0.92
Note. N=55.										

Table 4 *Pearson r Correlation Statistics*

	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10
IT1	.61**	.72**	.54**				.39**	.50**	.59**
IT2		.75**	.64**				.33*	.44**	.51**
IT3			.62**				.39**	.54**	.61**
IT4				.29*		.31*	.47**	.41**	.63**
IT5					.52**	.46**	.36**		.27*
IT6						.60**	.34*	.30*	
IT7							.47**	.35**	.37**
IT8								.43**	.50**
IT9									.68**
** Correlation is significant at the 0.01 level (2-tailed).									
* Correlation is significant at the 0.05 level (2-tailed).									

Table 4 showed significant Pearson Correlation statistics between items in Part II Questionnaire. Data indicated a significant correlation exists between preservice teachers' perception of sustainability education and their beliefs about teaching sustainability and benefits and rewards of that.

The analysis of Variance (ANOVA) tests (see Table 5) were conducted on Gender and Major factors. SPSS data results indicated a significant difference exists between male participants and female participants, $F(12, 42) = 1948.35$ ($p < .05$). On all items, female participants responded to the statements more favorably than males. A significant difference was also found between respondents of ECE and Secondary majors, $F(40, 15) = 6561$ ($p < .05$). A close examination found that over the 10 items, Secondary major participants responded more favorably on items 1, 2, 3, and 8 but not the others (see Table 6).

Table 5 *ANOVA Results by Gender and by Major*

Factor		n	ss	df	MS	F	p
Gender (Male*Female)	Male	13	550.34	1	550.34	1948.35	0.014*
	Female	42					
Major (ECE*Secondary)	ECE	40	612.41	1	612.41	6561	0.008*
	Secondary	15					
Note. $N=55$. * $p < .05$.							

Table 6 *Descriptive Statistics on Questionnaire II Items by Gender and Major*

		IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10
Mean	Male	4.46	3.62	4.15	3.46	3.15	3.38	3.08	3.92	3.62	3.54
	Female	4.43	3.98	4.24	4.12	3.17	3.43	3.12	3.74	3.88	3.98
STDV	Male	0.66	1.19	0.69	1.05	0.99	0.87	1.04	0.76	0.96	0.78
	Female	0.83	0.98	0.93	0.99	1.27	1.17	1.15	0.89	0.89	0.95
Mean	ECE	4.32	3.83	4.12	4.05	3.30	3.60	3.17	3.77	3.85	3.90
	Secondary	4.73	4.07	4.47	3.73	2.80	2.93	2.93	3.80	3.73	3.80
STDV	ECE	0.86	1.06	0.94	1.09	1.16	1.06	1.13	0.92	0.98	0.98
	Secondary	0.46	0.96	0.64	0.88	1.27	1.10	1.10	0.68	0.70	0.78
Note: N=55.											

Part III Open-Ended Questions

Opened question response data were entered into Microsoft Word and responses were grouped by frequency of same words/ideas in Excel spreadsheet. For Question 1: All participants except one indicated that sustainability education was important. A majority of the participants voiced that sustainability was important and relevant to their future teaching career. A math major stressed that sustainability education was important to human race and its living environment even though the participant did not perceive sustainability education was highly relevant to his major area of study in math. A majority of participants perceived sustainability education was especially important for teachers because they could influence/teach children to be mindful of the living environment. One participated questioned about what sustainability really was.

For Question 2, all participants mentioned about a little to none experience on sustainability education. For those who mentioned about a little knowledge about sustainability issues, mostly, they mentioned about the knowledge was gained from K-12 classroom and some college science, environment, or biology classes.

Question 3 asked about beliefs and actions on sustainability-based education. Participants' responses reflected two trends: the pedagogical ideas and specific theme/topic based thoughts. Participants felt it was important to emphasize sustainability in the classroom. To involve students in the classroom, fun activities and hands-on project based approaches set in real world problem solving context would be most beneficial. Discussion, field trip, and presentation, labs were viewed as the top ranked strategies. On topics and themes to be taught in the classroom, top ranked responses from participants could be categorized as world view, energy, environmental issues, recycling, and community efforts with recycling ranked as the number one and world view with emphasis on cultures, individuals, and educational system as the context of sustainability education as the second highest category. Table 7 summarized the top-ranked patterns and themes based on participants' responses.

Table 7 Top Teaching Sustainability Patterns and Themes

Pattern/Theme	Categories	Subcategories	Frequency
Pedagogical Perspectives	Strategies	hands on, fun, entertaining activities; grouping; discussion; field trips; presentations; labs	9
		show/demonstrate real world examples/scenarios; project-based approaches	7
		emphasis on relevance and importance on sustainability education	4
Topics/Themes	Recycling	paper, rechargeable, technology	14
	World View	world cultures, races & individuals, educational systems	7
	Environmental Issues	plastic, climate change, pollution, war	5
	Energy	water, electricity, wind, solar	4
	Community Efforts	planting trees, garden, green house	4

Note. $N=55$.

Research Questions

Research Question One asked what were preservice teachers' experiences with sustainability education? The survey results from items 5, 6, and 7 (Figure 1) indicated the lowest ratings among the 10 items with 3.16, 3.42, 3.11 respectively. These items also showed the highest "Strongly Disagree" or "Disagree" ratings, 23.64% for item 5, 21.81% for item 6, and 29.09% of item 7. The results showed participants in the study had very little to none experiences with sustainability education. Further analysis from the open-ended question 2 revealed that a majority of the participants did not have sustainability education experiences. For those who voiced they had a little experience on sustainability topic or subject, they had that through grade schools and some biology or environmental classes at college level. The results reflected the ratings from items 5 and 7 as the lowest rating items in that participants did not feel they were taught sustainability or learned about it through family, community or church organizations. Item 6 was rated comparatively higher than the other two items because some participants did learn some about sustainability through schooling. The ANOVA results also indicated that there was a significant difference between ECE majors and Secondary majors' experiences with sustainability education. The Secondary majors had lower ratings on their experiences with sustainability framework based education. Female participants also demonstrated a significantly higher level of experiences with sustainability education than males in the study.

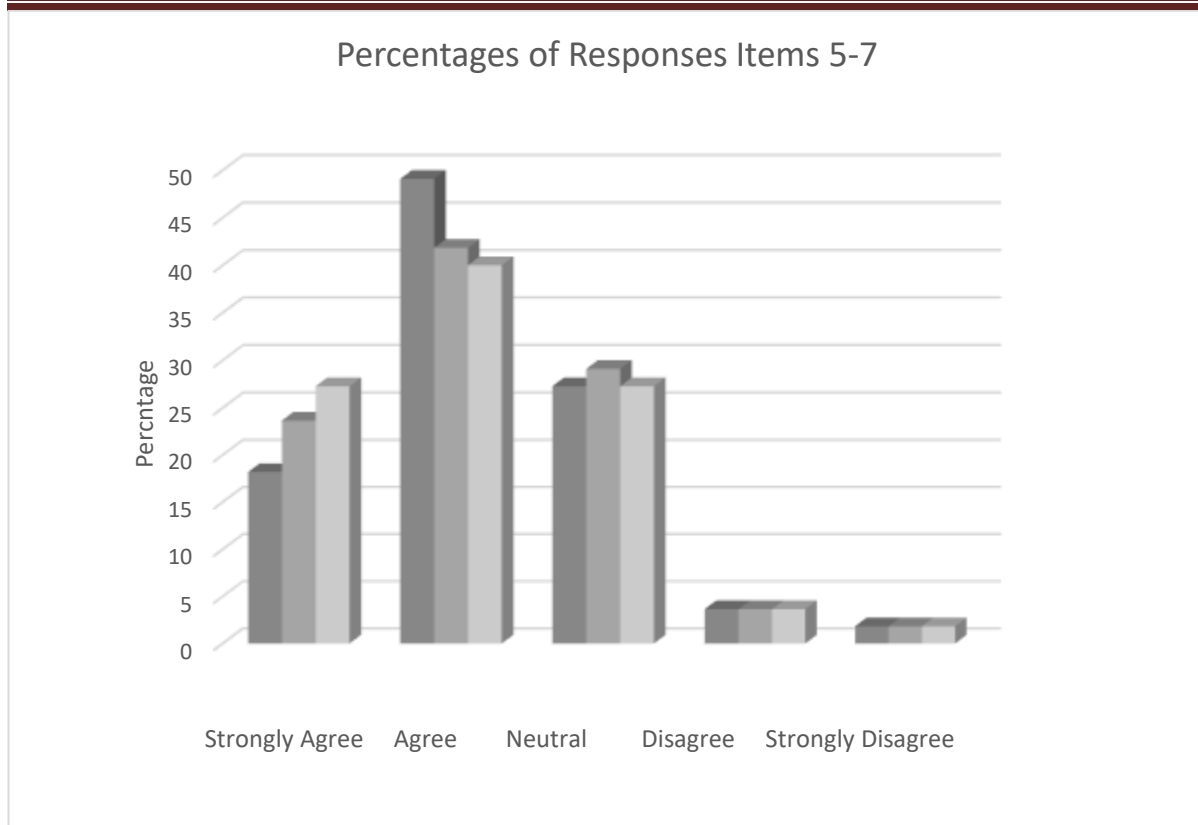


Fig 1. Percentages of Responses from Items 5-7.

