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JOURNAL OF THE INTERNATIONAL SOCIETY FOR TEACHER EDUCATION

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From the Secretary General

Educators recognize that teacher education is now positioned in an era when the inextricable relations between pedagogical practice, systemic accountability, and professional development drive the discourse of how knowledge is constructed, disseminated and operationalized in a fluid global society.

The increasing expectations from all public sectors(social, political, economic, etc.) for educated persons place formidable demands on the education system as the expectations come with dictates of how one must be as an educated person and what one must do to help make a more informed and habitable society, one that is fair and equitable. Added to fairness and equity for people is now ecological rightness.

At the heart of these legitimate and fervent concerns for our society lay educational practices that challenge and engage our learners and help them to emancipate and activate their passions for individual, societal and ecological justice. Doing so in the classroom requires teachers who base their pedagogical practices on sound theoretical constructs and empirical evidence integrated with their knowledge of their students and their society. As teacher educators our obligations to our students can be no less.

The International Society for Teacher Education has a notable track record for encouraging its members to do and share creative and scholarly work towards fulfilling such an obligation. The articles in this issue of the society's journal testify to that obligation. Collectively they help to bring a rich tapestry of understanding to our role in society as active contributors, not passive consumers.

Collegially yours

Forrest C. Crawford

From the Associate Editor

The ten articles in this issue of JISTE (15.2) bring to our readers the scholarship of teacher educators from seven countries. The first article by Cherubini and Volante focus our attention on how well an induction program on teachers' assessment knowledge and practices serve both new and experienced teachers in Ontario, Canada. An important finding from their work, that induction practices promote collegiality among teachers and their mentors, is echoed in Almaian's study of teachers in Kuwaiti schools. He found that the structure of the curriculum and the physical arrangement of teachers' working space are contributing factors to teachers' high level of collegiality.

The next three articles focus on teacher's subject knowledge and skills for promoting student achievement. Alkhezzi's and Abdelmagid's documentation of increased student attentiveness and engagement with their lessons when teachers use technology in their instruction underscores the need for more computers in schools and more professional development for teachers. Drakenberg from Sweden and Falaye from Nigeria share challenges the teacher has in teaching required subjects of the curriculum without adequate resources. In Sweden it is teaching a second language in a multilingual environment; in Nigeria the subject is geography. Smith and Shumow show the possibilities for creativity when they introduced their teacher candidates to the study of adolescent development through the eyes of adolescents whose videoed self documentaries provided primary source material for study. These studies represent an ideal of the International Society for Teacher Education – to improve the classroom situation and classroom practice.

The last four articles in this issue point to some directions for policy or theory development in teacher education. Simpson and Indiatsi from the U.S.A. explore the notion of the progressive teacher via Freirean requirements of a secure and ethical teacher and the implications of such a notion of teacher for teacher education. Wolf and Agnew-Tally would reverse early childhood teacher attrition in the U.S.A. through induction strategies that are grounded in constructivist theory. This has implications for rethinking the teacher education curriculum and policies for new teacher placement.

Panizzon from Australia and Adeyemi from Botswana address the heart of teacher education's obligation when they focus on teacher competence. They both argue for a higher level of competence for teaching subject disciplines. Recognising from her international research that there is weakness in teaching Science and Mathematics at the secondary school level, Panizzon would promote competence in pedagogical content knowledge (PCK) for teaching all subjects and especially Science and Mathematics. Adeyemi makes a case for a multidisciplinary approach to instruction, especially in teaching English as a second or subsequent language in the junior secondary classrooms of Botswana.

Thank you to all the authors of the articles in this issue of *JISTE*. We know that many hours of research and thinking went into them. I hope that you, the reader, will enjoy reading these articles. As I take my leave from JISTE as Associate editor, I would like to express my appreciation for the privilege of serving the society and my fellow teacher educators around the world in this role. A big thank you to Sybil Wilson, for compiling this issue of *JISTE* for the last time as editor. During the 31st annual seminar of the International Society for Teacher Education hosted in Norway in May 2011, Sybil received a plaque from the society in recognition of her many years of dedicated work as editor. The inscription reads: "The Secretary General's award for exemplary service...for quality work performed as JISTE Editor."

We welcome our new editor, Karen Berg Peterson from Denmark and new associate editor, Peggy Saunders from the U.S.A.

Anna Hugo, South Africa

TEACHERS' AND ADMINISTRATORS' PERCEPTIONS OF THE NEW TEACHER INDUCTION PROGRAM POLICY IN ONTARIO: ADDRESSING NEW TEACHERS' ASSESSMENT LITERACY

Lorenzo Cherubini and Louis Volante

This study examined teachers' and principals' knowledge of the Ontario Ministry of Education's New Teacher Induction Program (NTIP) in terms of serving new teachers' assessment literacy. Using a semi-structured interview format, 20 teachers and 18 principals from two school districts in southern Ontario, Canada were interviewed about assessment knowledge and practices and their perspectives of the NTIP program. Through constant comparison analysis of the data, three themes were identified and represented the key recommendations: (1) heightened awareness of the strategic timing of NTIP interventions throughout the academic year; (2) ensuring mentor compatibility; and (3) endorsing NTIP as a mutually-beneficial program for new and mentor teachers. The recommendations are discussed in relation to furthering the benefits of teacher induction programs.

Key words: educational policy, student assessment, teacher induction

Teacher induction is a formal and systemic process of facilitating teacher candidates' transition to professional teacher (Duncan-Poiter, 2005; Renard, 2003). According to the literature, well-planned induction programs can reduce teacher-attrition and enhance new teachers' professional capacities (Darling-Hammond & Bransford, 2005; Wayne, Youngs, & Fleischman, 2005). Of paramount importance is the fact that induction programs can improve new teachers' practice and student learning (Leithwood, Fullan, & Watson, 2003). In Canada, the Ontario Ministry of Education's New Teacher Induction Program (NTIP) is intended to support new teachers on their continuum of professional development. As NTIP begins to develop from policy to practice, it seemed timely to question its effectiveness.

New teachers are profoundly challenged by having to tailor their pedagogy to meet the individual needs of each student (Cherubini, 2009; Hiebert, Gallimore, & Stigler, 2002), particularly given the heightened public accountability across Canada and the United States on *all* students meeting predetermined achievement standards (Kauffman, Johnson, Kardos, Liu, & Peske, 2002). The pressure on teachers to be accountable for various educational reforms is also apparent in the United Kingdom where induction programs are also being favourably viewed by new teachers (Killeavy,

2006; Killeavy & Murphy, 2006). In a comprehensive review of teacher induction programs in Australia, Great Britain, Canada, France, Germany, Japan, New Zealand, and the United States, Howe (2006) concluded that the most effective induction programs afforded new teachers opportunities to collaborate and reflect in supportive professional school cultures.

While there is an array of new teachers' developmental needs that induction programs account for (Ingersoll, 2003), the impetus remains on empowering them to be capable and competent practitioners (Renard, 2003) and competent assessors of students' work. It is critical, therefore, that new teacher induction programs provide thoughtful opportunities for participants to establish connections between the theory of student assessment learned in their teacher education programs and the application to practice in the classroom (Ransdell & Maxwell, 2006).

The Ontario Ministry of Education's New Teacher Induction Program (NTIP)

NTIP is designed to extend the learning of new teachers acquired during their formal teacher education. It includes an orientation for all new teachers by their respective schools and boards of education, a mentoring partnership with an experienced colleague, and job-specific training in

the context of Ministry of Education initiatives. The infrastructure of the NTIP policy reflects the fundamental components of successful induction programs, as identified in the literature, by providing a mentor/protégé pairing (Ingersoll & Kralik, 2004), professional development sessions (Johnson & Birkeland, 2003), and release time for new and mentor teachers (Hirsch, 2006). NTIP considers the support of new teachers' assessment practices as a key component of the program, and offers training seminars and mentors as means to further novice teachers' development. This priority addresses the gap in the literature that suggests that new teacher assessment practices are inadequate to support student learning (Stiggins & Arter, 2002; Volante & Fazio, 2007).

Conceptual Framework

Among the outcomes of this study are key recommendations for policy makers in terms of how NTIP can better serve new teachers' assessment literacy. The conceptual framework employed in this research uses a discourse-based analysis of transcribed and written data as responses to key research questions about practitioners' awareness of NTIP in reconciling new teachers' awareness of assessment theory to their practice (Bannink & van Dam, 2007; Korthagen & Kessels, 1999). This approach provided insight into teachers' and administrators' descriptions of NTIP to address the complexities of student assessment. Further, it accounted for participants' perceptions of new teachers' development, including effective mentoring (Feiman-Nemser, 2001) that transcends managerial and procedural issues (Little, 1990). The framework provided a means of generating key thematic findings and recommendations that will be useful for policy-makers, and district and school staffs involved in NTIP initiatives to better serve new teachers' assessment literacy.

Method

Purposive sampling across two school districts in southern Ontario determined participant selection. School board personnel recommended the study participants for their range of experience in education. The sample consisted of 38 educators including 18 principals (11 elementary, 7

secondary) and 20 teachers (9 elementary, 11 secondary). The experience of the principals ranged between 1 and 20 years, with a mean of 6.1. Teachers' experience ranged between 2 and 27 years, with a mean of 11.0. Only one teacher had less than 3 years' experience and all were familiar with the new NTIP program. Educators were selected from 24 schools, 15 elementary and 9 secondary. Sixteen of the participants were male and 22 were female.

Research Site

This study was conducted in two school districts located in the south-central region of Ontario. In both districts, the student population represented various cultures and socio-economic groups. Similar to other school districts in Ontario, both districts strictly adhered to the Ministry of Education's NTIP policy.

Data Collection

Each participant completed a baseline assessment survey during the winter of the 2007/2008 school year. The survey consisted of a series of open and close-ended questions in four broad areas: general assessment knowledge; assessment *for* and *as* learning practices; and professional development as it relates to their awareness of NTIP. The survey responses assisted in the formulation of interview questions. Semi-structured interviews were conducted with each participant. These ranged between 40 and 60 minutes per interview. The interviews solicited information about participants' assessment knowledge, their professional experiences, and their perspectives of how NTIP can improve new teachers' assessment practices.

Data Analysis

The survey and interview data were analyzed by constant comparison (Bogdan & Biklen, 2003). Codes were assigned to each line directly in the margins of the survey and transcripts, merging entries with codes with similar meanings into a new category. The process was repeated for each of the remaining data sets in a reiterative manner. This process allowed for the emergence of thematic trends across teachers' and administrators' open-ended items. Investigator triangulation increased the trustworthiness of

the analysis. Selected extracts that best represent participants' reflections are cited in the findings below.

Findings

Seventeen codes emerged from the inductive analysis of participants' interview responses for the four participant cohorts (i.e., elementary and secondary principals, and elementary and secondary teachers). Through constant comparison, the codes were saturated into three core themes with attendant recommendations: (1) heightened awareness of the strategic timing of NTIP interventions throughout the academic year; (2) ensuring mentor compatibility; and (3) endorsing NTIP as a mutually-beneficial program for new and mentor teachers.

Awareness of the Strategic Timing of NTIP Interventions

Emerging from each of the four participant cohorts was the distinction that NTIP services focused on student assessment needed to be strategically timed throughout the academic school year in order for new teachers to optimally benefit. This finding is consistent with the literature that underscores the necessity for induction in-services to be aligned with new teachers' developmental needs (Kelchtermans & Ballet, 2002). Participants cited their approval of including an assessment component within NTIP, but were equally adamant that it could not be offered as a single, isolated session. Typical of others, one participant stated, "I feel sorry for those new teachers. I would find it overwhelming trying to manage all of the assessment tools as a new teacher because your learning curve is so huge" (Elementary Teacher-5).

Participants were not, however, unanimous in their suggestions of when induction programs should address student assessment. Some suggested that student assessment should be considered at the beginning of the school year because the process of evaluating students' work is, as one participant described, "not a natural part of our process [and as a result] we really have to think about it" (Elementary Teacher-8). In support of this suggestion, another elementary teacher participant stated, "the problem is that it

is not done at the beginning of the school year. As a new teacher you need to know from the beginning about assessment" (Elementary Teacher-7).

Secondary teacher participants also preferred that the student assessment components of NTIP be "more formalized" and considered as a strategic "process" for new teacher development (Secondary Teacher-1). They too cited new teachers' unfamiliarity with the dynamics of assessing students' work, suggesting that, "There are still difficulties with new teachers' understanding the whole weighting, the weighting practices, the categories, and the use of rubrics" (Secondary Teacher-3). One participant who successfully completed NTIP in the previous academic year adamantly stated, "We only had one session on assessment and evaluation. It was excellent, but there were still people at the table that were saying, 'well, my kids will not work if I do not mark everything'" (Secondary Teacher-7). Consistent in participants' insights was the notion that assessment practices should be consistently scheduled throughout the academic year. Reminiscent of the other responses, one secondary teacher concluded that, "there needs to be follow-up with the new teacher induction program and not just at the beginning" (Secondary Teacher-5).

Like the elementary and secondary teacher cohorts, elementary principals emphatically stated that assessment practices need to be a core consideration of NTIP delivery. But unlike the two teacher cohorts, they did not cite it as a top priority to be addressed at the beginning of the school year. This cohort believed that new teachers had to first establish an understanding and demonstrate their proficiency in classroom management. Characteristic of others, this principal explained, "You have to have the classroom management piece and the assessment piece comes....I think assessment is deeper" (Elementary Administrator-1).

Elementary principals recognized the numerous responsibilities that face new teachers and believed that matters related to student assessment contribute to this

complexity. The majority of elementary principals credited NTIP in “stressing the importance of having a balanced assessment” to new teachers (Elementary Administrator-10). Yet, they emphasized that new teachers need to be, as one participant described, “at the point” where they can ask informed and relevant questions about assessment and “how assessment drives instruction” (Elementary Administrator-5). This *point* refers to a stage in new teachers’ development when they have “a handle on the structure that needs to be created” for student assessment to be authentically incorporated into their pedagogy (Elementary Administrator-5).

Secondary school principals also recognized the profound “paradigm shift” that assessment practices entail for new teachers, and cited NTIP for being “instrumental” in illuminating the complexities (Secondary Administrator-1). Like their elementary colleagues, secondary principals underscored that new teachers experience “a lot of stress [from not only] the amount of work, but the different work they are responsible for” as novice educators (Secondary Administrator-2). They, too, overwhelmingly stated that although assessment is critical to NTIP, the foundational elements of teaching have a greater impact on new teachers in the classroom. One participant explained, “Classroom management has a bearing on what you can do in terms of assessment for learning. If you are too busy trying to manage your class you do not have an opportunity to see where the students are at” (Secondary Administrator-2).

Secondary principals acknowledged the training new teachers benefited from in their teacher preparation programs, but believed that their initial experiences “in the classroom [is when] the rubber hits the road” (Secondary Administrator-4). Their concern is that while new teachers may believe their theoretical understandings of assessment to be strong, the translation of the theory “into practice” is often quite contentious. Essentially, all participants underscored the fact that student assessment should be addressed throughout the school year.

Ensuring Mentor Compatibility

The research is clear that successful mentors are critical in transitioning new teachers beyond matters of classroom management towards student achievement (Athanases & Achinstein, 2003). In all instances participants were adamant that trust and respect be foundational characteristics of the professional relationship. In order for new teachers’ growth to flourish, teachers need to trust that conversations and counsel offered within the relationship are to sustain better assessment practices in the classroom.

By coupling new teachers with compatible mentors, secondary teachers perceived an opportunity for protégés to learn from not only experienced teachers, but from those who have demonstrated an interest in “recent professional development [that] draws upon their past experiences...to enrich the new teachers” (Secondary Teacher-1). This participant cohort expressed that mentors needed to be sensitive to the needs of new teachers, be demonstrably “more open to new teaching methods,” and have an understanding of “looking at assessment and what works, why it works, and how it works” (Secondary Teacher-2). Participants distinguished the value of the mentorship model as resting upon the mentor’s intrinsic “interest” in furthering new teachers’ professional development and in providing “opportunities that work” (Secondary Teacher-9).

Elementary principals’ responses also emphasized that the ultimate measure of a mentor/protégé relationship for a novice teacher “depends on who you are with” (Elementary Administrator-3). The mentors are considered, by the principal cohorts, as “guides” for new teachers that support them “through the NTIP topics that they need to cover,” particularly assessment (Elementary Administrator-6). Typical of other responses, this participant stated, “I am sorry to really lay this out but I heard many examples where the mentor teachers that were chosen were perhaps not chosen on the best basis and they were providing advice to new teachers that was totally wrong” (Elementary Administrator-7). Administrator participants emphasized that the mentor’s confidence level in assessment and evaluation was also a critical consideration. One secondary

principal stated that, “being a mentor who is a very strong teacher already [and] very confident in assessment” complemented the assessment and evaluation initiatives in NTIP and facilitated optimal professional growth for the novice teacher. In the end, participants drew attention to the importance of selecting quality mentors capable of establishing trusting relationships with novice teachers.

Endorsing NTIP as a Mutually-Beneficial Program for New and Mentor Teachers

Consistent across all four participant cohorts were observations that the mentor/protégé partnership was as potentially beneficial for the mentor as it was for the novice teacher. Time and again participants shared first-hand experiences whereby the pair “benefited from it and they were able to grow. If we want everyone to grow with assessment then we all need to be part of the process” (Elementary Teacher-2). While participants referenced the role of NTIP providers to service new teachers’ assessment needs, they suggested that the mentor/protégé partnership was ideal for customizing not only new teachers’ awareness, but for facilitating the mentors’ assessment literacy as well. Mentor teachers were considered the beneficiaries of the knowledge and theory of new teachers’ learning during their teacher education programs.