Research Question Two asked what were preservice teachers' perceptions on sustainability education? Items 1-4 (Figure 2) on the questionnaire and opened-ended question 1 provided insightful results. Those items had the highest ratings of among the 10 statements with scores of 4.44, 3.89, 4.22, and 3.96. The scores indicated that preservice teachers perceived the rewards of sustainability education highly. They perceived it was important for young people to learn sustainability in K-12 schools. They strongly believe better education on sustainability would make the world a better place. The results from open-ended question 1 also supported the quantitative results in that preservice teachers perceived highly on the relevance and importance of sustainability education. They felt strongly on the responsibility to learn and influence children on environmental practices and consequences of their choices, which was also indicated in items 2 and 4 on their willingness to learn more and teach K-12 children on sustainability. The ANOVA results indicated there was a significant difference between female and male participants on their perceptions of sustainability education. Female participants' responses were more favorable than males. Secondary majors also had higher level of perception on the importance and relevancy of sustainability education.

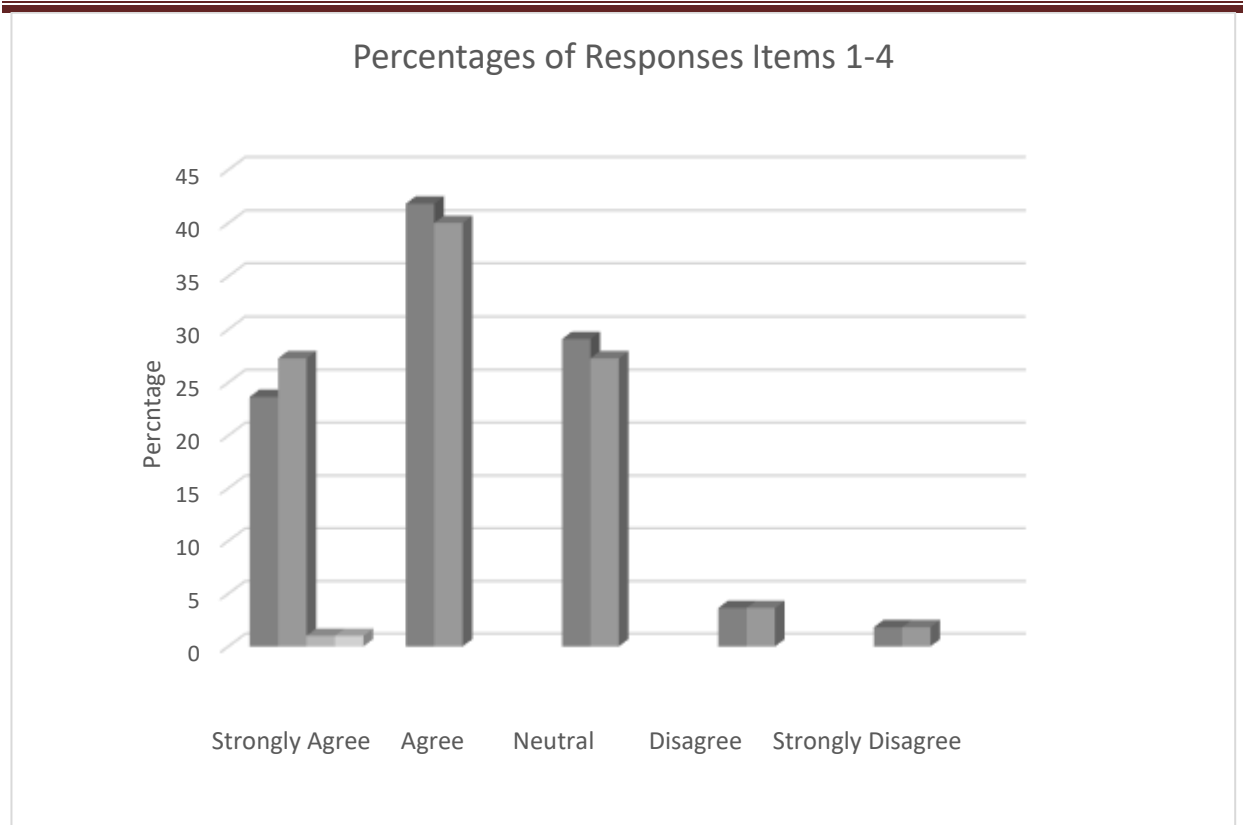


Fig 2. Percentages of Responses from Items 1-4.

Research Question Three asked what were preservice teachers' beliefs and action plans about teaching sustainability? Questionnaire items 8-9 provided results (Figure 3) to help answer the question. These three items had average scores of 3.78, 3.82, and 3.87, which are in the middle range of averages for all 10 items. These items showed a moderately high level of perception on sustainability teaching. The results showed 67.27% and 65.46% "Strongly Agree" and "Agree" perceptual distributions on teaching sustainability based on sustainability framework. The scores showed preservice teachers had moderately high beliefs on their ability to learn and teach sustainability in the classroom. They believed teaching sustainability was personally rewarding and economically beneficial. The third open-ended question provided further insights on preservice teachers' perspective to enrich classroom practices on teaching sustainability. They had great ideas on what they could take actions in the classroom. Pedagogically, they embraced the use of strategies such as discussion, field trip, and presentations. They liked the fun, hands-on, project based approaches/activities in the classroom to include the teaching of world cultures, individuals, and educational systems. For topics of teaching sustainability, preservice teachers voiced recycling as the top priority theme. They also had input in themes such as energy, environmental issues, and community efforts. ANOVA results also indicated that female participants had higher level of beliefs on what they could do in the classroom and they perceived higher level of rewards of sustainability education than male participants. ECE majors also had significantly higher level of perception on the rewards of sustainability education and higher level of beliefs about teaching sustainability in the classroom.

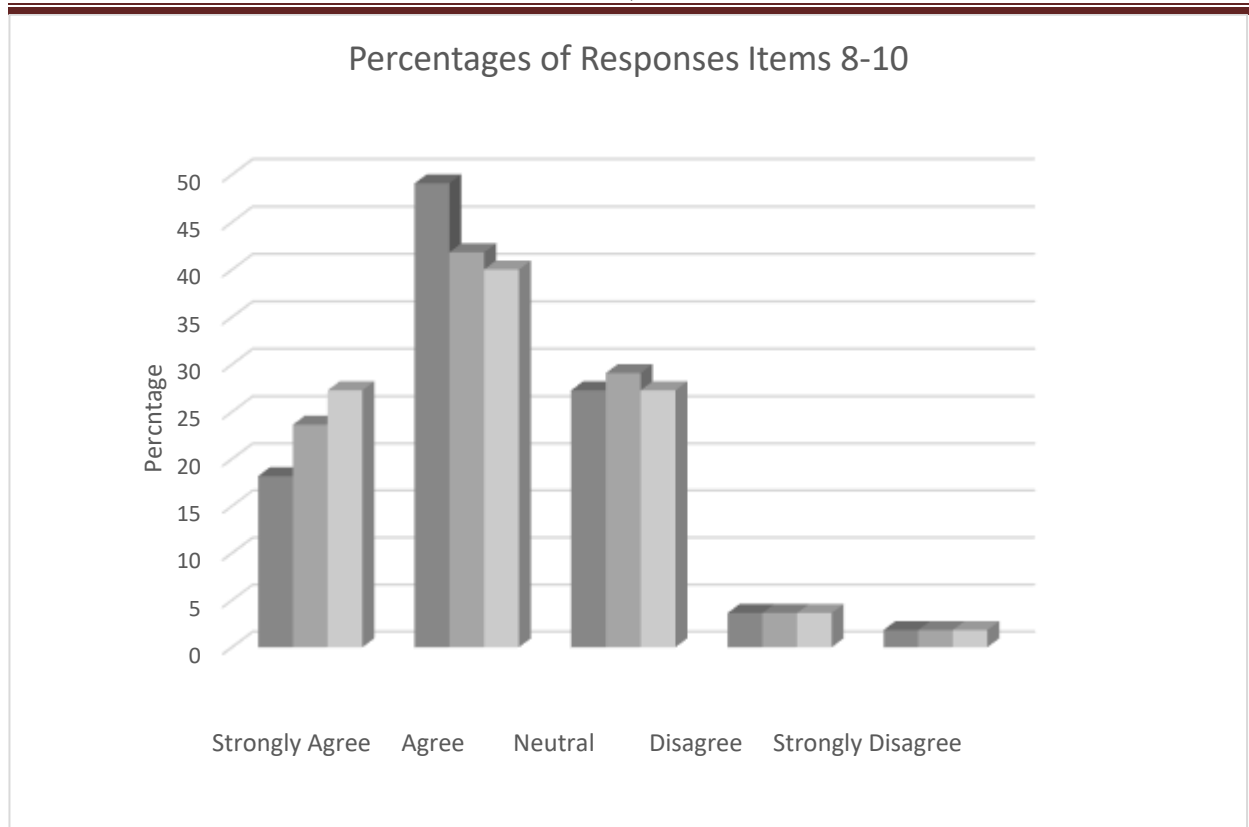


Fig 3. Percentages of Responses from Items 8-10.

Discussion

The paper explored a sustainability topic as it relates to preservice teachers during their foundation training years. The UNESCO laid out the blueprint of sustainable development globally for all to ponder, implement, and act (UNESCO, 2016). Sustainability education in higher education has been tried and studied in the last decades. For teacher education, efforts were made to address sustainability education training in methods and content specific classes. To better educate teachers, a solid foundation at the beginning of their teacher preparation is necessary. Teachers need to have the needed knowledge and skills in sustainability education, in order to teach students in K-12 schools to be responsible for the environment they live in, and to maintain the balance of global and ecological world for sustainable development.

The results of the study showed preservice teacher perceived the concept and sustainability to be import and relevant to them and their future career highly. They strongly agreed that young children should be taught sustainability education at a young age. They felt the responsibility and urgency to play a role in shaping/influencing children on their choices and environmental consequences. It is encouraging to see preservice teachers on their perceptions on the topic. In the study, preservice teachers also indicated a high level of interests to learn more on sustainability education. That is hopeful to see preservice teachers' willingness to learn and teach sustainability to sustain sustainability education efforts. They perceived the rewards of teaching sustainability to be meaningful to them at multiple dimensions personally, spiritually, and economically. That sets a great foundation for potential success in sustainability education for teacher education.

In reviewing participants' sustainability education experiences, preservice teachers showed little to none exposure on the topic in the study. For some, their learning mostly came from grade schools and some college classes. To them, friends, family's or community including church organizations' role in sustainability education were not greatly experienced. Research on sustainability education stressed that community and interconnectedness beyond the schools were important for sustainable education (Benjamin & Elser, 2015). Within the framework of sustainability education, family and community play a big role to sustain educational efforts on teaching sustainability. Those are the interconnected culture and community for renewed cultivation, thinking, and action in moving towards capacity and spaces of sustainability education (Anderson, Datta, Kayira, & McVittie, 2016).

The results of the study urged greater awareness and efforts to be made to increase the role of family and community involvement on the impact of sustainability education. The role of higher education and teacher training need a refreshed view and model in looking at teacher training and more active family and community involvement for increased level of impact on preservice teachers. It is imperative for high education institution to start the initiatives and getting preservice teachers to be more involved on the subject in their immediate surroundings and further collaboration and professional development in the community in preparing sustainable teachers (Santone, Saunders, & Saguin, 2014; Ull, Martínez-Agut, Piñero, Aznar-Minguet, 2014).

To involve them on sustainable education in preservice training could mean the foundation stage when teacher candidates enter the program. Limited exposure to sustainability education as revealed in the study had already sparked preservice teachers pedagogically and thematically on thoughts and ideas of sustainable education. During their beginning years of training, a solid introduction on sustainability framework could be taught to help preservice teachers form a strong foundation on sustainability. Issues of related topics on sustainability education could be introduced to better pave their way to later on, more advanced study in methods and content courses. The lower ratings of the study results on teaching sustainability showed preservice teachers need to be further facilitated on methods to successfully teach sustainability related topics. For beginning preservice teachers, it is not surprising to see this result. Their limit or none exposure to sustainability education could speak for the need. To teacher educators, this can translate into an opportunity and an important task for curriculum development. Current geopolitical rhetoric and policies provided the platform and motivation for more efforts on environmental issues and teacher preparation. It is the time to address the topic in high education with renewed efforts, vision, and framework. Preservice teachers' high perception on importance of this topic to K-12 schools and their future career showed that efforts should not be downgraded. These efforts will add a promising future for next generations of teachers and students, and eventually a better world for all.

It is also noticing in the study the results also showed a high level of "neutral" responses. A total of 26.36% responses were marked as "Neutral" on the topic although the overall grand mean of the study was 3.77, which was higher than a neutral rating of 3. In reflecting on the responses in both the questionnaire items and the open-ended questions, the data collection time could be a factor. At the time of the study, participants were into their final exam stage. They mind and thoughts had been occupied by final exams. From the open-ended questions' results, one participant answered the question "what sustainability was" for all three questions. This might be the situation and struggle for other study participants. The higher percentage of neutral responses

could indicate that the participants were not aware of or knowledgeable about the topic to be able to make a decision (DeMars & Erwin, 2005). Open ended question results also revealed that preservice teachers had limited learning and training on sustainability framework. It could conclude that preservice teachers need to be taught more on sustainability in order to make informed decisions.

Another inference on the noticeable percentage of neutral responses would be that preservice teachers lacked interest on this topic and did not want to put in effort and cognitive endeavor to make more discriminated response choices (DeMars & Erwin, 2005). This assumption would be true if preservice did not perceive sustainability to be important to K-12 education and would not perceive sustainability education to be important and relevant to them, their study, and their future career. This assumption seems contradictory to the results from the opened ended question 1 where preservice teachers voiced the topic was highly relevant to them and the topic was important to K-12 students and they voiced high level of need to learn more. Some preservice teachers further voiced that children should be taught within the sustainability framework and they shared the responsibility for sustainability education as a preservice teacher. Their high level of favorable rating and low level neutral response rating on Questionnaire item #1 could contribute to the understanding of the perspective. It could conclude that the higher level of neutral responses could be a result of participants, such as personality (Hernandez, Dragow, & Gonzales-Roma, 2004) and not the lack of interests for further learning and cognitive engagement on this topic.

Other factors such as political culture could have shaped preservice teachers' view on sustainable education as well. In a time when political rhetoric reflected less emphasis on environment and science education, the political culture may have casted a shadow on preservice teachers' perceptions on sustainability education and education as a whole. They may have mixed feelings about this topic not knowing the directions and their own dispositions on sustainability education. Some of them may think it is best not to show their dispositions on the topic with the confusing status of current politics on science, environment, and the world. To reploticize the culture towards sustainability education, a moving force as motivated by the higher level of perception and higher level of beliefs on rewards and benefits of sustainability teaching by preservice teachers could go beyond the divide of scientific facts and alternative truth, to go beyond the political dimension of truth (Sund & Ohman, 2014). Preserve teachers need to be further nurtured to have clear orientation and framework to become sustainable teachers.

Although the ANOVA analysis revealed significant differences existed between groups between male vs female participants and ECE majors vs. Secondary majors, the study is limited by a small number of participants. The percentages of male participants and secondary participants were small in the specific study setting and teacher education programs. Further studies on those differences could be conducted with larger number of participants and more balanced representation on gender and major. Longitudinal endeavor to follow up with preservice teachers into their in-service teaching will also help add dimensions and explanations of significant differences as well.

Conclusion

It is appropriate to start sustainability education with beginning teacher candidates (Ull, Martínez-Agut, Piñero, & Aznar-Minguet, 2014). It is hopeful that preservice teachers showed a higher level of perceived importance and relevance of sustainability education to them and their future career. The rewards of that could be personal, economical, and professional, and spiritual. In an era of political rhetoric and efforts to continue to cut funding for environmental efforts and education, in an era of confusing scientific facts and alternative truth/misinformation, preservice teachers may need further help to better master the foundational framework, skills, and strategies for sustainability education.

In addition to pedagogical perspectives and themes that integrate world views suggested and embraced by preservice teachers in the study, research has also seen successful results in interdisciplinary approaches in sustainability education (Muthersbaugh & Kern, 2012; Zong & Salyer, 2015), curricular development strategies (Aurandt & Butler, 2011) and preservice training. Beyond the perceptions, beliefs, and strategies, efforts added to sustainability education may add positive environmental cultural and ethics in the teaching environment (Dvorak, Stewart, Hosni, Hawkey, & Nelsen, 2011) in addition to the conception and role of family, community and politics in sustainability education.

At the beginning of teacher training, renewed energy and efforts could be made on teacher education and foundation training among beginning preservice teachers for promising results. Further empirical research could be conducted to include larger sized samples. Further studies and findings could add more to a well-rounded sustainability education and teacher preparation discussion.