Teacher participants brought to light the potential of structured, collaborative opportunities within NTIP for mentor/protégés teams to consult and dialogue about their student assessment practices in order to “build off each other’s’ ideas [and] grow off each other [by] sharing some ideas” (Secondary Teacher-5). They recalled examples of new teachers and mentors working collaboratively on common examples of student work, successful activities that engaged students, and examples of how various student assessment tools worked effectively with certain tasks. In this manner, “new teachers come in and have some stuff to work with [so] they know what works and do not get caught up in trying to manage their class by giving work as opposed to managing their class by giving really authentic and really effective activities” (Secondary Teacher-7). Teacher participants cited the potential of collaborative,

mutually benefiting professional development sessions whereby new and experienced teachers “get together and create together collaboratively” (Secondary Teacher-8). The exchange of ideas, strategies, and assessment instruments between new and mentor teachers, according to teacher-participants, furthers their pedagogy and creates more genuine learning experiences for students.

The principal cohorts also recognized new teachers’ potential to make a valuable contribution to the mentor/protégé relationship in terms of advancing student assessment practice. One elementary principal stated, “The new teachers are taught to use assessment and evaluation and they know the different types of assessment.” According to the same participant, “It is the older teachers who need that shift in philosophy” in order to better understand the respective assessment and evaluation reforms (Elementary Administrator-2). According to the majority of principals, NTIP services offered by their respective boards of education addressed new teachers’ assessment practices. New teachers are perceived as a valuable source of knowledge that can assist more experienced colleagues with assessment practices. New teachers “got some ideas” that can have a positive, school-wide impact on teachers’ practice (Secondary Administrator-1). Perceiving new teachers as contributing members of the school community can help to bridge the sense of isolation that many novices typically experience. In this light, new teachers understand that the accountability to assess and evaluate students in a fair and consistent manner is, as one secondary principal indicated, is the responsibility of the “whole community [including] students, parents, administrators, and department heads” (Secondary Administrator-2). Essentially, all of the participants acknowledged that the assessment literacy of both the mentor and the protégé has the potential to enhance classroom practice.

Discussion

Grounded in the data, therefore, are the core recommendations to improve NTIP, namely: timely interventions closely aligned to teachers’ needs, ensuring that the new and mentor teacher’s relationship is based on

respect and trust, and that the program itself endorses the mutual benefits inherent in the new and mentor teacher collaboration. The participants in this study were openly critical of the fact that new teachers were not sufficiently in-serviced given the complexity of student assessment. The research supports the notion that neither university courses nor professional development exercises sufficiently provide new teachers with sound assessment practices (Volante & Fazio, 2007; Stiggins & Arter, 2002).

School principals were fundamentally concerned with the specific operational procedures of NTIP. While they cited the role of NTIP to advance new teachers' assessment literacy, they were less certain that specific school-based strategies actually complemented the NTIP interventions. This may be somewhat alarming considering that NTIP is, according to the Ministry of Education policy, "a school-based program" (Ontario Ministry of Education, 2008, p. 8). Schools themselves, in the context of the NTIP policy document, are to create learning communities "in which new teachers are provided with plentiful opportunities to engage in professional exchange and collective inquiry" (Ibid., p. 12). One may have expected principals to have a more comprehensive understanding of NTIP interventions, particularly when they recommended that NTIP in-service should be scheduled according to new teachers' needs throughout the school year.

Another point of discussion is the importance of the mentor selection process. Selecting mentors who have the knowledge, professional capacities, and assessment expertise to be able to foster new teacher growth is pivotal to the intended outcomes of NTIP. As one secondary teacher participant suggested, mentors need to be proficient in understanding how to present the "alternative methods" to fairly evaluate students that may "work best for the kids you have sitting in front of you" (Secondary Teacher-3).

According to the NTIP policy, principals "should ensure that new teachers have the opportunity to improve their skills in a supportive mentoring relationship." More specifically, participants were adamant that NTIP providers,

principals, and mentors should be sensitive to new teachers' assessment knowledge. The participants suggested that experienced educators need to be proficient in successfully mediating the inexperienced and fragile identities of novice educators. This implied an understanding that, as one individual aptly stated, "Sometimes as teachers we take a lot of that type of thing [moderated marking professional development sessions with experienced teachers] very personally" (Elementary Teacher-3). According to the participants, NTIP should be structured as a mechanism for building self-directedness in new teachers to enable them to self-declare these needs in a non-threatening mentor relationship.

Of paramount significance to the findings of this study is the recognition on the part of participants that the success of NTIP rests to a large degree on complementing school board traditional *in-services* with more *personal services* professional development models. School based professional development offered by expert, qualified, and experienced educators can address new teachers' unique needs (Johnson & Kardos, 2002). Targeting new teachers' unique needs permits them to cultivate the professional development learning opportunities that are most relevant to their developmental needs throughout the school year (Cherubini, 2007). A personal service approach recognizes that situational demands, and not necessarily generic needs, constitute the most meaningful professional development for new teachers. In practice, new teachers themselves define their needs and communicate them to NTIP facilitators who, in turn, coordinate contextually-relevant opportunities to allow novice teachers to author their own professional development. NTIP and other induction related support services can then be perceived by new teachers more in light of self-validated professional development initiatives that evoke their sense of agency to author their own unique growth as novice educators. Board and school supports are perceived less as imposed interventions for the general good of all new teachers regardless of their individual strengths and weaknesses.

Illustrative of this model were those examples cited by participants where new teachers demonstrated substantial growth when provided with opportunities to share their knowledge while learning from the expertise of others. New teachers were considerably more involved in the span of their development and timely engaged with matters that were most pressing for their own individual practice. Their professional development is re-framed to enable new teachers to make authentic connections between the theory and implementation of assessment and evaluation in their own classrooms.

Conclusion

The study generated findings and recommendations that are useful for policy-makers and educators working with NTIP to better serve new teachers' assessment literacy. Both the

teacher and principal cohorts brought to light the fact that new teachers learn about assessment practices in various ways, including formal in-services offered by NTIP providers and conversations with mentors and colleagues. The participants recognized the value of both learning circumstances. Further, they cited the potential benefit of implementing school-based induction practices in tandem with the NTIP in-services. A discussion of the findings illuminated light the importance of a *personal service* paradigm that permits new teachers to direct their specific learning opportunities in areas of student assessment which would be immediately relevant to their professional needs. The challenge for providers of induction programs is to develop mechanisms and procedures to facilitate a mentor / protégé matching process that attends to these areas of need so that the relationship is mutually beneficial.

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COLLEGIALITY IN KUWAITI SCHOOLS: FORMS AND IMPACT ON TEACHERS' PROFESSIONAL DEVELOPMENT

Hend Almaian

A questionnaire was administered to 332 teachers in Kuwaiti public schools to investigate the forms of teacher collegiality and the impact of collegiality on teachers' professional development. Findings indicated that Kuwaiti teachers engage in many forms of collegiality, most commonly through storytelling/scanning of ideas and sharing and that collegiality is facilitated by the organization of their workspace. Findings also revealed that collegiality contributes to teachers' learning about planning, teaching practice, students and assessment.

Keywords: Arabic language teachers, professional development, teacher collegiality

In Kuwait, the Ministry of Education is going through a reform of subject curriculum framework with the consideration of developing teachers' practices and with the goal of eventually promoting students' learning. One activity being discussed is supporting teacher collegiality. Although forms of collegial activities can have an impact on teachers' practices that promote student learning, Hargreaves (1994) expressed concerns about the harmful effect of what he calls "contrived collegiality", and McLaughlin (1993) cautioned that collegiality does not automatically lead to effective teaching practices. Along with these cautions are research studies of teachers' professional development that show that teacher collegiality is an essential component for improving teachers' practices and for teachers' professional development (Clement & Vandenberghe, 2000; Jarzabkowski, 2003; Little, 1987; Shank, 2005; Horn, 2008; Wallace & Loudon, 1994).

Little (1982, 1987), Zahorik (1987), and Wallace & Loudon (1994) found that teachers working together produced an expanded range of instructional methods and materials, career rewards, and higher quality solutions to problems. Grimmett & Crehan (1989) and Little (1990) recommended professional collegial relations as one way to improve teachers and the image of the profession. The reasoning has been that teachers who engage in collegial relationships based on examination of each others' work are better prepared to improve teaching and student learning (Feiman-Nemser & Floden, 1986). The literature suggests that

teacher collegiality is based on contextual factors in subject departments and organizational structure of schools as a whole, such as schedules, subject matter, time, teachers' beliefs, and cultural values (Hargreaves, 1992; Reinken, 1998).

School Organization for Support of Teacher Collegiality

The organizational structure in Kuwaiti schools assumes that teachers have opportunities for collegial relationships. The common curriculum gives teachers a common content around which they can structure their work. The common examination also provides common goals that teachers share. The arrangement of the school week gives a block of time each week for teacher departmental meetings. This increases the possibilities for teachers to work together and discuss educational matters. A light teaching load gives teachers the chance for daily informal collaboration. The physical arrangement of schools and the allocation of space support the practice of collaboration. Teachers do not have their own classrooms; they do their instructional preparation in one shared office where teachers' desks are crowded together. However, there is a lack of studies about teachers' collegiality in Kuwaiti schools; so there is great need to understand the forms of collegiality and the impact of collegial relations on teachers' professional development. This understanding will contribute to the curriculum reform movement in Kuwait and to the impact of collegiality on teachers' practices and student learning. Given this lack of

studies it was important to learn more about teacher collegiality from the literature.

The Literature on Teacher Collegiality

The literature was very helpful for planning the study: refining its purpose, focusing the questions and directing the development of the questionnaire. Review of the literature is organized in four areas: how researchers define ‘teacher collegiality’; what they discovered to be the benefits of teacher collegiality; how collegiality among teachers was expressed; and what learning opportunities did teachers have for their professional development through collegial interactions.

The Meaning of Teacher Collegiality

Little (1987) defines collegiality as the professional relations among teachers - when teachers work in the sight and hearing of one another; plan and prepare lessons and materials together; and solve their instructional, curricular, and management problems together, as well as engage in discussing professional matters and in examining teaching and learning. Other researchers (Huberman, 1993; Hargreaves, 1993; Zahorik, 1987) define collegiality as the actions and interactions among staff members and with other school colleagues for the purpose of social support, assistance, sharing and joint work. Lord (1994) introduced the concept of “critical collegueship” as a form of professional development that provide teachers with support for greater reflection and sustained learning. He defined “critical collegueship” as “supporting teachers in their effort to bring to the surface their questions and concerns, to help teachers expose their classroom practice to other teachers, and to enable teachers to learn from constructive criticism” (p.192). These definitions suggest face-to-face relations among teachers for the purpose of implementing instructional, curricular, and management goals which eventually help in teachers’ professional development.

Benefits of Teacher Collegiality

One of several benefits of teacher collegiality is that teachers who work collegially are supporting one another in their daily work and they become more open to new ideas,

teaching methods and resources (Little, 1987). Another is that teacher collegiality helps in educational change and reform. Educational change is most successful when collegial practices and relations among teachers take place (Fullan, 1991). Teachers gain social and emotional support through teachers’ collegiality (Jarzabkowski, 2002). A fourth benefit is that collegiality reduces teacher turnover. Cockburn (2000) found that one of the main reasons teachers enjoyed teaching was having mutual and friendly relationships with colleagues. Little (1987) argued that a collegial environment provides support for beginning teachers. They gain moral support and emotional solidarity, and they gain assistance in achieving a balance between practical fluency and conceptual understanding. This collegiality enhances job satisfaction for teachers and reduces attrition (Woods & Weasmer, 2002). Veteran teachers also gain from working collegially. When they work together they gain instructional range, depth and flexibility, influence and respect, and career rewards and daily satisfactions (Little, 1987).

Forms of Teacher Collegiality

Little (1982) studied schools as a workplace. She supplemented interviews of 105 teachers and 14 administrators with observations in four relatively successful schools and two relatively unsuccessful schools. She found that teachers in successful schools participated in norms of collegiality. The forms of their collegiality were mainly talking about instruction, structured observation and shared planning. In a later study, Little (1990) conducted an analysis of the content and forms of teachers’ collegial interactions. She discussed four forms of collegiality. First, *storytelling and scanning for ideas* give teachers opportunities to communicate with other teachers to find answers about the demands of daily classroom life and to search for specific ideas, solutions or answers. Second, *aid and assistance* refer to asking for, giving, and receiving help. Third, *sharing* describes the exchange of teaching methods, new ideas, teaching activities and materials. Fourth, *joint work* relates to team making among teachers that emphasizes team teaching and shared responsibility for planning and teaching.

Zahorik (1987) also studied forms of teacher collegiality. From his interviews of 52 teachers in six schools, he learned that teachers frequently discuss materials, student discipline, and teaching activities. Wallace (1998) examined the forms of collegial interactions of four teachers and their partners in one Canadian school within a program on supervision for growth. Data collected from interviews, field notes and observation revealed that the quality and quantity of collegial interactions between teachers covered a broad spectrum, from frequent and productive to infrequent and superficial. Conferences and observations were the common forms of collegiality; however, teachers preferred the notion of warm encouragement and helpfulness rather than intervention.

Collegiality and Teachers' Professional Development

Collegial relations among teachers create different kinds of learning opportunities. These opportunities are crucial for teachers' professional development. Learning opportunities can be formal or informal. They can originate during in-service activities, but also during a school day when, for example, a teacher tries to find an answer to a question or a solution to a problem. The challenge, support, feedback, and counseling occurring in teachers' every day work context give them opportunities for professional development (Horn, 2008). But it is important that teachers take advantage of such learning opportunities (Lange & Burroughs-Lange, 1994), allowing them to evolve into learning experiences (Clement & Vandenberghe, 2000). Shank (2005) found that valued means of support and learning cited by new teachers in her study were the collegial interactions that common workspace, common planning time, and common task made possible, especially when the school day was structured in a way that enabled new and veteran teachers to converse about curricular and pedagogical decisions, student learning, and professional learning.

Clement & Vandenberghe (2000) studied the impact of collegiality and autonomy on elementary school teachers' professional development. They found that certain forms of collegiality and autonomy combined with certain workplace

conditions had a more positive influence on teachers' professional development than others. They suggested that workplace conditions should be modified in a way that clearly supports collegiality and collaboration for professional development without teachers having to abandon their autonomy. Penlington's (2008) study showed that teacher-teacher dialogue played a crucial role in developing teachers' practices. The dialogue and the process of questioning and answering among teachers can work to challenge teachers to reflect more deeply than when they reason alone.

The Study

Purpose of the Study

This study was done to identify the forms of collegial relations among Arabic language teachers and to explore the impact of these collegial relationships on teachers' professional development. In addition, the study examined whether these forms and the impact on teachers' professional development differ according to teacher characteristics: gender, years of teaching experience, and school level taught

Research Questions

1. What are the forms of collegiality among Arabic language teachers?
2. What is the impact of collegiality on teachers' professional development?
3. Are there any differences in the forms of collegiality and the impact on teachers' professional development between male and female teachers?
4. Are there any differences in the forms of collegiality and the impact on teachers' professional development based on years of teaching experience?
5. Are there any differences in the forms of collegiality and the impact on teachers' professional development in respect to school level (elementary/ middle/ secondary)?

Participants in this study were 332 Arabic male and female language teachers in Kuwaiti public schools. They included Arabic language teachers of thirty six schools, selected from all the public boys and girls elementary, middle and high schools in Kuwait. Kuwaiti schools are separated by gender.

Data was collected from the language teachers using a questionnaire which had two parts. The first part contained 18 items that provided a measure of four forms of collegiality drawn from Little’s (1990) study described above. Three items (8-12-18) sampled *Storytelling / Scanning of ideas*; five items (1-2 -3-10-11) sampled *Aids / Assistance*; four items (5-6-9-14) sampled *Sharing*; and six items (7-4-16-15-17-13) sampled *Joint work*. An indication of consistency is that the Cronbach alpha indicator across the 18 items was $\alpha = .93$. The second part of the questionnaire ($\alpha = .95$) dealt with the impact of collegiality on teachers’ professional development and contained 20 items distributed in four learning areas: Learning about students had four items (7-9-10-14); learning about teaching practice had six items (4-5-6-13-15-17); learning about planning had five items (1-2-11-12-

18);and learning about assessment had five items (3-8-16-19-20). In analyzing the data, several procedures were used: (1) frequency distribution to examine the forms of collegiality and the impact of collegiality on teachers’ professional development; (2) t-test to compare the difference of the forms of collegiality and the impact of collegiality on teachers’ professional development according to gender; (3) one way ANOVA was used to compare the difference of the forms of collegiality and the impact of collegiality on teacher professional development based on teachers’ years of experience teaching level.

Research Results

Generally teachers reported that they engaged in the four forms of collegiality: storytelling and scanning of ideas, joint work, sharing, and offering/receiving aid and assistance.