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APPENDIX A

Sustainability Education Inventory

Part I: Demographics:

Name: _____

Gender: _____

Major:

_____ECE (Early Childhood Education)

_____Secondary (___English ___History ___Biology ___Chemistry ___Physics ___Math)

Part II. Please indicate the level of your agreement with each statement below by checking the box that matches your level of agreement with the statement:

1 - strongly disagree; 2 - somewhat disagree; 3 - neutral; 4 - somewhat agree; 5 - strongly agree

Statement	1	2	3	4	5
1. It is important for young adults to understand environmental issues.					
2. I would like to learn more about environmental issues and sustainability while in college.					
3. I believe in environmental practices because I believe it will make the world a better place.					
4. I found it personally and spiritually rewarding to teach sustainability perspective in K-12 education.					
5. I was taught by my family and friends on sustainability.					
6. I was taught by my schools on sustainability issues.					
7. I was taught by my community/or religious organizations on sustainability issues.					
8. I believe I can teach based on sustainability framework.					
9. I found teaching from a sustainability framework to be economically beneficial.					
10. I believe teaching sustainability is personally rewarding.					

Part III. Open-Ended Questions:

1. How do you perceive sustainability education to be relevant/important to you as an education major?
2. What was your prior experience with sustainability education framework?
3. What would be the actions you would take in the classroom to implement sustainability education framework-based teaching practices?

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DEVELOPING TEACHERS' MULTIPERSPECTIVITY IN MULTICULTURAL VOCATIONAL EDUCATION CLASSROOMS USING TEACHER INQUIRY: A CASE STUDY OF DUTCH SENIOR SECONDARY VOCATIONAL EDUCATION

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ABSTRACT

Cultural diversity in the classroom requires teachers to adapt their attitudes towards their students and learn to take in different perspectives. Inquiry by teachers is often seen as a potentially effective strategy for encouraging professional development. This paper presents a study regarding teachers' professional change after conducting teacher inquiry to clarify challenges they encounter in their multicultural classrooms. Seven teachers from a large multicultural Dutch school for Senior Secondary Vocational Education participated voluntarily in an intervention in which they conducted teacher inquiry to explore the current practice of their classrooms. Semi-structured interviews were conducted with the teachers, and the Interconnected Model of Teachers Professional Growth was used as an analytical tool to establish the domains of change reported by the teachers.

The results suggest that, on the one hand, teacher inquiry encourages professional development by helping teachers to develop multiperspectivity and gain insights into their current multicultural classroom practice. A small number of inquiry activities appeared sufficient for teachers to gain multiperspectivity. Most of the teachers felt encouraged by the information from experts and literature. On the other hand, while these teachers' inquiry activities were relatively successful, there are still some challenges to overcome in the quality of the inquiry activities conducted by the teachers.

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Introduction

In many countries around the world, teaching in a multicultural context puts higher demands on teachers than teaching in mainstream classes because of the differences in cultural background between teachers and their students. Many teachers teaching in such a classroom are concerned because they lack confidence and feel inadequately prepared to teach diverse students (Duhon and Manson, 2000; Hollins and Torres-Guzman, 2005). The cultural diversity in the classroom requires teachers to adapt their knowledge, skills, and attitudes to the challenges that emerge in these diverse contexts, so that the students in their classes are stimulated to learn (Ladson-Billings, 1995).

In our previous research in the Dutch Senior Secondary Vocational Education (SSVE), we found that teachers find it difficult to adapt to the cultural diversity of their multicultural classrooms. Many of the problems the teachers mentioned seemed related to cultural background due to differences in perspectives between the teachers and students. Specifically, we found a lack of communication between students and teachers as cause of conflicts and misunderstandings. Teachers found it difficult to consider different perspectives when dealing with students from a different cultural background. The students did not work optimal during collaborative learning due to their different perspectives about collaboration.

Cultural background influences students' perceptions and perspectives ('Author' et al., 2003; Nguyen, 2008; 'Author', 2012) in ways that are additional to the prevailing differences in perceptions between teachers and students. Considerable research in mainstream classes finds that teachers perceive their classroom relationship with their students differently than how their students perceive it ('Author', 2005; Wubbels, 2005; Fisher and Fraser, 2006). However, in multicultural classrooms these differences appear even larger, and differences in perception also exist between different cultural groups. For example, 'Author' (2002, 2005) reported that Western students viewed teachers as less dominant than did African-American, Hispanic, and Asian students. Many teachers are not even aware of those differences nor of their own perspectives. This difference in perspectives between the students and the teacher in a multicultural classroom might emerge due to a lack of understanding of each other's cultures (Hofstede, 1986) and due to the stereotyped perspectives of "the other" (Coelho, 1998; Author, 2012). Many problems teachers encounter in multicultural classroom have to do with not being able to take different perspectives and being culturally insensitive. Teachers in multicultural classrooms should make sure that several cultural perspectives are presented whenever any issue is covered, and they must be able to view things from different perspectives and show multiperspectivity (Pinto, 2000; Banks and Banks, 2010). In accordance with Pinto (2000) and Banks (2007), we also define multiperspectivity as the ability of teachers to reason not only from their own needs and background but also while taking into account the needs and backgrounds of others, such as the various students in a multicultural classrooms. Among the characteristics of an effective teacher in a multicultural classroom Banks (2007) and Ladson-Billings (2009)

mentioned taking different perspectives, multiperspectivity, as one of the pillars of successful multicultural education.

Van Tartwijk et al. (2008) revealed that teachers in multicultural classrooms have a lot of practical knowledge and beliefs about their own teaching practice, but that the knowledge is often fragmented and not always evidence-based. What the teachers need in order to solve their problems in multicultural classrooms is theory-based practical knowledge in which their knowledge is systematized so they can analyze their problems and approach them from different angles or different perspectives ('Author' 2008).

To sum up, we can say that multiperspectivity is very important for teachers in multicultural classrooms and that it is also important that teachers develop more evidence-based and less fragmented views about their practice.

Professional development is a crucial component in nearly every modern proposal for educational improvement (Guskey, T.R and Huberman, E, 1995). Teacher inquiry is often seen as a potentially effective strategy for encouraging professional development and a very applicable strategy for teachers to become aware of the different perspectives that are inherent in multicultural classrooms, it may improve their multiperspectivity. Inquiries can help teachers to explore their multicultural practice from a distance and teach them to take different perspectives (Caro-Bruce and Klehr, 2007). They can gain different insights into the causes and consequences of their own actions, explore and find answers to practical problems, and gather evidence in a systematic way for what works in actual practice and why it works (Ponte 2005). For example, interviewing students about their perspectives might help teachers to bridge the different perspectives on the behavior of the students they encounter in their multicultural classrooms.

Inquiry by teachers allows teachers to construct new knowledge and develop new insights into educational practice (Dana, Smith et al., 2011). Forsman (2012) shows the benefits of using action research to explore cultural dimensions within language education in a multicultural classroom, concerning generic and value-related aspects such as awareness of diversity and respect for difference. However, she also found that teachers experienced some challenges using this reflective approach. For example, development of different perspectives was diminished when, in a dialogue with students, teachers were confronted with opposing perspectives or conflicting views by students. In a similar way, Vrijnsen-de Corte (2012) and Zeichner and Noffke (2001) in their studies about practice-based research by teachers reported that teachers are not being trained to conduct research and are unfamiliar with some basic research techniques like selecting method of inquiry and reflecting on their data. So conducting teacher inquiry can help teachers further to develop themselves professionally.

There is little literature on teachers' own inquiry in multicultural classrooms and even less on such research with a focus on multiperspectivity.

The present paper aims to provide insight into the use of teacher inquiry for strengthening teachers' multiperspectivity for the purpose of understanding their actual practice in the multicultural classroom. It adds an innovative focus to the literature.

The central research question is: What do teachers report to learn from conducting teacher inquiry aimed at strengthening their multiperspectivity in multicultural classrooms?

This study was situated in the context of an intervention trajectory that was conducted with teachers of a large SSVE school in the area of commercial services in the southern part of The Netherlands. In the Netherlands, the SSVE has a very multicultural student population (age 16-20) that presents a lot of challenges for the teachers. In this particular context there are two challenges to overcome. First, this school has a very diverse student population: over 80% of students have a non-Western European background. Strengthening of teachers' multiperspectivity can thus be very valuable. Second, the teachers are not familiar with the practice of inquiry-based activities. They had varying backgrounds, and action research was not a part of their preparation as a teacher. As such, in this study the teachers conducted inquiry-based activities for the first time.

Theoretical framework

The intervention that we designed centered on the use of teacher inquiry by teachers to clarify the challenges they encounter in their multicultural classrooms with the aim of strengthening teachers' multiperspectivity. Multiple models, interactions, and even names for teacher research have emerged through the years and have been implemented in varying ways for varying purposes (Somekh and Zeichner, 2009). Following Cochran-Smith & Lytle (1993, 2009), we also define teacher inquiry as a systematic, intentional study of teachers' own professional practice. Inquiring teachers seek change by reflecting on their practice. As illustrated in Figure 1, they do this by engaging in a cyclical process of posing questions or "wonderings," collecting data to gain insights into their wonderings, analyzing the data along with reading relevant literature, taking action to make changes in practice based on new understandings developed during the inquiry, and sharing their findings with others (Dana & Yendol-Hoppey, 2009).

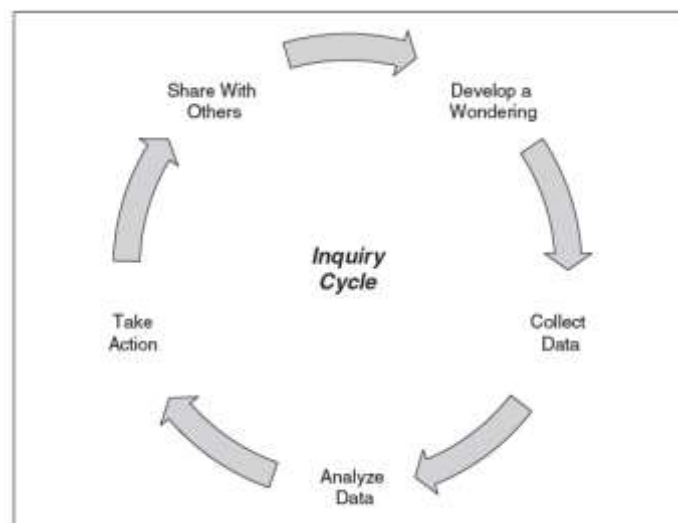


Figure 1: Inquiry Cycle

Source: Dana, Thomas, and Boynton (2011). *Inquiry: A Districtwide Approach to Staff and Student Learning*

In the present study, we regard teacher inquiry as consisting of the above mentioned steps (figure 1). Several researchers mention the benefits of in-school, practice-based research performed by teachers (Loughran et al., 2004; Zeichner & Noffke, 2001; Cochran-Smith & Lytle, 1999; Cochran-Smith, 2005; Huberman, M., & Miles, M. B. (2002); Anderson & Herr 1999; Robson, 1993, 2002; Dana, 2013). By doing inquiry, teachers can look at their own practice from a distance and reflect systematically on it. Students can help embed the practice-based research of teachers in professional practice by providing information and input for personal reflection (Bustingorry, 2008; Hoban & Hastings, 2006; Ponte, 2005).

In the inquiry steps of collecting data, when teachers interview other people, such as students, and of analyzing data and reflecting on the findings, they encounter new and different perspectives that allow the teachers to strengthening their multiperspectivity. Elliot (1991) suggests that action research is a process that is initiated by teachers in response to a particular practical situation that teachers confront. This is also one of the principles of the present study, in addition to strengthening teachers' multiperspectivity by introducing them to new perspectives. This is done by having them interview students and colleagues and consult relevant literature and experts. We can conclude that teacher inquiry is a promising strategy for strengthening multiperspectivity.

The practice of conducting inquiry aims to increase teachers' professionalism by obtaining critical insights and solutions for problems arising from educational practice in order to learn how to deal with these in future situations (Guskey, 2002)(Lunenberg et al., 2006).

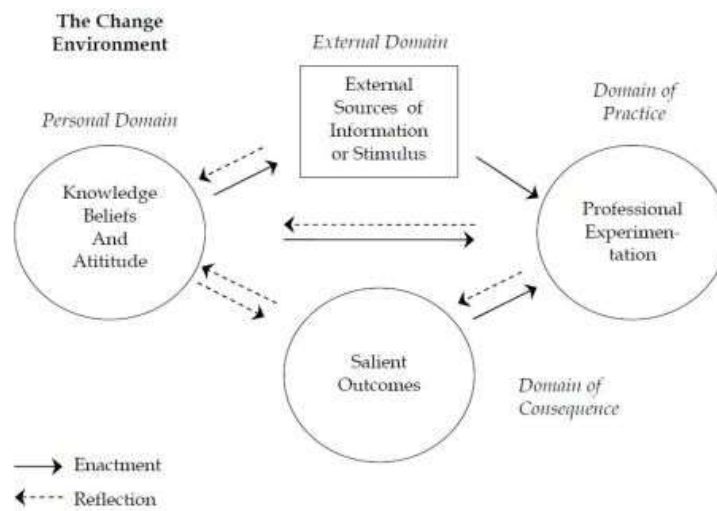


Figure 2: Interconnected Model of Teacher Professional Growth (Clarke & Hollingsworth 2002)

The Interconnected Model of Teacher Professional Growth (IMTPG) (See Figure 2) developed by Clarke & Hollingsworth (2002) can be used to determine the learning outcomes of a professional development trajectory. The IMTPG suggests that change occurs in four distinct domains that, according to the authors, encompass the teacher's world. The four domains are: the personal domain (PD, teacher knowledge, beliefs, and attitudes), the domain of practice (DP, professional experimentation), the domain of consequence (DC, inferred salient student learning outcomes, teacher control, student motivation, and student development), and the external domain (ED, sources of

information, stimulus, or support, such as in-service sessions, professional publications, and conversations with colleagues). These four domains can influence one another through mediation processes of “reflection” and “enactment.” The authors note that “The term ‘enactment’ was chosen to distinguish the translation of a belief or a pedagogical model into action from simply ‘acting.’” (Clarke and Hollingsworth, 2002, p. 951). In the present study, we adopt the IMTPG model to describe the professional growth of teachers conducting a teacher inquiry (See data analysis in methodology).

From the different models we described above, we conclude that it is important to look at the process of inquiry to see whether teachers professionally change. The inquiry cycle can be used to assess the inquiry activities that teachers undertake. The IMTPG model from Clarke and Hollingsworth can be used to measure the professional growth of the teachers after doing inquiry. However, research shows that teachers often learn something different than what they set out to learn (Zwart 2007; Coenders and Terlouw 2012). Therefore, in this research we take into account both expected learning outcomes and actual learning outcomes.

This study is about teachers’ professional change after conducting teacher inquiry to clarify challenges they encounter in their multicultural classrooms. The main question is: What do teachers report to learn from conducting teacher inquiry aimed at strengthening their multiperspectivity in multicultural classrooms?

Specification of this main question leads to some concrete research questions:

1. At the start of the intervention, what expected learning outcomes do teachers mention?
2. What learning outcomes do the teachers report after conducting teacher inquiry for exploration of their current practice?
3. What activities do the teachers report that they performed during their teacher inquiry?
4. What are the differences between the reported learning outcomes and the expected learning outcomes?
5. What is the link between teachers’ activities during their teacher inquiry and their reported learning outcomes?

In obtaining the results of the above research questions, a specific focus will be placed on the degree of multiperspectivity, as this is the overarching outcome that is sought.

Methodology

Sample

This study is situated in the context of an intervention that was conducted with teachers of a Dutch multicultural SSVE school. Seven teachers, all teaching multicultural classrooms in different departments at the school, were contacted to participate voluntarily. The teachers wanted to expand their skills to face the challenges that emerge in their multicultural classrooms and to improve their classroom management. The

school's principal assisted in contacting the teachers and gave consent to work with the teachers. The teachers did not have experience with the practice of teacher inquiry activities. Table 1 presents an overview of participants, including the subject they taught and their years of experience in education.

Table 1. Overview of participants' details

Participant no.	Gender	Age	Years of experience in education	Years working at this school	Subject taught
1	Female	35	1	1	Dutch language
2*	Male	61	30	8	ICT / Retail trade / Banking & insurance
3	Female	40	1	1	Social skills
4*	Male	55	2	2	Logistics
5	Female	56	27	15	Dutch language
6	Female	50	27	27	Dutch language
7	Male	56	32	32	German language

*These participants were interviewed jointly during the first interview.

Procedure

The intervention consisted of five sessions of three hours each, spread over a period of five months, in which the participating teachers explored a chosen problem they encountered in their multicultural classrooms and reflected systematically on it. During the intervention the participants worked in small groups of two or three teachers that they themselves formed, based on their common interest in the issues they mentioned in a semi-structured interview before the intervention started.

Based on the inquiry cycles (formulating a question/developing a wondering, collecting data, analyzing data, taking action, sharing findings), the intervention meetings were organized as follows: In the first meeting the participants received information about the intervention. They were informed about different aspects of inquiry, like formulating a research question, conducting interviews, and analyzing data. As homework they were tasked with making a plan for exploring their practice. In the second meeting the participants received information about intercultural communication from an expert in this field and discussed with each other their plans for exploration of the situations they wanted to improve. After this meeting, the participants gathered information by conducting interviews with their colleagues and students. In the third meeting the participants discussed the interpretation of their findings and evaluated the exploration

that they conducted, using each other as “critical friends” (Ponte, 2005). Furthermore, they formulated actions for improvement to take before the next meeting. During the fourth meeting an expert gave some more information about multicultural classrooms, and the participants shared experiences concerning the actions for improvement that they conducted. In the fifth and last meeting the participants shared their findings and their experiences with all their colleagues and the staff of the school.