Table 1

Mean and standard deviation of “forms of teachers’ collegiality” and “teachers’ learn”

Forms of teachers’ collegiality	Mean	Standard Deviation
Storytelling / scanning of ideas	4.35	.612
Aids / Assistance	4.16	.639
Sharing	4.35	.609
Joint work	4.33	.701
OVERALL	4.29	.584
Teachers’ learning from collegiality		
Learning about students	4.26	.628
Learning about teaching practice	4.29	.585
Learning about planning	4.33	.544
Learning about assessment	4.20	.645
OVERALL	4.27	.563

Table 1 indicates that of these four forms, aids /assistance is the least used. The table also indicates that, in terms of impact on professional development, teachers mostly learned about planning and teaching practice through collegial interactions.

Table 2 presents the result of an independent sample t - test that was conducted to evaluate the difference of forms of collegiality and the impact of collegiality on teachers’ professional development between male and female teachers.

Table 2

T-test with respect to GENDER

Forms of teachers' collegiality	Male N =132		Female N =200		t	Sig. (2 tailed)
	M	S.D	M	S.D		
Storytelling / scanning of ideas	4.30	.555	4.38	.648	-1.047	.296
Aids / Assistance	4.18	.592	4.15	.669	.444	.657
Sharing	4.31	.559	4.38	.640	-1.015	.311
Joint work	4.32	.656	4.34	.731	-.260	.795
OVERALL	4.28	.532	4.30	.618	-.386	.699
Teachers' learning from collegiality						
about students	4.26	.625	4.26	.631	.003	.998
about teaching practice	4.27	.605	4.31	.572	-.573	.567
about planning	4.33	.540	4.33	.548	-.010	.992
about assessment	4.21	.671	4.20	.628	.064	.949
OVERALL	4.27	.569	4.28	.560	-.162	.871

df = 330

There is no significant difference between these two groups of teachers, $t = -.386$, $p = .699$, with respect to forms of

collegiality ($t = -.386$) or impact of collegiality on teachers' professional development. ($t = -.162$).

Table 3

ONE WAY ANOVA in respect to Years of teaching experience

Teaching experience	1-2 years N=68		3-5 years N=58		6-10 years N=80		More than 10 years N=126		F.	Sig.
	M	S.D	M	S.D	M	S.D	M	S.D		
Forms of teachers' collegiality										
Storytelling / scanning of ideas	4.36	.606	4.22	.717	4.25	.700	4.46	.476	2.879	.036
Aids / Assistance	4.21	.674	4.06	.631	4.13	.715	4.21	.568	.918	.433
Sharing	4.29	.639	4.33	.607	4.35	.661	4.40	.561	.462	.709
Joint work	4.28	.722	4.27	.753	4.23	.788	4.46	.587	2.264	.081
OVERALL	4.28	.608	4.22	.611	4.23	.670	4.38	.490	1.474	.221
Teachers' learning from collegiality										
about students	4.38	.558	4.23	.539	4.19	.685	4.27	.660	1.188	.314
about teaching practice	4.40	.531	4.22	.523	4.26	.589	4.29	.633	1.068	.363
about planning	4.39	.513	4.24	.554	4.30	.562	4.36	.543	1.133	.336
about assessment	4.32	.634	4.12	.551	4.18	.693	4.19	.657	1.168	.322
OVERALL	4.37	.518	4.20	.508	4.24	.597	4.28	.586	1.161	.325

Table 3 reports a one-way analysis of variance that was conducted to evaluate the effect of years of teaching experience on teachers' response about the forms and impact of collegiality. The result shows that there is a significant difference in the form of "storytelling/ scanning of ideas" regarding years of teaching experience. However,

there is no significant difference in the other three forms and none in the impact of collegiality on teachers' professional development. Follow-up tests were conducted to evaluate pair wise difference among means for "storytelling / scanning of ideas". Multiple comparison tests were conducted using the Scheffe's (.05) procedure. The

result shows that no pairs of groups differ significantly at the .05 level.

Table 4 reports results of a one-way analysis of variance conducted to evaluate the effect of teaching level on teachers' report about the forms and impact of collegiality.

Table 4

ONE WAY ANOVA in respect to Teaching Level

Teaching level	Elementary		Middle		Secondary		F	Sig
	M	S.D	M	S.D	M	S.D		
Forms of teachers' collegiality								
Storytelling / scanning of ideas	4.29	.693	4.37	.566	4.38	.554	.745	.476
Aids / Assistance	4.08	.720	4.17	.641	4.27	.492	2.329	.099
Sharing	4.29	.702	4.38	.596	4.39	.475	.908	.404
Joint work	4.23	.779	4.33	.735	4.48	.495	3.207	.042
OVERALL	4.21	.685	4.30	.572	4.39	.420	2.280	.104
Teachers' learning from collegiality								
about students	4.22	.582	4.35	.641	4.21	.662	1.836	.161
about teaching practice	4.23	.602	4.40	.582	4.24	.549	3.073	.048
about planning	4.22	.586	4.42	.502	4.36	.519	4.331	.014
about assessment	4.12	.616	4.27	.700	4.23	.599	1.785	.169
OVERALL	4.20	.571	4.36	.568	4.26	.533	2.653	.072

Using the Scheffe's (.05) procedure to test for significance of difference, the result shows that there is a significant difference ($p=.05$) between elementary and secondary teachers in their response regarding forms of collegiality, specifically "joint work." The result of multiple comparison test shows that there is a significant difference in their response to this item. On this item the mean value for elementary teachers is $M=4.23$ and the mean value for secondary teachers is $M=4.48$ (see Table 4). This says that secondary teachers involve in "joint work" more than elementary teachers.

There is also a significant difference ($p =.05$) in the responses of elementary and middle school teachers regarding the impact of collegiality on teachers' professional development according to teaching level on the items: "teaching practice" and "planning." Collegiality creates learning opportunities about planning for middle school teachers more than for elementary teachers.

Discussion

The study explored the forms of teachers' collegiality among Arabic language teachers in Kuwaiti schools and the impact of collegiality on teachers' professional development. The findings of note are these:

1. The forms of collegiality that Little (1990) described in her study are all shown to occur among language teachers in Kuwaiti schools. Storytelling/scanning of ideas and sharing are the most common forms. This result is different from Jarzabkowski's (2002) finding that teachers greatly value the social and emotional aspect of teacher collegiality; but it is supported by (Shank, 2006), who showed that teachers value storytelling, discussing and sharing ideas about teaching. The reasons that storytelling and sharing are common forms among Kuwaiti teachers can be explained by the organization of the workplace of Kuwaiti schools that gives opportunities for teachers to talk together, scan ideas about teaching and learning, share ideas and teaching materials, and discuss experiences and challenges (Horn, 2008). Teachers share a common workspace.
2. In terms of impact, the findings indicate that collegiality provides opportunities for teachers to learn

about students, teaching strategies, planning and assessment. Most teachers reported that they learned about planning. This is an aspect of their work in which most teachers need help, perhaps because daily planning of detailed lessons is so important to teaching success and student learning and requires much subject matter and pedagogical content knowledge.

3. The results show that there is no difference in the forms of collegiality and its impact on teachers' professional development between male and female teachers. One explanation for this finding is probably cultural. . Kuwaiti schools are segregated by gender of students, and the Ministry of Education encourages collegiality equally of both male and female teachers. This contributes to teachers working as colleagues in both male and female schools. Another reason is organizational. Regardless of the schools being of one gender, the school day and workplace are organized in the same way. This situation creates similar opportunities for male and female teachers to work as colleagues. A third reason has to do with the curriculum. Having a prescribed national curriculum makes it easier for both male and female teachers to work as colleagues around the same curricular issues.

4. A major finding of the study is that there is no difference in the forms of collegiality and in its impact on teachers' professional development between new and experienced teachers' responses. This finding appears to be consistent with Nias' (1998) finding that suggested both new and experienced teachers need to engage in collegial practices. New teachers need their colleagues for help and professional support at the beginning stage of their career. Collegial relations also become important for experienced teachers because they have greater confidence in their skills and are more willing to help other teachers and provide them with professional support (Nias, 1998).

5. Results also show that secondary teachers involve in joint work more than elementary teachers. This can be explained by the nature of the content of secondary Arabic language curriculum. It requires much more of teachers: a

higher level of subject knowledge, deeper skills of grammar, and knowledge of many kinds of literary works that need close textual analysis and discussions of meaning and literary techniques to deepen students' reading comprehension. Therefore, teachers are motivated to share with one another to the degree that they require each other's contributions in order to succeed in their own work (Little, 1990). Teachers are motivated to get involved in productive teams, joint projects, departmental groups and joint deliberation in order to succeed in their teaching and for the benefit of their students. Clement and Vandenberghe (2000) found that learning experience cannot be created by enforcing structural forms of collaboration and suggested that "teachers should be motivated to collaborate, if this collaboration gives rise to the creation of learning opportunities and adequately adjusted learning space" (p.98).

Implications of the Study

This study contributes to the understanding of the forms of collegiality among Arabic language teachers in Kuwaiti schools. The findings provide evidence that there are some structural and cultural realities in the Kuwaiti public school system that facilitate and encourage collegiality among teachers in their daily work. Perhaps what is needed to strengthen language teachers' professional development is for the Ministry of Education to recognize what opportunities already exist to do so, and officially support teachers' collegiality with planned activities.

Workplace conditions and organizational structure of school play a major role in encouraging or inhibiting teacher collegiality. If schools, as teachers' workplace, are structured in ways that give them the time, place and a common goal to collaborate, this situation would encourage teacher collegiality and create learning opportunities for teachers.

Teachers need collegiality at all stages of their career. New teachers need their colleagues for survival and for professional help and support. Experienced teachers "look to other teachers both for new ideas, stimulation and challenge and as the potential recipients of their own

knowledge and expertise” (Nias, 1998, p. 1264). The Ministry can organize a professional development program in which experienced teachers are resource people for sharing curriculum planning and activities with newer

teachers. Teachers are motivated to collaborate on instructional matters with their colleagues when they find meaning and benefit in doing so.

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TECHNOLOGY INTEGRATION: THE USE OF COMPUTERS BY KUWAITI ELEMENTARY SCHOOL TEACHERS

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Six female teachers from two Kuwaiti public elementary schools were interviewed in order to gain some insight into the use of computers in the schools. Rogers' (2003) diffusion of innovation theory was used to frame the study and the research questions. Qualitative analysis of the interviews showed that the teachers viewed computers as relatively advantageous in their work, compatible with their needs for teaching, easy to handle, and simple enough to learn. When the computer was used in instruction students showed an increase in attentiveness and enjoyment of lessons; they interacted more with the teachers, and were motivated to learn. However accessibility was a problem for teachers and students.

Keywords: diffusion of innovation, educational computing, elementary school

Bates (2000) points out ‘that “the impact of new technology in education” is one of the most important reasons leading educational institutions to change. Thus there is an increased interest and emphasis on how technology should be integrated in teaching (Hofer & Swan, 2008). This can be seen by the substantial financial investments made by governments in educational technology. For example, between 2001 and 2004, in the United States (U.S.) federal expenditure on educational technologies, like software and equipment, was about \$28 billion (O'Dwyer, Russell, & Bebell, 2005). Despite these investments in technology in schools, a considerable body of literature indicates that U.S. public school teachers have not effectively used technology to enhance student learning (Cuban, 2001; Culp, Honey, & Mandinach, 2005; Pitler, 2006). A similar situation exists in Kuwait. In his study, Safar (2001) found that technology adoption and integration is still limited in the educational sector in Kuwait despite the recognition that the use of computers and other technologies is now standard practice in teaching and learning.

In Kuwait, education is viewed as a keystone for the development and progress of individuals and the society. Like many modern countries, Kuwait has given much attention to education in order to keep its society economically and culturally strong (Al-Sahel, 2005). Oil profits have allowed Kuwait to build a broad based educational system; the literacy rate is 93% (Kuwait, 2008).

Kuwait has invested a huge amount of state revenues to develop ambitious plans for public education (Alqahtani, 2007). Nevertheless, education faces many challenges, both cognitive and technological. The educational system of Kuwait has been criticized for a lack of technological tools in education and for its traditional teaching styles, which concentrate on rote memorization and the attainment of basic knowledge (Aldhafeeri, Almulla, & Alraqas, 2006).

Authors have indicated that there is a lack of research regarding the use of technology in education specifically in schools in the Arab Gulf Cooperation Countries (GCC) and the Middle East (Frag, 2005). According to Ali (2004), educational studies on Information Technology (IT) adoption in the Middle East is very limited because it is not used much in schools. Thus, there is a need to understand the reason/s for the lack of use of computer technologies in schools and consequently in the Kuwaiti culture. The literature suggests that the slow IT diffusion in developing countries like those of the Middle East could be attributed to poor infrastructure, high costs, language barriers, social factors, and political impediments (Marghalani, 1987). Authors like Shaw (2002) argue that it becomes a question whether the “state of readiness of the locals, the expectations of parents and the availability of equipment and the underlying cultural assumptions really offer favorable conditions for adoption” (p. 45). Therefore the

understanding of the social context in which the integration of technology occurs needs to be taken into consideration.

Viewpoints on Technology Integration

Scholars have different perspectives on the integration of technology in K-12 education. Cuban, Kirkpatrick and Peck (2001), for example, talk about the extent of the use of computer technologies by teachers in the classroom, focusing on high access and low-end use of technologies. Lim, et al. (2003) view technology in terms of how teachers use it to develop students' performance by creating a conducive learning environment. Hew and Brush (2007) sum up much of the literature on the use of technology in education as consisting of a common element, the use of computers for instruction. Hennessy, Ruthven and Brindley (2005) see technology use for more than instruction; it is about "how teachers use technology to carry out familiar activities more quickly, reliably, broadly, productively, interactively and how much use is re-shaping these activities" (p.155). Belland (2009) sees technology use as "the sustainable and persistent change in the social system of K-12 schools caused by the adoption of technology to help students construct knowledge" (p. 354).

But Bebell, Russell, & O'Dwyer (2004) believe that there is no clear standard definition of technology integration in K-12 schools, and so studies of 'technology use', do not yield results which are specific enough to understand the extent of technology use in schools and its impact on learning outcomes. They believe that it is important to define the types or categories of 'technology use' to gain a deeper insight into how these uses vary across settings. An example would be when investigating students' use of technology, issues related to where they use it and for what purpose should be measured and addressed separately. For the purpose of this study technology use refers to the use of computers by elementary Kuwaiti teachers to enhance students' learning in an elementary classroom setting.

A Theory of Innovation Adoption

Rogers' diffusion of innovation (DOI) theory (2003) emphasizes that several variables influence the adoption of

an innovation. One of these variables is perceived attributes of an innovation. This means that potential adopters judge an innovation based on their perception in regards to five characteristics of the innovation: relative advantage, compatibility, trialability, observability, and complexity. The rate of diffusion will increase if the potential adopter perceives the innovation to have relative advantage to other innovations; is compatible with existing practices and values; can be tried on a limited basis; offers observable results; and is not complex in terms of usage.

Relative advantage is related to the degree to which an individual perceives an innovation to be superior to previous methods. While economic advantage, social prestige, convenience, and satisfaction are important factors, an individual must perceive the innovation as advantageous so as to adopt it. Innovation needs to be consistent or *compatible* with the needs, experience, and values of an individual. The more compatible the innovation is with the individual's needs, the faster it will be adopted. The third characteristic of *complexity* refers to the difficulty or ease of understanding and using the innovation. The more complicated the innovation is, the harder it is to use, so it will be adopted more slowly. Simple innovations that are easy to understand and use are likely to be accepted and adopted quickly. Fourth, *trialability* is essential in the process because an innovation should be used and tested on a limited basis to check its suitability. These trials increase the likelihood of the adoption of the innovation by decreasing ambiguity towards its use. Finally, *observability* is another important characteristic since it shows how visible the results of the innovation are to other individuals. It is natural that people tend to adopt innovations that have obvious benefit and clear results rather than those having less obvious, less fruitful ones. In summary innovations perceived by individuals to have greater advantage, compatibility, trialability, observability, and less complexity are adopted more quickly than other innovations. Research indicates that these five characteristics are important in explaining how fast an innovation will be adopted (Rogers, 2003).

The Study: Purpose Statement and Research Questions

Based on Rogers' characteristics, the purpose of this study was to gain an understanding of Kuwaiti teachers' perception towards computer technology in public schools and their use of computers in their daily work. Two main research questions and several subquestions were explored:

1. What is the nature of the use of computer technology by Kuwaiti elementary school teachers?
2. How do Kuwaiti elementary school teachers perceive the use of computer technology?
 - Do the teachers see computer use as being advantageous to their teaching?
 - Do the teachers see computer use as consistent with their existing beliefs and needs? Compatibility
 - Do the teachers have the opportunity to experiment with computers?
 - Do the teachers see the computer as easy to handle and work with?
 - What changes on students learning do the teachers witness when using computers?

Study Population and Sampling Procedure

The current study focused on elementary schools due to the fact that elementary schools form the largest public sector

schooling in Kuwait comprising 43% of all public schools (Ministry of Education, 2010). Furthermore, the study focused on females due to the fact that despite the segregation of schools by students' gender, all teachers in elementary schools are females except in three schools. With permission from the Ministry of Education in Kuwait the researchers visited seven elementary public schools in one district area and randomly selected two schools from among them for the study. Time limitation made it impossible to do the study in all seven schools. Both schools that were selected follow the national curriculum, composed of 10 subject areas. Each school has approximately 65 teachers and 400 students. Teachers are provided with a mandatory training program in technology known as the International Computer Driving License (ICDL) offered by the Ministry for teachers to acquire skills in the use of computers. The program has seven units: Information Technology, Using Computer and Managing Files, Word Processing, Spreadsheets, Presentations, Database and Email and Internet (AlKhezzi & Alqahtani, 2010). Teachers are required to take all the units; they are advantageous in their teaching and also for promotion.