The intervention was accompanied by the first author and partially by the second author of this article. The first author led all the sessions, and the second author made field notes of the first three meetings of the intervention.

Data collection

The empirical part of the research was structured as follows: First, semi-structured, in-depth interviews were conducted with all the teachers involved in this study before the start of the intervention. In these interviews, questions probed for problems they encountered during their lessons in multicultural classrooms and their expectations of the intervention. Second, directly after the last meeting of the intervention, semi-structured, in-depth interviews were conducted with the seven teachers. A variety of interview questions were asked in accordance with the inquiry cycle and Clarke and Hollingsworth’s IMTPG model. For example, the teachers were asked about changes in their viewpoints after conducting their teacher inquiry and how the results influenced the teachers’ functioning in their educational practice. Sample questions regarding the teacher inquiry were: “Which activities of the teacher inquiry that you carried out were very stimulating for you?” and “What did you learn (improved knowledge and skills, changed attitudes) with respect to your own teaching practice as a result of carrying out your teacher inquiry?” Sample questions concerning their practice were: “Which learning outcomes of this intervention will you use as a teacher in your own practice?” Regarding the consequence of the salient outcomes for the school organization, questions were asked such as: “What are the advantages of your teacher inquiry with respect to pupils, colleagues, and school?” With regard to different perspectives in the multicultural classroom, finally, the teachers were asked about the influences of information, stimulation, and support during the intervention by experts and researchers: “What did you learn from the meetings with the experts of intercultural communication, and to what extent was the supplied information useful for your daily practice?”

The second author made field notes about the process taking place during the meetings and the activities displayed by the participants during the intervention. Furthermore, all groups of two to three participants completed a form based on the inquiry cycle in which they summarized their actions, namely the research question, data gathering, first conclusions, improvement of their practice, and evaluation. The participants submitted this “proof of action” to the researchers.

All the interviews were conducted by the first author at the teachers’ school and audio-recorded with the teachers’ consent. The interviews were later transcribed verbatim. Pseudonyms were assigned to the teachers and the school to ensure confidentiality.

Data analysis

To answer the research questions, the transcripts of the semi-structured entry and exit interviews conducted with teachers were coded using the software tool Atlas Ti (version 7.1.4). A coding

scheme was developed to analyze the interview transcripts (Miles and Huberman, 1994). The four domains of change identified by Clarke and Hollingsworth (2002) – namely personal domain, domain of practice, domain of consequence, and external domain – were used as super categories at the starting point in coding the interview responses by the teachers with respect to research questions 1 and 2. In line with Vrijnsen-de Corte (2012), several subcategories of each domain of change were identified during the coding of the first interview in order to describe the professional growth of the teachers who conducted a teacher inquiry. The personal domain was divided into the teacher’s inquiry role versus the teacher’s teaching role. This allowed us to compare their development in the different roles. For example, in the “personal domain-teaching” we distinguished between learning about perspectives in a multicultural classroom, the specific perspectives of students with multicultural backgrounds, and the awareness of teachers’ own perceptions in the multicultural educational practice. The various sub-codes were marked with an “X” when the teachers mentioned different perspectives in their multicultural classrooms, their own perceptions and/or the differences with their students, and specific perspectives related to the cultural backgrounds of their students. No mark means there was no teacher statement of that nature.

The learning outcomes within the domain of consequences were divided into different individuals within the school organization – pupils (e.g., improved learning results, increased motivation), teaching colleagues (e.g., improved lesson materials, new teaching strategies), and the school organization (educational policy). Clarke and Hollingsworth (2002) considered learning outcomes only from the teachers’ point of view. Given our interest in teachers’ professional growth as a result of their conducting a teacher inquiry, we considered learning outcomes at all levels of the school organization.

The second adaptation of the IMTPG model concerned the division of the external domain into a “general,” an “enactment,” and a “reflection” part. “Enactment” distinguishes the translation of a belief or a pedagogical model into action from simply “acting.” The reflective part is about the reflection by teachers on the influence of information, stimulus, or support by others. Table 2 presents an overview of the codes for expected learning and learning outcomes.

Table 2. Overview of codes for expected and actual learning outcomes

Code	Sub codes	Description:	Indicators /examples by teacher
Personal domain	Personal domain - inquiry	Learning about research (knowledge & skills) Discussing and sharing research experiences	Mentions learning from interview Mentions learning from discussions with others
	Personal domain - teaching	Learning about perspectives in multicultural classroom Learning about perspectives in teaching profession and professional identity Awareness of own perceptions in	Mentions different perspectives in his/her classroom Mentions the general perspectives of teachers Mentions his/her own perception and/or the

		<p>multicultural educational practice Learning about perspectives of students with multicultural backgrounds</p>	<p>difference with students Mentions specific perspectives related to cultural backgrounds</p>
	<p>Personal domain - teaching intention</p>	<p>Intention to use changed perspectives in multicultural classroom Intention to act according to new perspectives on teaching profession and professional identity Intention to apply awareness of own actions/educational practice</p>	<p>Mentions intention to change view on perspectives in multicultural classrooms Mentions intention to act differently according to new perceptions about multicultural classrooms Mentions intention to apply awareness to act differently</p>
<p>Domain of practice</p>		<p>Consciously acting differently in educational practice Considering (own) educational practice Involvement with schools' educational policy (new tasks)</p>	<p>Mentions or gives example of acting differently Mentions or gives example of consideration of educational practice Mentions or gives example of involvement with schools' educational policy</p>
<p>Domain of consequence</p>		<p>Consequences for students, colleagues, school practice</p>	<p>Mentions or gives example of consequences of new awareness/action for students, colleagues, and school practice</p>
<p>External domain</p>	<p>External domain</p>	<p>Influence of other group members' inquiries Influence of workshops by the researchers Influence of workshops by the experts in</p>	<p>Mentions or gives example of the influence of other group members' inquiries Mentions or gives example of the influence of</p>

		intercultural communication Influence of consulting literature	workshops (output) by the researchers Mentions or gives example of the influence of workshops (output) by experts Mentions or gives example of the influence of consulting literature
	External domain - enactment	Enactment influenced by other group members' inquiries Enactment influenced by workshops by the researchers Enactment influenced by workshops by the experts in intercultural communication Enactment influenced by consulting literature	Gives example of action influenced by other group members' inquiries Gives example of action influenced by the workshops (output) by the researchers Gives example of action influenced by workshops (output) by the experts Gives example of action influenced by consulting literature
	External domain - reflection	Reflection on influence of workshops by the researchers Reflection on workshops by the experts in intercultural communication	Gives example of reflection on action influenced by workshops (output) by researchers Gives example of reflection on action influenced by workshops (output) by experts in intercultural communication

Research question “3” about activities the teachers performed during the teacher inquiry was answered by determining the inquiry activities as defined by Dana (Dana & Yendol-Hoppey, 2009). The form with activities the teachers filled in was used in two ways, first to establish which activity each teacher performed – namely, formulating research questions/wonderings, collecting data, analyzing data, taking action, and sharing findings. Second, we took a closer look at, for example, the data collection to establish the intensity with which this activity was performed, as a measure for strengthening multiperspectivity. This was determined by whether

the participant formulated his own research question/wondering, and whether they interviewed both student(s) (male and/or female) and teacher(s), etc. (See Table 3).

Table 3. Overview of activities performed by teachers

Activities	Descriptions
Question/wondering	Whether the teachers formulated their own research question/wondering
Data collection	How the teachers collected data, how many interviews they did and with whom and with what variety in the interviews (male/female, student/teacher)
Data analysis	Whether and how the teachers analyzed the data
Taking action	Whether the teachers took further action, extended exploration of the practice/action to improve the practice
Sharing findings	Whether the teachers prepared a presentation for their colleague teachers, did the presentation, and took part (actively) in the discussion after sharing the findings

To establish how well the teachers' learning outcomes of the teacher inquiry met their expectations, which was research question 4, the coding results of both interviews with the teachers, the entry and exit interviews, were compared. The reported domains of change after conducting the teacher inquiry were compared with the teachers' expected domains of change (See Table 4).

To answer research question "5" we compared Tables 4 and 5 to see whether there was a link between the activities performed by the teachers during the teacher inquiry and their reported learning outcomes.

The results of the preliminary analysis using this coding scheme were discussed with two senior researchers after coding the first interview to validate the decisions being made and the procedures being followed. During the coding process, the identified subcategories were discussed regularly with the second author, and the coding scheme was agreed upon and adjusted. New subcategories were added until all seven interviews had been analyzed. The field notes were used to validate our findings and conclusions.

Results

In the following section the results will be reported for each individual question for all seven teachers, illustrated by some quotations from the teachers in order to illustrate to what degree the teacher inquiry activities may have contributed to their multiperspectivity.

Expected learning outcomes (Research question 1)

With regard to the expected learning outcomes, many of the statements that teachers made at the start of their teacher inquiry, as can be seen in Table 4, belonged to the personal domain, the domain of practice, and the external domain. They did not mention any expectations in the domain of consequence or implications for their practice.

In the personal domain, they mentioned they were dealing with doubts about their own actions such as whether they had the right attitude as a teacher in a multicultural classroom, whether they knew enough about the different cultural backgrounds of their students, about how to handle different perspectives in their classrooms, and about how to deal with conflicts. For example, teacher Kevin said at the start regarding what he wanted to learn:

“During this intervention I want to learn how to guide and coach my students in an optimal way with more respect and understanding for each other in this multicultural context. I would like to get some information and tools on how to handle this.”

This example shows the need the teacher had to be able to handle different perspectives (multiperspectivity) in his multicultural classroom.

In the domain of practice, the teachers often mentioned things about their own daily practice such as the composition of their classroom and its challenges and the rules they apply, but also about their own beliefs concerning their multicultural classrooms with regard to different perspectives. For example, teacher Lynn said: *“So my feeling is – but that is perhaps very, very biased – that when I give feedback to my students, it's a kind of violation of their honor, and that in other cultures honor plays a much bigger role than in our culture and that they feel attacked much more than a Dutch student would. I get a lot of excuses like ‘Yes teacher, but...,’ while the only thing I want is that they at least take care of what I say and do something with it. I would like to learn and get tools for how to give feedback to those students who have another cultural background.”*

In the external domain, the teachers mainly expected to get information from the experts and trainers about the cultural backgrounds of their students and about intercultural communication, and good practices and tools to handle multicultural classrooms. In the following example, teacher Jolie expressed her needs for information before the intervention, displaying her lack of understanding different cultures and her struggle with (multiple) perspectives: *“I once had a girl in the class who looked at the ground all the time while I spoke to her. So I said, ‘Just look at me!’ Later I understood that that was her way of showing respect. Now I wonder to what extent we should or we must have consideration, or whether we should perhaps require some more from them. I do not know, but I want to know! I need some information and hope to get it from you guys! If only just a little more than what I already know...”*

Learning outcomes of teachers' inquiry (Research question 2)

Table 4. *Expected and actual learning outcomes of teachers' inquiry-based approach*

	Peter		Lynn		Jolie		Kevin		Mary		John		Jane	
	Ent ry	Ex it	Ent ry	Ex it	Ent ry	Ex it	Ent ry	Ex it	Ent ry	Ex it	Ent ry	Ex it	Ent ry	Ex it
Personal domain - inquiry														
Learning about research (knowledge & skills)		X				X				X				X
Discussing and sharing research experiences		X		X		X		X		X		X		X
Personal domain - teaching														
Learning about perspectives in multicultural classroom		X												
Learning about perspectives in teaching profession and professional identity		X		X				X		X				X
Awareness of own perceptions in multicultural educational practice		X		X		X		X		X	X	X		X
Learning about perspectives of students with	X		X	X	X				X	X	X	X	X	X

multicultural backgrounds													
Personal domain - teaching intention													
Intention to use changed perspectives in multicultural classroom		X									X		
Intention to act according to new perspectives on teaching profession and professional identity		X		X		X				X			
Intention to apply awareness of own actions/educational practice													X
Domain of practice													
Consciously acting differently in educational practice	X	X	X	X	X		X	X	X		X		X
Considering (own) educational practice				X	X			X			X		
Involvement with schools' educational policy (new tasks)													
Domain of consequence													
For pupils													
For colleagues													

For the school organization (educational policy)													
External domain													
Influence of other group members' inquiries													
Influence of workshops by the researchers				X		X							
Influence of workshops by the experts in intercultural communication	X	X	X	X	X	X	X	X	X		X	X	
Influence of consulting literature	X				X				X				X
External domain - enactment													
Enactment influenced by other group members' inquiries				X									
Enactment influenced by workshops by the researchers	X												
Enactment influenced by workshops by the experts in intercultural communication	X		X				X		X				X
Enactment influenced by consulting literature													X

External domain - reflection														
Reflection on influence of workshops by the researchers			X											
Reflection on workshops by the experts in intercultural communication					X				X					

Note: No mark means no teacher statement of that nature; X means teacher statement.

Table 4 shows that the same activities for all the teachers gave a varied learning outcome. External domain (sources of information), personal domain (inquiry), and personal domain (teaching) were more often reported by the teachers than the other domains. The domain of consequence was not mentioned. To indicate what they learned, the teachers reported, for example, that they appreciated very much the information given by the experts and the consulted literature (external domain). They reported benefits such as awareness, the deepening and strengthening of their knowledge and perspectives, and the opportunity to exchange information. As an example, Teacher Jane made the following comment in response to this question about how the teachers experienced the information from the experts and other sources: *“You see, my colleagues and I need this. That background information works very well. Then you just look at things much differently!”*

Although the teachers did not expect so much from inquiry (personal domain) as an activity, Peter reported how valuable conducting inquiry was for him in order to change his attitude toward his students. As can be seen in the following quotation by him, interviewing students as a part of the teacher inquiry helped him to become more interested in them.

Peter: *“And I have asked the students in recent weeks some things that have nothing to do with school. ‘How is it at home? Do you have fun here? How are you doing this year?’ etc. So really, just things not specifically to do with school results, but very occasionally you break through to someone and then comes all the information.”*

A closer look at Table 4 shows two groups of teachers, those who experienced outcomes in almost all domains and another group with fewer outcomes. Teachers Lynn and Peter experienced outcomes in almost all domains, while others had more varied results. Below are specific examples of two teachers, one from each of these two groups, Peter and John. All the following examples illustrate the difference in growth these teachers experienced, with Peter showing more multiperspectivity than John. At the start they had the same expectations.

Peter, an experienced teacher of ICT, retail trade, and banking & insurance, is nearing retirement (61 years old) and was a reluctant participant in the intervention. He signed up for the

intervention because he found it difficult to adapt to the cultural diversity of his multicultural classrooms.

As a part of the intervention, the participants had to formulate inquiry questions concerning their actual practice in the multicultural classroom that they wanted to explore. Peter's group formulated about how teachers experience their multicultural classrooms. To get more insight into their wonderings, Peter conducted interviews with some of his colleagues and his students. Reporting his findings during an intervention session with the other participants, Peter said that he was very inspired by one of the colleagues who approaches the multicultural classroom very positively and regards such a class as a positive challenge. Shortly after this session he voluntarily went back to this colleague for a more in-depth interview to get to know more about his beliefs and attitude. Furthermore, Peter changed his attitude toward his students after he interviewed them by chatting with them more often about daily things. Finally, Peter reported in the last interview that he also collected some extra literature about "dealing with differences in the multicultural classroom" and "the teacher as a role model" in order to understand his students even better.

The case outlined above shows several changes in domains. The intervention provided Peter with new information and a new stimulus (external domain). There were many external sources of information available for Peter during the intervention such as relevant publications and information provided by experts in the field of multicultural education. Also, the interviews with colleagues and students were important external sources of new information and stimulus.

In the personal domain, Peter's change in attitude is evident in the increasing value that he attached to interview as an inquiry activity and a source of information about his students. The change in Peter's attitude toward his students shows his change in the domain of practice as illustrated by his comments above.