Table 1

Participant Demographics

Name*	Age	Work Experience	Subject Area
Karima	29	6 years	Arabic
Hana	26	4 years	Social Studies
Walaa	31	8 years	English
Dina	28	4 years	Science
Esraa	33	8 years	Math
Nuha	24	6 years	Religion

* All names are pseudonyms

In choosing the participant teachers from the two schools, a purposeful sampling approach was employed. According to Patton (1990), purposeful sampling seeks information-rich cases which can be studied in depth. There were three

criteria used for selecting the teachers: those who taught several subjects of the curriculum excluding computer, art, music and physical education; those with 4-8 years teaching experience; and teachers well-skilled in the use of

computers. After the school administrators were orally informed of the study, the selected teachers were invited to complete a consent form and to learn about the details of the study. A total of six teachers, three from each school, fit the three selection criteria and they became the participants for the study (see Table 1).

Data Collection and Analysis

The interview was used because of the small sample size and as a research tool, the interview allows the researcher to gain deeper insight into educational and other social issues by understanding the experience of the individuals whose lives reflect those issues (Seidman, 2006). Participants were interviewed individually for 35-40 minutes in an open-ended interview that consisted of 15 questions. The set of questions included questions about Rogers' five perceived attributes, software applications used and problems encountered using the computer. The interviews were audio-recorded, and then transcribed.

Data analysis involved several steps. After the researchers transcribed the interviews, they identified common patterns among responses in the script. These patterns were then grouped into categories and from this themes were identified. In this way, the researchers were able to gain a deeper insight into the Kuwaiti teacher's experiences regarding their use of computers.

Findings

Seven themes were identified: professional use of computers, benefits of computers, professional development, and difficulty of use, class performance, lack of computers and resources, and accessibility. These themes are elaborated below.

Professional use of Computers

The most utilized applications by teachers in both schools were: Word, PowerPoint, and the Internet; the least used was Excel. Priority use was for preparing teacher-related documents (Word), for instructional purposes (Power point presentations), for locating materials (Internet), and lastly for data entry of students' grades (Excel). Walaa, the

English teacher explained that she used Word for "lesson preparation and inserting pictures; PowerPoint for "inserting songs and animation"; the Internet for "information searching," and Excel for "entering students' grades".

Benefits of Computers

The participants found computers to benefit them in their teaching. One of the teachers described that through the use of computers, "it is easier and faster to do things and it saves time". Other teachers emphasized that the computer "facilitates lesson preparation" and thus they "use it a lot for this purpose".

Training

Teachers were exposed to computers through various training programs during college and through taking the mandatory ICDL training program. Some teachers said the training was beneficial, while others said that their daily experience was more important; for example, Karima, the Arabic teacher stated, "The ICDL is for beginners only, I have more practical experience and so I did not take".

Difficulty of Use

The teachers said that it was difficult to deal with computer troubleshooting issues. Some teachers stated they did not try to resolve their problems and some received help from their husbands. Hana, the Social Studies teacher said, "My husband helps me if I do not know how to do it." Others indicated that they tried by themselves at the beginning but if the problem persisted they asked colleagues or a computer technician. One teacher stated, "I receive help if I have difficulty with downloading some items, but dealing with hardware is more difficult than software."

Class Performance

The participants indicated that students tended to perform better in class when computers were used. For instance, Karima, the Arabic teacher stated that students tend to memorize the information more easily when the computer was used:

The students get attracted to the computers and I noticed that there is an increase in the level of their

performance. The students interact more with me and they learn the words easily and so I do not need to repeat myself.

Lack of Computers and Resources

The participants emphasized that, due to the lack of computers in classrooms, students were not exposed to computerized hands-on-activities, but they learned their skills via the computer lab sessions. One teacher emphasized that, "Computer sessions are offered once or twice a week, whereby they [the students] learn basic operations like how to turn on a computer, use the mouse and keyboard, as well as learn how to surf the Internet.

Furthermore, teachers indicated that despite the fact that computer labs were available, they faced some challenges in using them with their students. Nuha gave this example, "We face the lack of connection reliability, the lack of frequent computer maintenance, insufficient number of computers for each student, and the lack of electrical jacks that allow all computers to be connected."

Accessibility

The Kuwaiti teachers discussed the issue of lack of computers in classrooms and not having access to the computer lab. One teacher emphasized that, "We have to share the computer labs with other teachers and so we do not have access to the lab at all times."

Discussion

In answering the first research question on the nature of the use of computer technology by Kuwaiti elementary school teachers it was found that Kuwaiti teachers face the problem of accessing computers at all times. Classrooms are not equipped with computers and computer labs are shared between all the grade levels. Jaber and Moore (1999) emphasize that instructional activities and frequency of use of computers are influenced by access. Having computers in the computer lab would not facilitate frequent usage as when they are accessible in the classroom (Al-Gahtani, 2003). If computers were in the classroom, the teachers would get motivated to use them and with frequent practice would likely develop favorable attitudes towards them and

thus become potential adopters. Scheduling classes into the computer lab for timing or security reasons was another hindrance to using computers in teaching, a reality that is documented by Oncu, Delialioglu & Brown(2008); and Zhao, Pugh, Sheldon, & Byers, (2002).

The participants prioritized their use of the computer as follows: for preparing teacher materials (Word), for instruction (PowerPoint), for locating materials (Internet) and for data entry (Excel). Low use of spreadsheets is similar to findings by Alkhezzi and Alqahtani (2010) that spreadsheets (Excel) were the least used as teachers had little use for them in their work. The order of use differed from what Abougamos & Al-Harsh (2004) found in their study: spreadsheets, word processing then presentations. The study results showed that each subject area determined the type of computer applications used. For instance, the Arabic teacher did not see the benefit of using presentations in class instruction, but used Word for preparing daily worksheets. This relevance to subject matter holds in other studies. Alkhezzi and Alqahtani, (2010) found that the use of spreadsheets was high by teachers in the science department and not by those in the art department as they are more related to Science and Mathematics needs. Oncu et al., (2008) refer to this feature of subject relevance as "applicability", which is that teachers will more likely adopt technology if the technology and the topic of the lesson match.

The second research question was about how Kuwaiti teachers perceive the use of computer technology. The results are framed according to Rogers' (2003) five attributes of an innovation: *relative advantage, compatibility, complexity, trialability and observability*. Kuwaiti teachers perceive computers as having relative advantage over their traditional teaching techniques. Computers allowed for quick access to information, improved storage and retrieval of students' records and saved time when preparing materials. This finding echoes that from a study by Oncu et al., (2008) that reported that perceived usefulness of technology was linked to teachers' expectations of and beliefs about the benefit of technology

in enhancing lessons, providing convenience, and fostering student learning and understanding. Compatibility also was evident in this study as the Kuwaiti teachers perceived computers to match their curriculum goals, to be reliable and accurate, and made up for limited classroom time. To address the lack of computers in the classroom, some of these teachers used their own personal laptops for class presentations, and others found means of accessing and using them either at home or in school computer labs.

Complexity and trialability were evident in this study. Teachers faced the problem of dealing with troubleshooting and computer malfunctions. They tried to deal with simple problems like wire connections but for more complex problems they sought help from their peers, a technician or a family member. As for the use of computer applications, the teachers indicated that the ICDL training units assisted them in knowing how to use application programs; hence they did not perceive computers as being difficult to use. Thus the ICDL training seemed effective in addressing the issue of complexity as well as trialability for it provided opportunities for the teachers to practice using computers and the application programs. They were therefore more comfortable using them in the classroom. Their previous experience with computers during college also contributed to their comfort level with using computers in school. The study also showed that some teachers attended the ICDL training sessions more for promotion than for acquiring skills for instruction or lesson preparation. This supports Al-Helsa (2005) who found that teachers attended the ICDL training primarily for promotion, salary increase, and pay bonuses.

The teachers in the study observed (observability) changes in their classrooms. They reported seeing more student attentiveness and enjoyment in class than when they used traditional methods of teaching. They also noted that students' performance increased as they engaged more with the class topic perhaps attracted by the multimedia

presentations (e.g. animation, audio and text, and more legible words than handwritten text on the blackboard). In addition, the weekly computer lab sessions lessened students' negative attitude towards computers.

Conclusion and Recommendations

This study investigated the extent of computer technology use by Kuwaiti teachers in two elementary public schools in the Capital district in Kuwait. Issues of ease of use, benefits and need were identified as contributing elements in Kuwaiti teachers' perception of how much computers are used in the classroom. This illustrates Rogers' (2003) concept of perceived attributes of an innovation whereby he emphasized that the perception of the potential adopter towards an innovation predicts the rate of adoption of the innovation. The lack of computers in the classrooms limited teachers' ability to demonstrate to their students the extent of the usefulness of computers and accordingly, to decide whether to adopt or reject the technology. The results of this study show that accessibility is very important for adopting computer technology in Kuwaiti schools. . All of the study participants suggested that there should be computers in each classroom to facilitate students' learning and to help teachers make better use of their time in doing lesson preparation. Along with more computers would go the need for more application programs and adequate technical support.

This study begins to fill the gap in the literature on Kuwaiti elementary school teachers' use of computer technology. More information could be provided by replicating the study with a larger sample size and having more detailed interviews about teachers' experience with computers in schools. To get a fuller picture of computer use in schools in Kuwait and the issue of adoption of the technology, studies should be conducted across genders and at other school levels. In such studies it would be important to also find out the part that teacher attitude plays in the adoption of or resistance to the technology.

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TEACHER VOICES FROM THE DUAL LANGUAGE CLASSROOM

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Bronfenbrenner's theory on ecological development was used as a framework for conceptualizing a study on implementing bilingual education in Arabic and Swedish languages in schools in a multilingual geographic area in Sweden. The research approach was to focus on the teachers talking about their experiences of implementing bilingual education. Teachers' voices were accessed by the researcher through their diaries in which they recorded the benefits, problems and difficulties experienced in their teaching. This was different from the usual approach of focusing on students and their acquisition of languages.

Keywords: bilingual teaching, Bronfenbrenner on ecological development, second language acquisition, teacher diaries

In the last four to five decades Sweden has had a great influx of refugees, which has increased the bilingual and multilingual student population in the school system. The educational gap between these children and the children of native-born parents is of great concern and there are ongoing discussions about which teaching approaches to use to promote children's acquisition of a second language. Reviews of international literature (Bailey, 1996; Garcia, 2009) show that different teaching approaches may be used, e.g. dual teaching, parallel teaching, station teaching and team teaching. These are forms of co-teaching that mean that two or more teachers share responsibility for teaching some or all of the students assigned to a classroom.

In order to test out a dual teaching approach with the Arabic and Swedish languages in schools in Sweden the study reported in this article was done. The overarching purpose of the study was to illuminate the situation for managers, teachers, students and parents when transferring from mono-lingual to bilingual teaching and learning. Different test instruments were developed and tested in the pilot study. Questionnaires in both languages (Arabic and Swedish) were given to the parents; interviews were conducted with school managers and teachers; teachers kept diaries; students' language ability in Swedish and Arabic was diagnosed; and video recordings were made along with notes from feedback meetings. In this article the results using one of these data collection methods – teachers' diaries- are reported.

The Pilot Study

Some years ago the Swedish Government decided to support geographical areas with a large number of immigrants and refugees. These were also areas where unemployment and poor health predominated. As part of this state support, one of the local communities of Malmö decided on a bilingual program in Arabic and Swedish, the Arabic speaking group being the largest of the immigrant groups in Malmö. According to Graddol (2006) the Arabic language is growing faster than any other world language. A research group at Malmö School of Education was asked by the community to monitor the initiation, implementation and development of this bilingual program. In this pilot study two preschool class rooms having five teachers (2 Arabic speaking) and two grade 1 class rooms having six teachers (2 Arabic speaking) were involved. A total of 11 teachers, 87 students and 84 families (some of the students were siblings) participated in the study. Diaries were kept by the teachers and these diaries were analyzed by content analysis methods recommended by Krippendorff (1980) and Neuendorff (2002).

The conclusion from the pilot study was that diaries as a research tool was a promising way to have the teachers' voices heard and to get a deeper understanding of teachers' work and behavior during a changing period. The diaries showed that this bilingual program was not implemented as planned by the school authorities as there was no curriculum for Swedish-Arabic teaching. This pilot study instigated a

three-year longitudinal study that was supported by the Swedish Scientific Research Council.

The Three-Year Study

The purpose of the longer study was to examine the implementation of a bilingual teaching program in the Arabic and Swedish languages and the impact of this instruction on the children's language development and acquisition of knowledge, related to relevant background variables as well as to the social context of which the school is a part. Teachers' diaries were the focus of the main research question: Are there any consequences for a Swedish school when bilingual (Arabic- Swedish) instruction is introduced?

Theoretical and methodological approach

Bronfenbrenner's theory of "the experimental ecology of education" provided the theoretical framework for the study. Bronfenbrenner (1979) introduces four different levels of influence: the micro, the meso, the exo, the macro and later a fifth level – the chronological level. The theory suggests that intellectual and social development are explained in terms of relationships between individuals and their environment. The *meso* level provides the connections between structures of the individual's *micro* level. The *exo* level focuses the relationship between different systems in the society, for instance, social security systems, employment insurances, and educational courses. The structures in this level impact the individual's development by interacting with structures in the individual's micro and meso levels. The individual may not be directly involved at this, the exo level, but does feel the positive or negative forces involved in the interaction with his own (micro) system. For example, at this level parents' work place schedules, or community-based family resources as well as unemployment interact and influence the individual.

According to Bronfenbrenner (1979), the *macro* level is considered to be the outermost level in the individual's environment and consists of cultural values, customs and laws, which have an influence, explicitly or inexplicitly, throughout the interactions of all the other levels.

Bronfenbrenner further claims that the ecological environment is conceived as a set of nested structures. Thus, changes and conflicts in any level will ripple throughout all other levels. It can therefore be concluded that the interaction between factors in the individual's maturing biology, his or her immediate family/ community environment and the societal landscape fuels and influences his/her development. In this study the teachers, working in pairs, were the object of study within Bronfenbrenner's theory, which focuses on the relationships between individuals as well as between different levels. In order to get a deeper understanding of the teachers' work and issues in this approach to bilingual education the teachers' diaries were used as a research tool.

Diary as a Research Tool

Teachers, student teachers as well as researchers have found reflection to be of great help in their self-development. Reflection often works well using a diary, because patterns in individual's everyday experience become visible (Sa, 2002). The diaries were unstructured although some guidelines were provided at the outset. In order to inform the diarists what to write about or comment on, the following foci were given: planning activity, implementation (conducting instruction), evaluation, and relationships between those involved in this kind of teaching activity. The diaries were written in Swedish, both by the Arabic speaking and the Swedish speaking teachers. Data from a total of eleven teachers over three years is reflected in the results presented in this article. Data was collected each September-October and each March-April, 2006-2008. This means that four diaries should have been written per teacher per year. However, not all teachers completed diaries as they missed writing for different reasons. A teacher was busy in further training or absent on holidays or was ill; so a total of 44 diaries over three years were analyzed. It is of note that there was no prescribed Arabic language curriculum; the syllabus, the content and teaching methods were decided by the teachers.

Results

From a first reading of the 44 diaries four main categories emerged: planning, conducting (implementing), teachers' evaluation, and teachers' relationships. It became evident that finer categories were needed. After a number of re-readings the following ten categories became apparent: planning; conducting (here two different categories emerged, i.e. description of what they did and why they did it); teachers' evaluation of themselves and of their students; teachers' relationships to the local school leaders, to their students, to students' parents and to other teachers; and a tenth category dealing with teachers' attitudes towards bilingual instruction and towards the other teacher in the two-teacher partnership.

Planning

Administrators as well as researchers of bilingual programs often talk about the enormous amount of planning time needed due to the complex work teachers are doing in bilingual classrooms (Lessow-Hurley, 2009). The results showed that a few teachers often mentioned that they devoted much time to planning, and particularly in the beginning of the project period. Later on planning activities were less frequently mentioned and were less ambitious. Some excerpts¹ from the diaries illustrate these results:

"X and I have together prepared how we wanted to do the instruction" (S, Grade 2)

This first excerpt shows the desirable situation for planning. The next ones show the more common situation:

"Today we had our planning time but it was devoted to a lot of other things, like general information and recess guards" (A, Grade 1).

There were many complaints, mainly from the Swedish speaking teachers, about lack of planning time. Although there was time in the timetable, other things seemed to intrude frequently:

¹ X is an Arabic speaking teaching; A is an Arabic speaking teacher; S is a Swedish speaking teacher.

"Now we were to continue our theme, but instruction swayed to and fro because we had had no time for planning" (S, Grade 1).

"We had also big problems finding planning time for the two of us" (S, Grade 2).

"On Thursdays we have planning time reserved, but X was busy teaching another class" (S, Grade 3).

Due to the fact that there was a great lack of Arabic material and textbooks some teachers took on an enormous task preparing classroom activities. In spite of the great amount of planning time there was often a mismatch between what was planned and what was actually taught and there were also many interruptions of different kinds that disturbed the teachers thus causing frustration and disappointments. Although the local Board of Education as well as many of the teachers was accustomed to the context of multilingual classrooms they had obviously not been aware of how much time for planning actually was needed when implementing a new mode of teaching.