John is an experienced teacher of the German language, 56 years old, and a participant who had a strong personal opinion during the intervention. He signed up for the intervention because he wanted some rest in his classroom for the time left till his retirement. John's group had an inquiry question about what is the best way to give feedback to students with other cultural backgrounds. To get more insight into this, John conducted interviews with two students. While reporting his findings during an intervention session with the other participants, John very often gave his own opinion about the challenges he encountered in the multicultural classroom, and he did not seem very open to the information in the data he gathered. This case shows fewer changes in domains than in the case of Peter. The intervention provided John with new information, and he expected even more information from externals (external domain). Besides the sharing of research experiences as a valuable activity in the inquiry part of the personal domain, John reported his own views of his educational practice and seemed unswayed by other perspectives, as shown in the following comment where he explained his ideas on how to handle a conflict in his classroom: *"I was not surprised by the results of my interviews. It was more about general pedagogical affairs than multicultural. We must be aware that people with different cultural backgrounds have different expectations. I knew that, but still my rules should be applied."*

Teachers' activities during teacher inquiry (Research question 3)

Table 5. *Activities performed by teachers during the teacher inquiry*

Participant \ Activities	Peter	Lynn	Jolie	Kevin	Mary	John	Jane
Question/wondering	One own question	Two own questions	No specific question	One own question	One own question	No specific question	One question
Data collection	Interviews with two students (boys) and two teachers (man and woman)	Interviews with three students (two girls, one boy) and two teachers (man and woman)	No data available from interview	Interviews with two students (boy and girl) and two teachers (man and woman)	Class interview with students	Interviews with two students (girls)	No data available from interview
Data analysis	Done	Done	Not done	Done	Not done	Not done	Not done
Action taken	Further exploration doing extra interview with a teacher (man)	Carried out a plan for improving her classroom practice	Not known	Carried out a plan for improving his classroom practice and evaluation by interview with two teachers (man and woman)	Not known	Not known	Not known
Findings shared	Presentation for all school colleagues and participated in	Presentation for all school colleagues and participated in	Participated in discussions after the presentations	Presentation for all school colleagues and participated in discussion afterwards	Did not share findings	Did not share findings	Presentation for all school colleagues and participated in

	discuss on afterwar ds	discuss on afterwar ds					discuss on afterwar ds
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Table 5 shows two kinds of differences in activities performed by the teachers: whether the activity was performed or not and the intensity (richness) with which the activity was performed. The latter aspect refers to both a quantity and a quality aspect, whether the teacher conducted more interviews as well as conducting interviews with a more varied sample, such as with students and teachers differing in gender, ethnicity, and age. Also, the sharing could have been performed in different ways and with different intensity – namely, preparing a presentation, giving the presentation, and actively participating in the discussion with the audience after the presentation.

Some of the teachers conducted all of the activities, while others only carried out some activities. Furthermore, there was a difference in the richness with which the activities were performed. Five teachers formulated one or two research questions, and two teachers had no specific research question. All the teachers indicated that they gathered data through individual interviews or a class interview, but two of the participants could not show us reports of their interviews. Some teachers conducted more interviews than others with students and/or with colleague teachers. Two teachers carried out a plan for improving their classroom practice. One teacher conducted further exploration of his classroom practice by doing extra interviews. Four teachers did not report taking any action. There was also variety in the ways the teachers shared their findings. Some did a presentation and held discussions concerning their findings, while others only participated in the discussions, and two teachers did not share their findings at all. A closer look at this table shows that there are two different groups, one group of teachers (Peter, Lynn, and Kevin) that performed a lot of activities, such as conducting many different interviews and doing a presentation, etc., and another group (Jolie, Mary, John, and Jane) who did fewer activities, such as fewer interviews, not actively sharing their results, etc.

A specific comparison of Peter and John, from each group, indicates some differences. Peter reported activities in all the domains mentioned in Table 5. He formulated his own research question and conducted interviews with two teachers and two students to gather data concerning his research question. As an action after his interview with one of the teachers, who was very positive about his multicultural classroom, Peter did further exploration by interviewing the teacher again. At the end of the intervention Peter did a presentation for all his colleagues about his findings, and he participated in a lively discussion with his colleagues. John, on the other hand, did not report so many activities in the areas mentioned above. He did not have a specific question at the start of the intervention but simply adopted the question of a colleague to explore. He conducted interviews with two students to gather information about this question. He did not take any action after gathering information and did not share his findings with his colleagues at the end of the intervention.

Expected learning outcomes and actual learning outcomes (Research question 4)

A comparison of the expected domains of change that the teachers mentioned at the start and the actual domains of change they reported after conducting their teacher inquiry shows, in Table 4, a difference between the two. At the end, teachers reported not only various domains of change

that they had expected but also different domains of change that they did not expect at the start and in different sub domains. In most cases, the main expected domains of change mentioned at the start were personal domain, domain of practice, and external domain. For details, see expected learning outcomes (Research question 1).

Peter and Joh, for example, had the same expectation at the start, with both mentioning that they wanted to work on their knowledge (personal domain) concerning their own educational practice because of the multicultural backgrounds of their students (domain of practice). At the end, both Peter and John reported changes in not only the personal domain and the domain of practice, but also the external domain. While John mostly kept his own perceptions, Peter showed multiperspectivity at the end.

The link between teachers' activities during the teacher inquiry and their reported learning outcomes (Research question 5)

The link between the teachers' activities during their teacher inquiry (Table 4) and their reported learning outcomes (Table 5) is that the group that performed the most numerous and varied inquiry activities, also displayed the richest learning outcomes. As we can see in the examples above, Peter conducted more numerous and more varied inquiry activities, like interviewing students and colleague teachers, than John, and he also reported more learning outcomes and showed more multiperspectivity considering more the perspectives of others than before.

Conclusions and discussion

An important starting point of this study was whether teacher inquiry in which teachers reflect more systematically on their practice would develop their multiperspectivity.

Based on the results, we can draw the conclusion that the development of multiperspectivity was fairly successful for some teachers. As we can see in the results of research questions about the "expected learning outcomes" (1), the "actual learning outcomes" (2), and the "link between teachers' inquiry-based activities and their learning outcomes" (5), several teachers demonstrated in their comments a better understanding of their practice and the strengthening of their multiperspectivity, which could be considered a prerequisite for teachers of multicultural classrooms (Pinto, 2000; Banks and Banks, 2010).

Another focus of this study was whether the teachers in this context could be successful in conducting inquiry-based activities. Our results showed a variation in the way teachers conducted the inquiry-based activities. There seems to be a correlation between their active participation in conducting inquiry-based activities and the richness of their data gathering, on the one hand, and their development of multiperspectivity, on the other hand. More active participation and rich data gathering generated more multiperspectivity.

Our teacher inquiry was not successful for every teacher. There are still some challenges to overcome in the quality of the inquiry-based activities conducted by the teachers (Zeichner and Noffke, 2001). In line with Vrijnsen-de Corte (2012), we also found that some teachers did not perform every inquiry step, and that there was a variation in the intensity with which some teachers performed the inquiry steps. Based on this study, we argue that the development of multiperspectivity could be strengthened by ensuring that every inquiry activity is carried out in a proper way.

We can therefore conclude that in this study teacher inquiry encourages professional development by helping teachers to develop multiperspectivity and gain insights into the problems they encounter in their multicultural classrooms. The learning outcomes suggest that the teachers learned more than they expected to at the start from conducting teacher inquiry. Most of the teachers became encouraged by the information from experts and the literature, but there are still some challenges in conducting inquiry-based activities to overcome.

Remarkably, the teachers did not expect or report learning outcomes in the domain of consequence, namely consequences and/or changes in educational practices as an outcome or implication of their inquiry. This may be due to the short duration of the intervention and is in line with Vrijnsen-de Corte (2012), who found that teachers need to also be able to change their practices on the basis of their own research findings and experiences. The intervention period was short and teacher inquiry was relatively new for the teachers, while changes in behavior are known to take time and effort (Guskey, 2002). For future intervention, a longer time period is recommended eventually with a postponed interview on the effects of the intervention. In the present study, the teachers were asked only to formulate a research question. It would be better to ask them to formulate a research question that directly relates to their personal performance in their own multicultural classroom, in order to increase the ownership of their inquiry project (Cochran-Smith & Lytle, 2009).

We have developed a useful coding scheme based on theory (Clarke and Hollingsworth (2002) and on the data, with which we have gained better insight into the professional growth of teachers using teacher inquiry. We have focused in particular on whether or not the different domains of Clarke and Hollingsworth (2002) were mentioned. In future research on professional growth, we want to validate this coding scheme and consider also the frequency in the domains and the correlation and patterns between the domains. In this study we also used semi-structured interviews to study the effects of teacher inquiry on professional development. A suggestion for future research might be to use other research methods, such as observations and tests of the improvement in educational practice, in addition to self-reported data by teachers.

Our study reveals that teachers can attain multiperspectivity just by doing a number of inquiry activities. For example, by systematically collecting data from their students and colleagues, they will gain insights into the differences in perspectives in a classroom. It is easy to get started with teachers in this context, and strengthening their view of different perspectives is very instructive and valuable. The major challenge is to make this teacher inquiry suitable for larger research projects by teachers and ensure that it is effective for anyone and not only for a few. In the near future we will work toward achieving that goal.

Limitations of the study

The analysis presented herein provides interesting insight into the processes underlying the strengthening of multiperspectivity by teachers of multicultural classrooms using teacher inquiry. However, it presents several limitations. First, it was conducted on a small scale (seven teachers). Thus, the qualitative interpretation of the data provides no more than a first indication or trend, requiring confirmation in other, perhaps larger scale studies. Second, the sample was purposefully selected, and the seven teachers involved were willing to cooperate and had no experience with

conducting research. Obviously, processes might be quite different with teachers who have more experience with conducting inquiry. These limitations open the window for further research in which the results could be tested at a larger scale and with a teacher sample that is more varied.

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