Conducting (implementing instruction)

In this category the ambition was to analyze the actual instructional activities planned and why the teachers had planned those activities, for

"We thought that the pupils would gain when following a well-known structure - although variation also is important" (S, Grade 1).

However it was more typical for many of the diarists to tell only what they had done and not why. Therefore this category was split into two: records of activities that had been done in the classroom and records of teachers' intentions for using the actual activities. Of 11 teacher-diarists, four persons told what objectives the chosen activities were to meet, for example,

The children drew a map of the area closest to the school. The intention from me was to prepare the

children for the approaching theme – geography and the region-theme (A, Grade 2).

I told them a fairy tale, “The Small Tailor”. My intention was to teach the children that a person’s strength was shown through intelligence and smart problem solving - not through muscles (A, Grade 2).

Stories of personal experiences were very succinct accounts of multiple events. Whereas the Swedish speaking teachers gave longer explanations, elaborating the activities with more emotion and evaluation, the Arabic speaking teachers seemed to be relatively sketchy in their accounts. This might be due to cultural differences in ways of telling and understanding where they might have understood the words but not realized what the request actually was about.

Relationships

Another category was about the teacher-diarists’ relationships to different groups in the school, such as students, students’ parents, local school leaders and teacher colleagues. The following excerpts show the teachers’ reflections on these relationships:

Teacher – students

Upbringing is a difficult area and closely connected to an individual’s values and beliefs. In this study some students showed lack of respect for the teachers, for discipline in the classroom and also regarding too slow a teaching tempo.

The class had physical training, but a number of the students had forgotten to bring their suit so while not participating they went up to mischief and interfered in the teaching (S, Grade 1).

We went to see a movie. Everything worked nicely. We came back to the school but during the recess some of the children managed to enter the classroom, where they knocked down chairs, threw paper-slips, materials and books on the floor (S, Grade 2).

We had some problems with two girls, who refused to work together with the two boys in their work group, which I had structured. I became very frustrated. The girls finally joined two other groups (S, Grade 3).

What teachers know and do have a most important influence on what students learn. The teachers expressed a combination of trust, confidence and faith in their students and a deep admiration for their strengths permeated the teachers’ diaries. The teachers believed in their students. But will such positive attitudes be sustained when things get rough? When students get restless or agitated, disobedient or too talkative? As can be seen from the excerpts, conflicts may arise particularly when the students are from a background different from the teacher’s. It was noticed in the diaries that the Arabic speaking teachers (A and X) never complained about the students’ way of behaving; it was the Swedish speaking teachers (S) who complained.

Teacher – students’ parents

Cooperation between teacher and parents is very important in order to support children’s development and learning. Therefore it is valuable for the teacher to know as much as possible about his/her pupils. Bilingual children and their parents seem to have an extremely sensitive ear for signals from their surrounding society, so a smooth cooperation between teacher and parents is very important. However, the liberal view characterizing the Swedish school regarding upbringing are often sources of misunderstandings and conflicts between teachers and their students’ parents.

Establishing solid and positive connections between home and school is a demanding and tactful activity, especially when the parents are of a different culture and from another country than the teacher. Teachers who know themselves and their students well are in a much better position to treat students and their families with respect and fairness. In this study the Arabic speaking teachers had, to a considerable extent, facilitated the relationships with the students’ families, who found these teachers helpful, trustworthy and reliable. The first of the series of the excerpts below is from

a Swedish teacher, who had an Arab teacher as her teaching partner,

All the parents are very satisfied and happy due to our way of teaching and due to X's presence in the class (S, Grade 1).

Note that the other three excerpts are from the diaries of Arabic speaking teachers:

I have phoned the parents many times and asked them for help, which the children also got (A, Grade 2).

When the students had left school I wrote to the parents and explained the new organization of students' homework (A, Grade 2).

The mothers sometimes come to see me and now and then want to discuss behavior problems. I try to answer the very best I can (A, Grade 3).

Many Swedish teachers expect parents to help their children with their homework; but some immigrant parents see teaching as the job of the teachers, and parents' job is to see that their children arrive at school healthy, clean and cared for. However, in this study done in schools located in a poor part of Malmö and characterized by many immigrants and high unemployment, some parents did not fulfill their obligations. As claimed by Gough (1991), "Trying to educate the young without help and support from home is akin to trying to rake leaves in a high wind" (p. 339).

Teacher – local school leaders

In this study the relationship between teachers and their local school leaders was complicated. On one hand the teachers were very positive and grateful for help and mentoring given to them; on the other hand they were sometimes irritated and frustrated over the decisions made by their local school leaders. They recorded:

The autumn semester was not so good. It started already at the scheduling/timetabling period when a number of teachers realized they had to participate in

several teacher communities – sometimes at the same time (S, Grade 2).

This school year has not passed smoothly. When last semester ended I was promised to get an extra teacher resource. During the summer my colleague fell ill and when the autumn semester started I was informed, by the local school leaders that somebody would act as her substitute- but having only 50% [time]. This substitute was completely inexperienced and had no idea about the intentions behind the project. I can only establish the fact that everything went wrong. Bilingualism as a goal was obviously set aside (S, Grade 2).

It is important that key stakeholders share a philosophy or system of principles guiding instruction. Then educational activities aimed at changing the processes and products of teaching and learning in school can necessarily require the local school leaders and the teachers to develop new understandings and skills, to be in agreement on essential issues, and to follow through on decisions made. This is an area of focus that seldom is approached in educational research. One reason might be that the two groups are reluctant to reflect. Another reason might be the unwillingness from economic supporters to let this relationship be scrutinized.

Teacher - teacher colleagues

The teachers in the study were acutely aware of differences among teachers in the school with respect to bilingual teaching. Also the lack of discipline in and outside of the classroom was cause for much discussion between different teachers.

There were voices saying we had too little of the Arabic language while there were others emphasizing we had too little in the Swedish language. However, when we talk about something we do it in both languages. We have talked about 50/50 Arabic/Swedish (S, Grade 2).

In summary there were too much [many] misunderstandings and mistakes during the first autumn

semester, leading to frustration and bad teaching. We had also problems finding planning time, which is extremely important for a successful cooperation (A, Grade 2).

Still, I feel frustration and disappointment regarding the last school year. Bilingualism as an objective has been neglected. This situation also affected the working climate as well as the relationship between my teacher colleague and me. It is all to my regret (S, Grade 2).

Everyone in school has a culture and everyone comes to school with cultural knowledge. But often only the most obvious manifestations of culture are seen, thereby missing the more fundamental expressions of different cultures; it is like an iceberg, where nine-tenths is below the surface. When assumptions are not shared, miscommunication happens. Unfortunately, the people involved do not often realize they are misreading each other as they interpret the other person through their own lens and translate all that does not fit as strange or even wrong. In this study other teacher colleagues as well as media added fuel to the negative attitudes that existed and instead of emphasizing and empowering the teachers in the study they questioned and severely criticized their work.

Attitude to the teacher partner

For the project the teachers worked in pairs. Working together in the same classroom at the same time is demanding and calls for a positive team chemistry. It takes time to develop and establish a solid and trusting relationship between each other. One teacher recorded:

During a period X was much out of the school, several days in a row, due to illness, studies etc., and the other teachers in the classroom were totally stuck. Strange, but on the other hand, it shows how dependent they were upon the Arabic speaking teacher (S, Grade 1).

When trust and respect are established and there is comfortable and effective interpersonal communication

within the teams, there can be much benefit to both teachers and students.

The children's benefit would not have [have] been so good if X had [had] not been in the classroom, because too many of the students would not have understood everything. Now, X could translate and X and I were very satisfied with that school day (S, Grade 1).

"We had a math lesson in both Arabic and Swedish. Sometimes it is nice to be able to explain various concepts in both languages" (S, Grade 2).

On the other hand there can be difficulties, if the two co-working teachers do not share their beliefs, teaching models and expectations, and other information relevant to the classroom and if there is no chemistry between them. The diaries revealed examples of disagreement and dissatisfaction between some teacher partners.

"I hope my teacher partner becomes more positive and changes regarding how much time and space she gives to the Arabic language training" (A, Grade 2).

"My Swedish speaking colleague wanted to have most of the speaking space – as usual" (A, Grade 2).

It is me who takes care of everything and gets everything going. Nice for X! However, the local school leaders have decided math instruction should be taken care of by the Arabic speaking teacher. But X doesn't care a bit about that. She leaves everything to me – and I do it (S, Grade 3).

The teacher partners must respect and trust each other; must feel valued by each other; have realistic expectations of each other; and have a voice in the implementation of instruction.

"I am still critical towards my teacher partner who only gives space and time to me to translate more difficult words and concepts" (A, Grade 3).

But, on the other hand, to reach a collaborative partnership is not easy and can take between a few weeks to two years or more. Despite disagreements and dissatisfactions, the overall impression from the diaries was that the teachers involved in the project recognized the value for the children to achieve literacy in the two languages, Arabic and Swedish.

Discussion

The positive results regarding bilingual education shown by Cummins (2000, 2001) were not realized in this project. One reason might be that in Cummins' projects there were 50% French speaking and 50% English speaking students. This meant that the students were able to hear and practice each language (French and English) in numerous situations. In the Malmö project the whole classes were Arabic speaking and their school and community surroundings consisted of various different languages. There were very few Swedish speaking persons in the schools or in the surrounding residential areas. In addition, there have been concerns about the cultural appropriateness of importing pedagogical techniques as well as teaching and learning modes from one culture into another culture. "The impact of one set of norms on another depends on the interrelationships between people, their positioning as self, and their positioning in relation to the other" (Fox, 2009, 54). Another reason for the differences could be seen in the teachers' explicit and implicit expectations of the students as well as the common attitude to the students' first language. The teachers' diaries revealed challenges for both teachers and students.

Notwithstanding, these challenges are isolated and are not insurmountable. Multilingual and multicultural classrooms are common because migration is now global. According to Fox (2009), "Every education system has now become affected, not only by a globalised information technology and globalised market, but also by a global spread of natural disasters, mass dislocation through migration, environmental pollution and degradation" (p.48). Bronfenbrenner's ecological model is very helpful for understanding some of the different factors that affect an individual's development and the levels of interactions

within classrooms. Some researchers suggest that the model is inadequate for today's complex classrooms. Engler (2007) recommends adding another fifth level to Bronfenbrenner's model, called the resilience level. The resilience level might explain why individuals from the same challenging environment might achieve different levels of success and happiness. Drakenberg (2004, 2006), as well as Horck (2006) and Christensen (2010) suggest that it is necessary to expand the ecological theory to enclose an ex-macro level, containing the influences of globalization upon national and local communities' activities.

Methodologically speaking, research by teachers within their institutions should lead to professional growth and validate their beliefs and experiential knowledge. To use diaries as a data collection method has some pitfalls, and also many advantages. The participants' modes of writing diaries varied. Some of the teacher diarists were very personal in what they wrote, while others tried to stand outside of their own behavior and ways of acting. The level of accuracy differed. Some diarists were comprehensive and diligent; they wrote entries every day or every week and summarized at the end of the month. Several missed the recording time for different reasons. The Arabic speaking diarists might have had difficulty writing in Swedish which is their second language, so they might not have expressed themselves as fully as they wished. The study could have been improved by using data from other sources such as interviews and feedback meetings to complement the diaries. Thus conclusions reached would have been corroborated and therefore more reliable.

Evaluation and Conclusion

Overall, the teacher diarists perceived that the pupils' language proficiency was constantly improving, both qualitatively and quantitatively. The respect and nurturing of the two languages presented in the schools has led to teachers' expressions of excitement once they had made it through the initial semesters of planning and implementing the different modes of teaching. They also emphasized that they had lots of support, once staff development and teacher planning time were in place. Another very positive result

was that the teachers as well as their pupils demonstrated linguistic tolerance as they learned to value different language practices. Also the schools in the research study

were given a primary role in the development and growth of bilingualism as a show of positive regard for their work.

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TEACHERS' PERCEPTION OF DIFFICULTY LEVELS OF TOPICS IN TEACHERS' PERCEPTIONS OF DIFFICULTY LEVEL OF SENIOR SECONDARY SCHOOL GEOGRAPHY

Folajogun Veronica Falaye

Forty eight geography teachers from 24 public secondary schools in South - West, Nigeria rated the difficulty level of the topics of the geography syllabus. Results showed that only one of 22 topics (elementary surveying) was rated as very difficult. The perception of difficulty levels of geography topics was significantly related to teachers' level of education and years of teaching experience, but not to gender. Issues identified for further study include increasing teaching experience time for preservice teachers, and the discrepancy between teachers' perception and the general assumptions about the difficulty of the geography syllabus.

Keywords: difficulty level, geography syllabus, teacher perception

In order to ensure the attainment of goals of education in any nation, the contents and activities of the school learning program are presented in a curriculum for each subject area. The curriculum is influenced by the needs of the society. The syllabus, a derivative of the curriculum, presents the various knowledge topics on the actual subject matter of the learning program. It guides the teachers' choice of instructional strategies for facilitating students' learning and achievement. How well students achieve is a big school factor in judging the performance of the secondary education sector. Other school factors are the curriculum, the teacher and their teaching effectiveness.

In the high schools of South -West, Nigeria students generally perform poorly in geography. Students and teachers believe that this poor performance is related to an overloaded curriculum, difficult subject matter and the inability of teachers to effectively cover the topics. To what extent is this general assumption true? This study seeks an answer by uncovering teachers' perceptions of the difficulty level of the senior secondary geography syllabus.

Literature Review

Research that assesses the difficulty levels of contents of senior secondary school subjects in the social sciences in the Nigerian education system is limited and there is even less in geography. The few studies of subject difficulty level that were found concentrated on students' perspectives. For

example, Onabanjo (1999) investigated students' perception of topic difficulty in mathematics, and found that well over half of the students perceived trigonometry and practical geometry as the most difficult sections in the Senior Secondary Mathematics syllabus.

The West African Examination Council (1995, 1997) investigated the difficulty level of some senior secondary certificate syllabuses: mathematics, further mathematics, chemistry and English language. Fadare (2001) compared the West African Examinations' Council (WAEC) and the National Examinations' Council (NECO) physics papers in terms of their item difficulty. The study revealed that WAEC items were more difficult than NECO items. In these studies difficulty levels were assessed from the students' viewpoint. This study assesses the difficulty level of the geography syllabus from the point of view of geography teachers.

There is general agreement about the importance of high quality teachers for high student achievement. While there is no consensus among researchers, practitioners and parents about exactly which specific qualities and characteristics make a high quality and effective teacher, there is some evidence that teacher's content knowledge, teaching experience, training and certification, and overall academic ability are qualities that are related to high student achievement.

Studies by Greenwald, Hedges & Laine (1996), and Rivkin, Hanushek & Kain (2005) showed that students taught by experienced teachers achieved significantly higher than students of teachers with little experience. On the other hand, Andrew & Schwab (1995), and Denton & Peters (1988) were of the opinion that teachers with less years of experience can be highly effective if well prepared. Rosenholtz (1986) argued that the advantages of experience may even out after some years. This may be so because experienced teachers seem to grow tired and lose interest in their job over time. But the benefits of teaching experience may interact with other factors such as opportunities for further learning and collaboration to improve teaching effectiveness.

With regards to training and certification, there are several studies that provide evidence that students taught by certified teachers perform better than students of uncertified teachers, mostly in mathematics and sciences (Darling-Hammond, 2000; Fuller & Alexander, 2004; Laczko-Kerr & Berliner, 2000; Oyedeji, 1996). Reasons for the differences in effectiveness of such teachers, in addition to content knowledge, include teaching methodology, classroom management skills and knowledge of the psychology of the learner, all of which make certified teachers better at the job than those who teach without pedagogical training (Greenwald, Hedges, & Laine, 1996). However, Goldhaber & Brewer (2000) disputed this finding. They found that advanced degrees in general were not associated with higher student performance; but, if advanced degrees were subject specific, students taught by such teachers recorded higher achievements. Darling – Hammond (2000) found that teachers' subject matter knowledge is associated with students' achievement. In contrast, Ferguson & Ladd (1996), and Rivkin, Hanushek & Kain (2005) found no difference in students' performance of teachers with graduate level training and those with only an undergraduate degree in their content area. Fetler (1999) found a strong negative relationship between average student scores and the percentage of teachers on emergency certificates.

The influence of teacher gender on students' achievement has been extensively documented. However, the pattern of influence has been controversial (Adesoji, 1999; Aremu, 1999 & Toh, 1993). Notwithstanding these contrary findings, it is conventional to believe that teachers' qualification and experience are related to student achievement. With this background, the study examines the relationship among teachers' teaching experience, level of education and gender and teachers' perception of the difficulty level of the Senior Secondary School Geography syllabus.

Purpose of the Study

The Senior Secondary School Geography curriculum is organized under five broad content areas, each having a different number of topics, as listed in Appendix 1. In total, there are twenty-two (22) topics in the syllabus. The study investigated the difficulty levels of the topics of the senior secondary geography syllabus as perceived by geography teachers. In addition, the study examined the relationship between teachers' gender, level of education and experience and their perceptions of difficulty levels of the senior secondary geography topics

Research Questions

1. Which of the senior secondary geography topics are rated difficult and which are rated easy by the teachers?
2. Is there a significant difference between male and female teachers' perception of the difficulty levels of senior secondary geography topics?
3. Is there any significant difference in the perception of difficulty levels of geography topics by teachers with different educational qualifications?
4. Is there any relationship between teachers' perception of the difficulty levels of geography topics and their teaching experience?

Methodology

This is a non-experimental research study that used the survey method for collecting data.

Sample and Sampling Techniques

Forty eight (48) geography teachers from 24 secondary schools in South -West, Nigeria participated in the study. They were from 24 schools, four schools from each of the six states that make up the South -West geo-political zone of Nigeria. There is a dearth of geography teachers in most secondary schools in the region; therefore, schools that had less than two teachers were excluded from the study, while schools that have up to two geography teachers teaching the senior secondary classes were purposively selected from each of the 24 schools. There were 13 female and 35 male teachers. In terms of qualification the teachers fell into three groups: those with a first degree in geography but no professional teaching qualification, those with a degree in geography and teacher certification, and those who had additional higher degrees in geography. The sample of teachers ranged from those with little teaching experience to teachers with over 20 years experience, with five years as average.

Data Collecting Instrument

A questionnaire for assessing teachers’ perceived difficulty level of geography topics in the syllabus was used for data collection. The instrument consisted of two sections. Section A requested background information from the

Table 1
Teachers’ perception of the Difficulty Levels of Geography Broad Content Areas

Geography Broad Content Areas	VE	E	D	VD
1. Practical Geography (Topics 1-3)	20 (41.7)	18 (37.5)	7 (14.6)	3 (6.2)
2. Physical Geography (Topics 4-14)	21 (43.8)	21 (43.8)	5 (10.3)	1 (2.1)
3. Human Geography (Topics 15-19)	23 (47.9)	21 (43.7)	3 (6.3)	1 (2.1)
4. Regional Geography of Nigeria (Topic 20)	21 (43.8)	22 (45.8)	3 (6.2)	1 (4.2)
5. Geography of Africa (Topics 21-22)	11 (22.9)	2 (60.4)	7 (14.6)	1 (2.1)

Almost half (47.9 %) of the teachers rated the broad area of Human Geography as the easiest, followed by Physical Geography and Regional Geography of Nigeria (Table 1).

Question 2. Is there a significant difference between male and female teachers’ perception of the difficulty level of senior secondary geography topics?

respondents, while section B listed the topics in the five areas of the senior secondary geography syllabus. The teachers were asked to rate the difficulty level of all the topics on a four- point Likert scale of Very Easy (VE), Easy (E), Difficult (D) or Very Difficult (VD).

Data Collection and Analysis

Six research assistants distributed the questionnaire to teachers in the selected schools; one assistant was assigned to a state. The research assistants were familiarized with the purpose of the study before going into the schools. The data collected were analyzed using descriptive statistics, t-test, ANOVA and Pearson Correlation.

Results

Question 1. Which of the senior secondary geography topics are rated difficult and easy by the teachers?

A close look at the 22 topics across the five broad content areas reveals that 68.7% of the geography teachers rated as very easy topics: rocks (types, formation, characteristics and uses), 60.4% rated settlement (types, patterns and factors affecting location, growth and size, functions), and similarly 60.4% rated map reading and interpretation. Among all the topics, elementary surveying was rated as the most difficult (see Appendix 1).

Table 2 shows that there is no significant difference in how the male and female teachers perceived the difficulty level of the topics in the geography syllabus, although with a mean score of 74.5 for female teachers and 71.4 for male teachers, the female teachers rated geography topics as more difficult than their male counterparts did.

Table 2

T-test Comparison of Male and Female Teachers' perception of Difficulty Level of Geography Topics

Teacher	N	Mean	SD	T-obs	Df	Sig (P)	Remarks
Male	35	71.4	9.43				
Female	13	74.5	6.67	1.10	46	.278	*NS

*NS: t-test not significant at 0.05 alpha level.

Question 3. Is there a significant difference in the perception of difficulty levels of geography topics by teachers with different educational qualifications?

Table 3 shows that F-observed, which indicates the differences in the rating of the difficulty level of geography topics by subject teachers with different educational

Table 3

Comparison of Difficulty Levels of Geography Topics as Perceived by Teachers with different Educational Qualifications

	Sum of Squares	Df	Mean Square	F	Sig (P)	Remarks
Between Groups	824.94	5	164.99	2.45	.049	*S
Within Groups	2828.056	42	67.34			
Total	3653.00	47				

*Significant at 0.05 alpha level.

Question 4. Is there any relationship between teachers' perception of the difficulty levels of geography topics and their teaching experience?

The results showed, with this sample of 48 teachers' ratings, a negative correlation (-0.078) between teachers' teaching experience and their rating of the difficulty levels of the senior school geography topics. The negative correlation suggests that with increasing number of years of teaching experience, the less difficult teachers perceived geography topics. The relationship between the perception of difficulty levels of geography topics and teacher's teaching experience is, however, not significant ($p = .05$).

Discussion

This study found that among the five broad content areas of the Senior Secondary School Geography syllabus, Human Geography was rated as the easiest followed by the geography of Nigeria and Elements of Physical Geography. The five topics which make up Human Geography were rated as very easy. This is not unexpected as the themes such as world population, settlement types, patterns, size, functions and factors affecting their location, transportation

and manufacturing industries, deal with familiar issues that affect the day to day activities of people. This implies that there is a difference in teachers' rating of the difficulty levels of geography topics based on their educational qualifications, and that difference in rating is significant ($p = 0.05$)

and manufacturing industries, deal with familiar issues that affect the day to day activities of people. The same explanation could also be offered for the observed rating of Geography of Nigeria and Physical Geography. Elementary surveying, which was rated as the most difficult topic in Practical Geography, is a relatively new topic in the syllabus. That may explain the rating as teachers may not be well prepared as yet to teach this unit.

While there is no significant difference between the male and female teachers' rating of difficulty levels of the senior secondary geography topics, the relationship between teachers' level of education and their rating is noteworthy. It would seem from this study that teachers with high qualification found geography topics easier than their counterparts with a lower level of education. It can be assumed that the higher the level of qualification, the more depth would have been covered in the course of training; so, it can be argued that those with a high level of education would most likely find many geography topics easy. This finding is consistent with those of Fuller & Alexander

(2004); Laczko - Kerr & Berliner (2002); Darling - Hammond (1999); and Fertler (1999).

With respect to teachers' experience, a similar pattern of response emerged. Teachers who taught geography over a long period of time (20 years and more) found many of the topics easy. It seems obvious that over time, teachers would have been able to master the content better than teachers with little or no teaching experience. This finding is in line with those by Greenwald, Hedges & Laine (1996) and Rivkin, Hanushek & Kain (2005), but not with that of Rosenholtz (1986) who argued that teachers' experience does not always relate to their effectiveness.

Summary and Conclusion

This study assessed how geography teachers rated the difficulty levels of the Secondary School Geography syllabus used in the schools of South -West, Nigeria. Practicing geography teachers rated the difficulty levels of the topics in the syllabus on a four-point scale of very easy, easy, difficult and very difficult. The findings revealed that teachers rated some topics under Human Geography, Physical Geography and Geography of Nigeria as the easiest, while elementary surveying was judged as the most difficult of all the topics. Teachers' perception of the difficulty levels was related to their teaching experience and qualification. Therefore, rather than allow generalists to teach geography at the senior secondary school level, efforts should be made to use certified subject specialists who are experienced teachers. However, generalization of the findings should be done with caution due to the small sample used for this study.

Implications for Teacher Education

The findings of this survey are specific to the context of geography teaching in the schools of South -West, Nigeria. Most geography teachers rated themselves as not having much difficulty with many of the topics except with elementary surveying; notwithstanding, the teacher's knowledge should be updated periodically through refresher courses. Such courses should focus mainly on pedagogy, rather than subject content knowledge. Evidence from the study shows a significant relationship between teachers' perception of the difficulty levels of geography topics and teaching experience; therefore extending the period of teaching practice may help novice teachers to become more familiar with the geography topics.

It would seem that these findings belie the commonly held belief in South -West, Nigeria that geography is a difficult subject to teach. Perhaps this sample of 48 teachers was too small to test the belief. Perhaps the data was inaccurate, given that it was collected by self-ratings and teachers may not be keen to let others know that they have difficulty with any of the topics on the syllabus. The kind of self reporting that was done in this study reflects only how teachers 'felt' about the topic. This subjective data need to be supplemented by more objective data to get a truer picture of the perceived difficulty level of the geography topics for teachers. Perhaps the responsibility for secondary students' poor performance in geography is attributable to other factors yet to be identified and researched.

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IMPROVING SECONDARY TEACHERS' KNOWLEDGE OF ADOLESCENT DEVELOPMENT THROUGH TEENS' SELF-DOCUMENTARIES

M. Cecil Smith and Lee Shumow

Secondary education teachers learned about adolescent development after viewing, analyzing, and discussing selected student documentary videos. The TeenScene project recruited high school students to create videos about themselves. The videos were used as resources in adolescent development classes taken by preservice and in-service teachers. Viewing excerpts of videos enabled teachers to observe adolescents' behaviors, obtaining first-hand accounts of adolescents' views and perspectives. Teachers interpreted the excerpts from multiple perspectives and constructed detailed views of adolescents; but many teachers' responses lacked clarity, reflecting uncertainty about how to respond to adolescent learners. Nonetheless, results suggest that videos depicting real students can promote teachers' understandings of adolescents.

Keywords: adolescent development, adolescent voice, preservice teacher, in-service teacher

Adolescents' perspectives have been missing from most secondary teacher education curricula, educational publications, and educational policy discussions (Phelan, Davidson, & Yu, 1998). This is unfortunate because compelling theoretical, empirical, and practical reasons exist for including adolescents' views in secondary teacher education. Many teacher educators agree that constructivist and social constructivist approaches provide the most thorough and well-supported basis for teaching practice. Central to these approaches is the idea that teachers must understand the learner's knowledge, skill, beliefs, and perspective (Cook-Sather, 2002a; Daniels & Shumow, 2003). Teachers can better see the world from their students' perspectives when they listen and learn from their students (Clark, 1995; Finders, 1997; Heshusius, 1995; Rodgers, 2002). When adolescent students feel that they are respected as individuals, their voices are being heard, and that their teachers consider their views, they feel motivated to play a more active role in their education (Colsant, 1995; Cook-Sather, 2002c; Hudson-Ross, Cleary, & Casey, 1993; Oldfather et al., 1999; Smyth et al., 2004). Research in education, framed in a constructivist view, demonstrates that teachers who understand their students' perspectives are better teachers (Daniels & Shumow, 2003). Thus, standards in teacher education encourage a student-centered approach.

Yet, preparing teachers to be student centered is challenging for teacher educators. Olson and Bruner (1996) advise that "the first step in 'equipping' teachers for their task is to provide them access to the best available understanding of the mind of the child" (p. 12-13). Cook-Sather (2002a, 2002b) argues that teacher education programs must prepare teachers so that they want to listen to students and know how to do so. Indeed, in many teacher education classes, students learn from lectures, textbooks, academic media, and traditional writing assignments with little exposure to adolescents' perspectives. Field-based practicum experiences provide some opportunities to interact with adolescents, but those opportunities are often highly scripted. More resources exist today to help foster a foundation for student-centered practice (e.g., Cornelius-White & Harbaugh, 2009), but there are few practical ways for preservice teachers to practice observing and hearing adolescents prior to or during their field-based practicum experiences.

This article addresses an approach we (the two authors) have developed that highlights adolescent perspectives in adolescent development courses that are required for secondary teacher certification. Our *TeenScene* project loaned digital video cameras to selected high school students. We asked each student to create a one-hour "documentary" about themselves. Brief (e.g., 2.5 to 8

minutes) excerpts edited from these videos exposed our students to adolescent perspectives. We chose this method because it was one of the most practical ways to enable prospective teachers to observe adolescents' behaviors and to obtain first-hand accounts of adolescents' views and perspectives. Although we have also brought adolescent discussion panels to our classes and have connected our students with adolescents in partnership schools, these activities have been time consuming and have resulted in uneven exposure—largely dependent on the individual makeup of the panels or the partnership. We hoped that our students would begin to see adolescent development from multiple perspectives, including those of adolescents (Clark, 1995; Cook-Sather, 2002a, 2002b; Finders, 1997; Heshusius, 1995; Rodgers, 2002) as a result of viewing the excerpts. Thus, we examined the perspectives from which our students interpreted selected *TeenScene* video excerpts and report on how many perspectives they used in their responses and whose perspectives they adopted in their description and discussion of various excerpts.

We also aimed to have students understand that adolescents' behaviors can be interpreted in several ways. Being able to conceive of several explanations for behavior predicts more skilled and effective teaching (Daniels & Shumow, 2003). Educational psychologists have argued that narrative case studies should be used in teacher education classes because they represent the complexity that teachers encounter in real classrooms (Anderson, Blumenfeld, Pintrich, Clark, Marx, & Peterson, 1995). Such case studies are said to foster connection with multiple psychological concepts, while brief scenarios do not. However, researchers have demonstrated that viewing brief behavioral sequences allows novices to focus, replay, and reflect better than do longer episodes or narrative descriptions (Beitzel & Derry, 2004). We believed that the *TeenScene* excerpts were sufficiently rich so that connections to multiple concepts from adolescent development could be conveyed, yet brief enough to allow novices to focus and reflect on what they saw and heard.

Researchers also have found that preservice teachers who are exposed to student perspectives are more likely to (1) suggest how to make curriculum more accessible to students (Commeyras, 1995; Dahl, 1995; Lincoln, 1995; Johnston & Nicholls, 1995); (2) develop strategies to respond to adolescent perspectives on their learning and school experience (Cook-Sather, 2005); and (3) be more collaborative with students (Oldfather & Thomas, 1998; Shaughnessy, 2005). These dispositions are important because adolescents who have teachers with such qualities are more motivated and engaged in school (Cook-Sather, 2002c; Oldfather et al., 1999; Smyth et al., 2004). Cognitive science demonstrates that as novices gain practice they consolidate and have an easier time applying their knowledge and skills (Berliner, 1988). The *TeenScene* video excerpts provided preservice teachers with opportunities to develop skills in perceiving, recognizing, and reflecting on adolescents' perspectives. Students who viewed the *TeenScene* excerpts were expected to give credence to adolescents' "voices" and to consider and generate ideas for how to respond as teachers.

Listening and giving credence to adolescents is a basic skill in relationship building (Delpit, 1998), which is important because positive relationships with adults enhance adolescents' social and academic skills (McCombs & Lauer, 1997; Pianta, 1999). We assumed that using these video excerpts would enable our preservice teachers to focus on and better understand adolescents' perspectives and the social contexts (e.g., peers, family, and schools) that influence adolescents' development and learning. Preservice teachers in an undergraduate course, and preservice and in-service teachers in a graduate course (each course focused on adolescent development) viewed the video excerpts and responded to questions specific to each excerpt.

Our students' responses to the videos were examined for their (1) ideas about connecting curriculum to students, (2) suggestions for instructional strategies, and (3) plans to collaborate with adolescents. We also determined the number of connections students made to concepts in

developmental psychology and the specific concepts they used to analyze the videos.

Method

Development of *TeenScene* Videos

The video excerpts were drawn from six adolescent self documentaries. These adolescents were recruited from three high schools in northern Illinois through a counselor or teacher. There were documentaries from three adolescents (one 15-year old white male sophomore, one 17-year old Hispanic male senior, and one 17-year old white female senior) from a medium-sized school in a university community, a 15-year old white adolescent female who was a freshman at a medium-sized rural school that serves several surrounding communities, and two 17-year old adolescents (an African American female and a Hispanic male) from a large high school located in an economically impoverished suburb. Each adolescent met briefly with the project coordinator (a student research assistant), who explained the purpose of the project and the kinds of content the video documentary should contain, and demonstrated how to operate a digital video camera. Adolescents were asked to provide a minimum of 60 minutes of taped content, and to focus the camera primarily upon themselves and their activities rather than those around them. They were asked to consider three questions while creating their documentaries: (1) What is important to me? (2) What do I want others to know about me? and (3) How can I show others what I did this week?

Each adolescent was provided with a digital video camera for one week. When they submitted their completed video, it was then edited to capture what we deemed as the most useful contents for instructional purposes. Typically, five excerpts, varying in length from 2.5 to 8 minutes in length were taken from each video.

Participants

The participants included 43 students enrolled in two concurrent sections of an undergraduate course on adolescent development, and 39 students from two sections of a graduate adolescent development course over two

semesters (summer with 21 students, and the following fall semester, with 18 students). In total there were 82 participants. Approximately one-third of the graduate students were in-service teachers; some had one or more years of teaching experience, others were classroom aides, yet others were regular substitute teachers. The remaining graduate students had no teaching experience and were taking the course to fulfill teacher certification requirements. The first author taught the graduate course and the second author taught the undergraduate course.

Procedures

Thirty video excerpts were edited from the students' videos. Ten of these excerpts (see Appendix 1) were selected for this study because we judged them to best exemplify the salient topics (e.g., adolescent egocentrism, academic motivation, self-efficacy) that are addressed in both adolescent development courses. All video excerpts were uploaded onto the university's media server and could be accessed by the instructors and students in Blackboard™. We used the *TeenScene* videos somewhat differently in our respective courses, as students were given different assignments using the selected videos as source materials.

Undergraduate course. All 43 students in the undergraduate course viewed four of the ten video excerpts for a homework assignment. The four videos were Erin's¹ "Art class," and "Language arts teacher", Miguel's "Talks about school", and Jacques' "Message to teachers". These videos were purposefully selected because they conveyed these adolescents' strong feelings about their teachers and about "school." Students were asked to provide brief written descriptions and interpretations of these excerpts, i.e., "what are you seeing and hearing these teens tell you about themselves and their schooling experiences? What does this mean to you?"

Graduate course. All students in the summer section of this course (n=21) viewed the same four video excerpts as shown to the undergraduates. Each of the videos was shown

¹ All names are pseudonyms

to the entire class. After viewing each excerpt, students were asked to respond, in writing, to a brief series of questions that varied slightly, depending upon the video. Students' written responses to the four video excerpts were then collected for analysis. Using a somewhat different procedure for the fall semester course, each student in the course (n=18) viewed four video excerpts that were randomly selected from the sample of 10 excerpts (see Appendix 1). That is, each student viewed any four randomly pre-selected excerpts. This was done so that we could utilize all of the 10 video excerpts and convey a broader array of adolescent perspectives to students. Students individually viewed their four assigned videos on wireless laptop computers in the classroom. After viewing each video, students answered, in writing, a series of brief questions and posted their responses on Blackboard™. Students were asked not to discuss the videos, or their responses to them, with other students.

Results

Undergraduate Course

Students' written responses were coded for four perspectives represented in their description of the excerpt. Adolescent perspective was coded when students clearly identified the adolescent's point of view. For example, students wrote statements such as, "(Adolescent's name) thinks, believes, feels..." Teacher perspective was coded when respondents wrote statements like, "As a teacher, it is obvious that..." Self perspective was coded when the preservice teacher represented their individual perspective, e.g., "I had to take math even though I did not like it; he should have to take it, too," or "I know just how she feels, I had the same exact experience in high school!" Other perspective was coded when the perspective of the "generalized other" was given. For example, the students sometimes wrote from a "societal" perspective, as in "Adolescents need a balanced course load. They might need math for a career or for a college major they select in the future," or "Family dissolution is a crisis for children. He is struggling because his family is in crisis and we (society) do

not have supports in place for children who experience this."

As can be seen in Appendix 2, the adolescent perspective was the most frequently adopted view for each video excerpt. Preservice teachers also frequently analyzed the excerpts from a teacher's point of view. Particular excerpts drew out certain reactions more than others. For example, Miguel's excerpt on school prompted many of the preservice teachers to discuss his ideas from the perspective of the "generalized other" in that they felt compelled to represent the systemic or societal perspective. This most often took the form of an argument in favor of the comprehensive college preparatory curriculum. About one-third of the preservice teachers also reacted to Miguel's statements from their own personal perspective "Well, when I was in high school..." Jacques' video also elicited several personal reactions, which were divided between empathetic and judgmental responses, e.g. "I had it tough, too, you just have to get over it and I don't hear him taking responsibility for himself like I did." Many of the "other" perspectives on Jacques' statements related to statements about family dissolution in society. The majority of the undergraduates interpreted the excerpts from two or more perspectives.

Overall, students connected each excerpt to a range of concepts from the developmental readings they had completed for class. Most of the students, however, relied on only a single concept (such as motivation, stress, identity development) to interpret Miguel's and Jacques' excerpts, whereas most used two concepts to interpret Erin's excerpt (e.g., cognitive egocentrism, motivation).

To examine how preservice teachers found the adolescent perspectives meaningful for teaching, we asked the undergraduates to comment on what the video excerpt meant for classroom practice. They were most likely to respond to Erin's excerpts by suggesting specific teaching strategies such as the importance of using rubrics to assess work or how collaborative groups might be constructed. Miguel's excerpt, on the other hand, led the preservice teachers to suggest that they needed to connect instructional content with students' lives. For example, many wrote about

relating mathematics and science to Miguel's deep interest in music, and went on to describe how their subject areas could be related to adolescents' interests. Few students suggested collaborating with the adolescents as an appropriate teacher response. The majority of the responses were not very specific. Students wanted "to help" Jacques and "to care" about him but they did not explain what they meant by these responses or how they would demonstrate help or care.

Graduate Course

We examined graduate students' responses to the discussion questions that were posed to them following viewing of the different video excerpts. First, we examined their responses in regards to the *meaningfulness*, from their perspective as a teacher, derived from viewing the videos. Second, we examined how they responded to the videos in regards to their interpretations of adolescents' motivations for academic success. Finally, we examined students' responses to the videos for which they were asked to draw upon their knowledge of adolescent development to make an interpretation.

Regarding the meaningfulness of the videos, students recognized that adolescents want to be acknowledged and understood as persons, and to have their needs met by adults and teachers (see Appendix 3). Fifteen percent of the responses to the meaningfulness question acknowledged the important influence of family life on adolescents, e.g., "This video indicates that family life has a huge impact on school. Academic achievement is influenced by family life. A teacher must recognize this to fully understand the student." Interestingly, nearly all of the responses suggested that the students were concerned about what they or other adults could do to teach adolescents or support adolescents' development, but not what adolescents might do on their own behalf. Further, the students' responses to the question regarding the adolescents' motivation suggested that teachers can directly impact motivation by using instructional strategies that will increase motivation e.g., "...students are motivated by teaching methods that are hands-on and real-world." Fully forty percent of the

responses indicated that it is what *teachers* do that impact adolescents' motivation—including showing an interest in the adolescent. No responses conveyed an understanding that teens bear some responsibility for their own motivation, or that motivation is often intrinsic to the individual. Finally, a number of students were able to identify several dimensions of adolescent characteristics, such as demonstrating formal operational thinking skills, egocentric thinking, and idealism, e.g., "I think it is difficult for her to see others' point of view due to her egocentrism; she tends to see things in [black and white]."

Discussion

We asked our teacher education students to view edited videos from adolescents' self documentaries to highlight adolescents' perspectives on their own development and learning. We used the videos as a means to promote a perspective of student centered teaching and learning during teacher education courses. Most of our undergraduates interpreted the excerpts from multiple perspectives and included the viewpoint of the adolescent more than any other view. Many of these students also took the perspective of a teacher. Some students used their own experiences to empathize with the adolescent's perspective, but a troubling minority had difficulty decentering from their own viewpoint and experience, which they used to harshly judge the adolescent. Given that the society perspective coded as "other" is the one most often represented in academic writing, it is not surprising that students used that voice.

We did not examine our graduate students' perspective-taking, but rather looked at their responses to questions that tapped into their developing knowledge of theory and practice. These students (about one-third of whom were in-service teachers) recognized that teachers have important influences on teens' classroom and academic behaviors and motivation. They did not, however, acknowledge adolescents' agency in their own development - a concept discussed at length at various points throughout the course. The graduate students tended to focus on the most highly salient aspects of adolescence, e.g., egocentrism, identity - features of adolescence that were highlighted in class

lectures and discussions. This finding perhaps reflects the students' general lack of familiarity with some of the less universal aspects of adolescent development and behavior.

Although both graduate and undergraduate students used a range of concepts drawn from developmental psychology to try to understand the adolescent, most used only one or two concepts in their written responses. We were gratified that the students did not pigeonhole the videos as narrow representations of only a single concept since others (Anderson et al., 1995) have criticized the uses of brief vignettes for instruction. In most cases, our students were eager to learn more about the adolescents, and expressed their desire to view and discuss other excerpts from the videos. As teachers, the students will be best served by constructing a more complex and multidimensional range of possible explanations for understanding adolescents rather than settling on one or two ideas as "the" reason for an adolescent's behavior or viewpoint. Therefore, it might be best to hold class discussions or to have students read one another's interpretations to broaden their exposure to a range of ideas with which to make sense of even these brief excerpts.

Clearly, our students began to think about how the adolescents' viewpoints were related to what they might do as teachers. One of the video excerpts (Miguel's, "Talks

about school"), in particular, evoked the idea of connecting curriculum to students' lives. Another prompted a number of the students to write about assessment procedures and grouping methods (Erin's "Art class"). In general, however, most responses regarding teaching practice were not very specific. It was heartening that so many committed themselves "to care" and "to provide interesting work" in response to what they saw as adolescents' legitimate observations of schooling that they find dull and uninteresting. These young teachers will need to be able to translate their intentions into more concrete ideas for instructional practice. Perhaps they need deeper exposure to teaching examples, students, and live classroom practice before they can generate specific ideas about how to appropriately respond to adolescents' needs. Our project did not require the depth and connections that Cook-Sather's (2005) project did, so it is not surprising that our teachers were not more specific in describing their knowledge of adolescent development.

We are now turning our attention to using the intact, unedited self documentary videos as individual cases that our students can view, study, and analyze in greater detail. As we acquire more of these self documentaries, which are rich in detail and capture the lived experiences of adolescents, we will be able to provide a diverse set of cases to our students.

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Appendix 1

Assignment of Video Excerpts to Response Groups

Adolescent	Vital Information	Title, Length, and Description of Video Excerpt	Developmental and Educational Concepts Illustrated By the Video
Erin	15 years old, White female, freshman at rural high school	<p>“<i>Art class</i>” (2:08)—Erin describes her response to receiving a lower grade than she anticipated on an art project and tells why she thinks that art cannot be evaluated.</p> <p>“<i>Utopia group project</i>” (2:29)—Erin describes the difficulty she encounters when working with other students in cooperative learning groups.</p> <p>“<i>Language arts teacher</i>” (2:28)—Erin describes a teacher who is very engaging and gets students excited about learning</p>	<p>Cognitive egocentrism; student assessment</p> <p>Adolescent idealism; cooperative learning</p> <p>Student motivation; teacher enthusiasm</p>
Miguel	17 years old, White & Hispanic (Cuban) male, senior at university community high school	<p>“<i>Talks about school</i>” (8:03)—Miguel describes his interests in art, music, and theatre, and his difficulty with math and science; he wonders why he will be required to take math in science in college, but students are not required to take art and music.</p> <p>“<i>Discusses art</i>” (6:34)—Miguel gives a tour of his bedroom, shows photos of his performances in school.</p>	<p>Student interests; adolescent egocentrism; academic preparation</p> <p>Adolescent interests; identity formation</p>
Jacques	17 years old, Hispanic male, senior at economically distressed suburban high school	“ <i>Message to teachers</i> ” (2:58)—Jacques describes a typical day in his life, his parents’ divorce, and the stress that he experiences as he tries to help take care of his sibling. He appeals to teachers to be aware of the difficulties that many adolescents have and to understand their needs.	Adolescent “voice”; perspective-taking skills; stress; family life
Keith	15 years old, White male, sophomore at university community high school	<p>“<i>Swim competition</i>” (5:13)—Keith describes the goals he has set as a swimmer on the high school team, shows his participation in a swim meet, and then discusses why he did not attain his performance goal.</p> <p>“<i>Love blog</i>” (1:36)—Keith describes how he has sent anonymous online messages to a girl that he likes, enjoying her curiosity about the identity of her secret admirer.</p>	<p>Goal-setting; self-efficacy</p> <p>Adolescent egocentrism; relationships</p>
Nickie	17 year old, African-American female, senior at economically distressed suburban high school	“ <i>Life</i> ” (5:45)—Nicky describes her interests, worries that she has been unable to find a part-time job because of her race, interviews her mother about their relationship, and talks about her career aspirations—to be a hairstylist or a teacher.	Identity formation; parent-teen relationships; race-ethnicity; aspirations and goals
Callie	17 years old, White female, senior at university community HS	“ <i>Poms & ballet</i> ” (3:16)—Callie discusses and shows her participation on the high school poms squad and involvement in ballet.	Adolescent interests; Involvement in extracurricular activities

1 – Graduate course, Summer semester only.

Appendix 2

Frequency of preservice teachers' reactions to TeenScene videos

	Erin video	Miguel video	Jacques video
<u>Perspectives</u>			
<i>Adolescent</i>	35	25	34
<i>Teacher</i>	29	18	27
<i>Other</i>	4	16	13
<i>Self</i>	2	13	8
<u>Multiple perspectives</u>	24 (2 perspectives) 1 (3 perspectives)	18 (2 perspectives) 5 (3 perspectives) 1 (4 perspectives)	23 (2 perspectives) 7 (3 perspectives)
<u>Developmental concepts used</u>	Motivation = 21 Self & Identity = 12 Cognitive Dev = 12 Perspective/Egocentrism/ Social Cognition = 7 Teacher Influence = 6 Control/Autonomy = 5 Moral Dev = 4 Mood Fluctuation = 2 Context = 1 Social = 2 Creativity = 1	Motivation = 6 Cognitive Dev = 7 Identity = 7 Time Use = 6 Moral Dev = 3 Adol Egocent. = 2 Rebellion = 2 Transitions = 1 Anger, Emotions = 1	Stress = 17 Family = 18 Sleep = 8 Motivation = 2 Import of Adults = 2 Time Use = 2 SES = 1 Moral Dev = 1 Perspective Taking = 1 At risk = 1 Idealism = 1 Class Size = 1
<u>Number of concepts used</u>	Mean = 1.67 Median = 2	Mean = .98 Median = 1	Mean = 1.32 Median = 1
<u>Meaning for teachers:</u>			
<i>Connect content w/ students' lives</i>	4	15	0
<i>Suggest specific teaching strategies</i>	12	6	3
<i>Collaborate with students</i>	1	1	3
<u>Nonspecific</u>	15	14	24
<u>Not my problem</u>	0	0	5

N = 43 students in 1 section of an undergraduate adolescent development course.

Appendix 3.

Students' responses to post-viewing questions.

<u>What does this video mean to you, as a teacher?¹ (N=123 responses)</u>	<u>Percent</u>
Adolescents need to be heard, understood, respected, and valued	17%
Family and home life have importance in adolescents' lives	15%
Teachers must engage students and get them interested in learning	11%
Teachers must set clear standards for performance; give constructive feedback	11%
Effects of student characteristics on behaviors	8%
Teachers must assist students, be supportive, and meet their needs	7%
Teachers must recognize individual differences	4%
Teacher must use a variety of instructional strategies, and be creative	4%
Miscellaneous responses	22%
<u>What does this video suggest to you about adolescents' motivation?² (51 responses)</u>	<u>Percent</u>
Use instructional strategies to increase motivation	41%
Teachers' behaviors affect student motivation	24%
Taking an interest in students increases their motivation	16%
7 miscellaneous responses	15%
<u>Based upon what you know about adolescent development,</u>	
<u>what is your interpretation of this video?³ (43 responses)</u>	<u>Percent</u>
Teen demonstrates formal operational abilities; abstract thinking, logic	30%
Teen displays egocentrism; is self-centered	30%
Teen is seeking identity and autonomy	16%
Teen displays idealistic thinking	9%
Teen questions authority	7%
Teen lacks perspective-taking skills	5%
Teen demonstrates concrete operational thinking	2%

Key

- 1 – Post-viewing question for all video excerpts except Erin, “*Utopia group project*,” and Miguel, “*Discusses art*.”
- 2 – Post-viewing question for Erin, “*Language arts teacher*,” Keith, “*Swim competition*,” Miguel, “*Discusses art*,” and Callie, “*Poms and ballet*” video excerpts
- 3 – Post-viewing question for Erin, “*Art class*,” and Miguel, “*Talks about school*” video excerpts.

**PAULO FREIRE'S CONCEPTION OF THE PROGRESSIVE TEACHER:
IMPLICATIONS FOR TEACHER PREPARATION PROGRAMS**

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The concept of the progressive teacher is explored via the three Freirean requirements of a secure and ethical teacher - scientific competence, political clarity and ethical integrity- with a view to clarifying their potential influence in teacher preparation programs. The conclusions reached are that Freire's ideas provide a provocative lens for examining teacher preparation programs, pose challenges for the cooperative construction of programs according to his ethical ideals, and create the need for special assistance to teachers who accept the responsibility to promote educational and societal justice.

Keywords: ethical integrity, political clarity, scientific competence, teacher knowledge

Paulo Freire's concept of the progressive teacher may be approached from many angles. In this article our slant is to construct an understanding of his theory around his three requirements of a secure, confident teacher: "scientific competence, political clarity, and ethical integrity" (Freire, 2005, p. 79): The context for Freire's threefold requirement is a discussion of the crucial characteristics of a progressive teacher, a teacher who is identified by a profound commitment to democracy and to an unequivocal rejection of prejudice. In this context, Freire discusses at least nine different but overlapping teacher qualities, namely humility, commonsense, lovingness, courage, tolerance, decisiveness, security, patience and impatience, and the joy of living. While highlighting security, he notes that those who are insecure may be indecisive and manifest their "lack of confidence" with others and impede their success. However, Freire does believe indecisiveness may be overcome, in part, by the teacher as she¹ develops her professional knowledge or scientific, political, and ethical understanding. These three understandings provide the framework for our examination of his conception of the teacher, as well as furnish an outline for this study. These domains intersect, and Freire commingles them in his writings. In the end, he subsumes both political clarity and ethical integrity under the broader category of scientific competence.

We should stress that Freirean confidence or security is not associated with arrogance but, rather, with what he terms an "insecure security" that is a manifestation of humility (2005, p. 73) and knowledge (1998, pp. 120-121). Humility and security stimulate listening to and learning from others, including students and colleagues. Nevertheless, humility and security are qualities that go beyond encouraging the teacher to be an active listener and learner. They are demonstrated when the teacher engages in respectful dialogue that fosters an open democratic ethos of communication and learning. Moreover, security is partly a byproduct of knowledge, especially when the teacher recognizes that she is an unfinished being who needs to be open to learning throughout life. Fortunately, the knowledgeable, secure, and open teacher desires to be dialogical with students.

Before examining Freire's spheres of understanding, several disclaimers and clarifications need to be mentioned. First, we do not attempt to speak for Freire; we offer an explanation of his ideas that we hope will stimulate reflective discussions about preparing teachers and, ideally, a study of Freire's key works on education. Second, our discussion of his three realms of understanding is not designed to provide an all-inclusive treatment of his conception of the teacher. Here we use Freire's claim as a framework for understanding rather than as a narrow paradigm for encompassing all of his ideas. Additionally,

¹ The pronouns *she* and *her* are used generically to include both females and males throughout this study.

we use the framework for examining Freire's views for possible adaptation in many local and national settings. Beyond these reasons, the framework offers a convenient triad of important but sometimes neglected streams of thought that need to be considered by many who prepare future teachers.

In a day of uninterrupted teacher education reform, we think that Freire offers much to those who wish to take a comprehensive approach to programmatic change. But, again, we emphasize that our analysis is partial, not exhaustive. We do not discuss in detail the political, pedagogical, and content preparation of the teacher or how she may teach a specific subject, make curricular decisions, engage students, or pursue classroom management. Nor do we elaborate on her interactions with parents and colleagues or how she works with school and district administrators and colleagues in professional associations. And only indirectly do we delve into the "physical, emotional, and affective preparation" of teachers (2005, p. 5). These topics, and others, are largely beyond this inquiry.

Scientific Competence

Freire's assertion that a person cannot be secure in her thoughts and choices as a teacher unless she has a strong scientific knowledge base for her actions is extremely important. The teacher needs to be clear about what she is doing and toward which goals she is moving as a professional. She needs to be able to articulate why she does what she does and why she selects particular goals. The question remains, however, to what kinds of knowledge is Freire referring? He speaks of two kinds of knowledge: systematic knowledge and spontaneous knowledge (2005, pp. 34, 165). For the sake of emphasis, we identify a third kind of knowledge that is probably a derivative of and embedded in systematic and, to a degree, spontaneous knowledge. This third kind of knowledge emerges more fully in "educative practice" (1998, p. 29): knowledge of critical thinking.

We begin by examining systematic knowledge. Freire includes in this state-of-the-art knowledge an understanding of the following: subject matter (2005, p. 32), pedagogical

expertise (1998, pp. 33ff), socioeconomic, cultural, and linguistic settings (2005, pp. 39, 129-130), classroom cultures (2005, pp. 95-96), interpersonal relationships (2005, pp. 97-110), student development and identity (1998, p. 45; 2005, pp. 89-90, 130), political theory and practice (2005, pp. 31, 79-80), and ethical theory and practice (2005, pp. 79-80). Collectively, Freire refers to this realm as both "professional competence" and "scientific competence" because the area includes humanistic, scientific, disciplinary, and cultural knowledge that informs both theory and practice. Stated differently, the teacher needs to be current in her knowledge of the educational theory, scholarship, subject matter, and practice that is related to her responsibilities as a professional educator. Predictably, Freire includes political and ethical theory as scientific knowledge. Freire's (1996) own political and ethical theories and practices emerged as he studied Marxist ideals, Catholic liberation theology, and democratic principles and as he saw and experienced the oppressive practices of capitalistic industries and dictatorial governments.

Moving to spontaneous knowledge much as Vygotsky (1978) does, Freire refers to experiential, commonsense, and/or spontaneous knowledge as a facet of understanding that the teacher needs to value and evaluate in her own and in students' thinking. Rather than dismissing either her own or her students' out-of-school or in-school experiential or spontaneous learning (Freire, 2005, p. 164-167), the teacher needs to see it as intersecting with more precise and systematic knowledge. Metaphorically, Freire wants teachers to read the word and the world. Of course, reading suggests that both kinds of knowledge need to be examined with "intellectual rigor" and "epistemological curiosity" (2005, p. 6, 54). Inquiry demands an evaluation of systematic learning, and we need to do the same with spontaneous learning because we do not habitually "ask for the reasons" that explain why we think and act in certain ways in our everyday lives. For certain, having a love for learning is invaluable to the teacher who thinks epistemologically about her understanding. In part, this means that the teacher needs to learn about and critique the

hidden curricula that are embedded in her “historical, cultural, and class-based experiences” (1993, p. 120).

Freire (1998, p. 29ff) elaborates on critical thinking, especially thought that is stimulated by and immersed in *conscientização* or critical consciousness (Freire, 1973/2002). He provides considerable details about the professional competency of teachers, discussing knowledge that he says is “fundamental” to “educative practice” and, therefore “essential” to the preparation of future teachers (1998, p. 30). In particular, he believes the future teacher needs to know how to think correctly, rightly, rigorously, or critically (1998, pp. 33-48). In context, he argues that the future teacher needs to acquire “methodological rigor” (p. 33), yet avoid being “overly convinced” of the correctness of her beliefs (p. 34). Likewise, the aspiring teacher needs to learn to respect the experiential knowledge, creative powers, and critical consciousness of learners (p. 36).

Freire also argues that this learning needs to be linked with inclinations to be self reflective and epistemologically curious (p. 37). Right thinking, too, requires that teachers learn to neither “deify [n]or demonize” technology, neither separate ethics and thinking nor conflate them, and neither dichotomize right thinking and doing nor collapse them into unreflective habits (p. 39). He adds that right thinking is informed by “a generous heart, one that, while not denying the right to anger, can distinguish it from cynicism or unbalanced fury” (p. 40). Freire argues that teachers should learn to take risks, be open to the new, and recognize the importance of the past when it is alive in the present (p. 41). And, predictably, right thinking involves being interested in being “dialogical ... not polemical” (p. 43). Finally, he believes that right thinking recognizes “legitimate anger” against a plethora of injustices and inhumanities, but that it does not devolve into “rage and ... hatred” (p. 45).

Political Clarity

To Freire, thinking critically is nowhere more important than it is in the realm of politics, because political clarity about a host of issues is necessary for the teacher. Among the different kinds of clarity that Freire mentions, we

examine just four. For convenience, these topics are labeled: (a) the political nature of education, (b) the omnipresence of power, (c) the democratic nature of dialogue, and (d) the indispensable nature of tolerance. Of course, it seems warranted to assert that the details of political clarity that are needed by a teacher will vary somewhat from place to place and subject to subject.

The first area—the political nature of education—is approached by Freire in diverse ways, e.g., by his saying or implying that “education is a political practice,” “the educator is a politician” (2005, p. 129), the teacher is a “political agent,” (2005, p. 75), and that the educator should be a political militant (2005, p. 103). These claims may make some skeptical of approaching teacher education through Freirean lenses. Pushing to understand what he means when he says that education is political is, therefore, important. In one sense, Freire means, as others note (Scott, 2008, pp. 141-142), that even “description” in the political and other intellectual spheres is “never neutral,” regardless of the theme or idea mentioned. Education is a political choice and an undertaking, in part, because it takes place in specific political and national contexts. Political values—whether conservative, liberal, or radical—bleed into schooling.

In schools, the identification of materials and software, selection of content, designation of aims, and collection of resources create “the capacity to have powerful effects” (Scott, p. 142). For Freire, these decisions about curricular, procedural, and evaluative matters are often related to the “dreams” of people—whether privileged, powerless, or in-between—and are “substantively political” (2005, p. 75). In most countries, educational decisions have been made largely, if not exclusively, by the privileged and powerful and often from a capitalistic orientation. So, the teacher—if Freire is correct—needs to know how to go beyond content narrowly defined as “math, geography, syntax, history” and move to issues of social justice, personal autonomy, and national liberation. In the process, Freire calls on the teacher to unmask so-called innocent topics and discriminating ideologies (2005, pp. 4, 104) and uncover the “directivity”

in educational practice (1995, p. 18). In a word, education is inescapably embedded in and a vital part of political issues. The progressive teacher, therefore, uncovers, exposes, and interrogates political ideologies that promote economic inequities, passive citizens, and impoverished regions and nations.

The second realm—the omnipresence of power—is easily seen in Scott’s (2008, pp. 141-142) analysis of description and how it contains the potential for powerful outcomes. For Freire, power is not intrinsically unethical, but he thinks it is frequently amassed and hoarded by those who have significant social, religious, political, economic, and material resources. In the process of acquiring, retaining, and losing resources, privileged and disadvantaged peoples emerge in multiple kinds of settings, e.g., where military dictatorships, pseudo-democratic leaders, and global capitalists largely control the lives of most people, stripping them of their rights and needs as persons and citizens. In such settings, “the taking of power” by the poor or oppressed is aided by dialogue between those with much and those with little or almost no power (2003b, pp. 136-137).

Hence, one of the key responsibilities of the teacher is to be a member of a liberating profession, a person who rejects the banking model of education and favors a problem-posing model that makes teacher and student co-investigators of power relations in whatever subject is being studied (2003b, pp. 72). Ultimately, for Freire, the teacher should demonstrate in the classroom an education of liberation, not domination (2007, p. 17), for liberation is not merely a philosophical belief but an existential practice that may begin in the classroom but should extend throughout the economic, social, and political structures of society and the world.

The third domain—the democratic nature of dialogue—is connected to teaching and learning but also to the taking and sharing of power and helps transition us to another aspect of political clarity: the need to listen to and dialogue with others, regardless of their social, political, and

economic status in life. Listening to others, Freire asserts, is a political act that reveals a commitment to “an ideal of democracy” (2005, p. 72). When dialoguing, the teacher cannot be indecisive about concerns; she needs to analyze issues, to make decisions, and to accept responsibility for being “a good democracy oriented pedagogical example” (2005, pp. 78-79). Yet the teacher, while not neutral, does not seek to make her school a political base for a party’s ideals (2005, p. 17). Instead, she nurtures a dialogue that (2005, p. 81) avoids “overly controlled,” “undisciplined,” “benevolent,” and “unrestrained” kinds of dialogue in favor of “considered yet energetic discourse” (2005, pp. 81-82).

Freire supports a dialogue that is “hopeful, critically optimistic, and ‘drenched’ in ethics;” not one that is rooted in anger or bitterness (2003a, p. 78). Here there appears to be an underlying assumption, akin to Strike and Soltis’ (2004, pp.15-16) orientation, which understands equal respect of persons as partly expressing itself in listening to others, understanding common rights and interests, and revising plans and policies to address everyone’s needs and concerns. For Freire, not to listen to the disenfranchised is a manifestation of disrespect for them and a means of further dehumanization.

Of course, dialogue often needs guidelines. A set of criteria that serves Freire well in his dialogues includes what he labels love, humility, faith, mutual trust, hope, and critical thinking (Freire, 2003b, pp. 87-92). Collectively, these criteria help to create and to sustain an educational—and, therefore, political—environment that promotes a respect for others, a willingness to learn from others, a faith in the ability of others to address and to change situations, a mutual trust with others based in the belief that a supportive partnership can be formed, a hope that the future can be different from the present, and a critical thinking that avoids naïveté but nurtures a perception of reality that can be transformed by collective action (2003b, pp. 87-93). Conversely, these criteria might not serve everyone equally well. Thus, the dialogical ideas of Camus (1995), Greene (1988), and Habermas (1987) among others might be examined as well.

The fourth realm of political clarity—the indispensable nature of tolerance—for Freire is necessary so that the teacher understands that tolerance is a critical virtue professionally, democratically, and personally (2005, p. 76). Or, alternatively, “Tolerance is the virtue that teaches us to live with difference and learn from it, to live with those who are different without considering ourselves superior or inferior” (1996, p. 148). Yet tolerance, to Freire, is not a slogan or shallow ideal and does not mean “coexistence with the intolerable” but “coexistence with the different” (2005, p. 77). The teacher, then, should not (a) force students to agree with ideas that they find objectionable, (b) continue a boring dialogue with students out of a false view of pedagogy, (c) deny that a genuine conflict of opinions exists, or (d) deny students the right to think and be different from teachers (1996, p. 148). Hence, a note of interest: the tolerant person—whether teacher or student—is, perhaps, more authentic if she learns to defend her ideas and accepts the “profound ethical ... duty not to lie” (Freire, 1996, p. 148).

These conclusions are anticipated if we recall that Freire thinks the teacher needs to be able to articulate what she is doing, the grounds that support her actions, and the rationale she has for selecting and pursuing certain objectives and goals. He notes that the same general thought applies to being politically clear as well (Freire, 2005, p. 79). In short, the teacher needs to be capable of articulating what she supports in political controversies, who she supports in elections, and why she does so. Having the knowledge to make these clarifications and justifications, her scientific preparation is “informed by political clarity” (Freire, 2005, pp. 14-15). But from Freire’s standpoint, there is more to political clarity than understanding and talking about political matters. The additional element is taking action as a consequence of being “moved” by one’s political beliefs and values (Freire, 2005, p. 79). The idea of the teacher being moved by her political beliefs may lead to various activities, e.g., her fighting for democratic schools (Freire, 2005, pp. 11-12, 158), recognizing students as persons (Freire, 2005, p. 160), opposing authoritarianism (Freire,

2005, pp. 112-114), arguing for equitable treatment of the disinherited (Freire, 2005, p. 69), exposing weaknesses of the political right and left (Freire, 2005, pp. 24-25), and cultivating democratic dispositions in her classes (Freire, 2005, p. 116). Political clarity, therefore, has an action dimension.

Ethical Integrity

As noted earlier, Freire thinks that the teacher’s competence includes ethical integrity. What does he mean by ethical integrity? Among the ideas that he mentions, we have selected four to explicate. Specifically, we note his emphasis on the teacher having a personal ethical consistency, a certain set of virtues, a disposition toward courage, and, perhaps, a universal human ethic. By mentioning the idea that Freire is interested in the teacher being “moved” by her beliefs, we have an important clue about his idea of ethical integrity. It involves the teacher *acting on* her professed ethical beliefs and keeping the gap between profession and practice as small as is feasible. Instead of being “an empty mouther of words,” the teacher should develop a personal consistency between verbal claims and behavioral consequences (Freire, 1998, p. 61). Demonstrating coherent attitudinal and behavioral patterns can be seen when the democratically oriented teacher respects “the autonomy, the dignity, and the identity” of students (Freire, 1998, p. 61). But the teacher is ethically inconsistent and irresponsible if she disregards a student’s dignity, exposes her to hurtful experiences, or ignores her rights (Freire, 2005, pp. 79-80). Accordingly, the teacher is ethically obligated to protect the dignity and rights of students and others by revealing oppressive situations in school and society (Freire, 2007, p. 3).

A second and related dimension of the ethical integrity that the teacher needs to understand is related to a set of virtues that was mentioned earlier: humility, commonsense, lovingness, courage, tolerance, decisiveness, security, patience and impatience, and the joy of living. Freire states that these attributes are not given to us by genetic or instructional command. Rather, he asserts these qualities are “acquired gradually through practice” (2005, p. 71).

Freire is not claiming, however, that knowledge concerning these attributes is completely learned via practice, nor does he imply that the practice is unguided or unreflective. He assumes that these qualities will be examined and that they are, in due course, acquired by the teacher who actually practices them. Further, he avers that for practice to lead to these characteristics it must be conjoined with “a political decision” that the role of the teacher is critical to the well being of students and society (2005, p. 71). Politics, ethics, and education are co-partners.

While giving details about the aforementioned qualities is outside the scope of this examination, a few comments about courage are necessary. Freire claims that courage is required by humility (Freire, 2005, p. 72) and is a critically important dimension of ethical integrity. Indeed, an inclination toward courage may be the lynchpin that makes ethical integrity possible, e.g., how can a teacher demonstrate ethical consistency if she lacks the courage to act on her beliefs? The fact that a teacher has to “invent” courage in herself and in her environment suggests that democracy may be endangered in many settings (Freire, 2005, p. 75). Thus, the courage to fight for the political needs of school and society is essential for the teacher who lives and teaches with integrity. In contrast, the teacher who fears losing her position, promotion, or salary raise may be easily intimidated into silence and inaction and forfeit her political responsibilities (Freire, 2005, pp. 75-76).

Fear of another kind may result from a person having to teach a difficult subject and then feeling scientifically incompetent in a number of ways (Freire, 2005, pp. 49-50). Thus, the teacher needs to recognize that her fears, while both normal and acknowledgeable, need to be analyzed to determine if there are real reasons for them (2005, p. 50). If there are actual reasons for the fear, the teacher needs to confront them so that they can be controlled, restricted, and conquered (2005, pp. 50, 75-76, 87). Conquering fears does not mean that they are eliminated. Indeed, courage is only needed in the face of fear, uncertainty, and doubt (2005, pp. 50, 75-76). In time, the teacher who grapples with her fears can come to see that “there is a beauty in the ethical

struggle” (Freire, 2005, p. 100), as well as that she has a responsibility to attempt to convince her students of the rightness of resisting the oppression of authoritarian governments (Freire, 2007, p. 35). Clearly, Freire is a “discloser” rather than a “non-discloser” when it comes to teaching about controversial issues (Hess, 2009, pp. 99-100). For example, Freire does not thoughtlessly claim that the teacher should merely let each student and the public make up their own minds on critical issues. Instead, he thinks the teacher is charged with the responsibility of sharing her own thinking on controversies so that others can consider her arguments as they make up their own minds on questions regarding justice, respect, and liberation.

Ultimately, therefore, Freire supports a reasoned disclosure and advocacy by teachers. Yet he (Freire, 1995, p. 20) rejects the idea that he is entitled to impose his beliefs on students or convert students into “shadows” of himself (Freire, 2004, p. 20). On the broader question of disclosure and advocacy, Essex (2011, pp. 143-148) observes that teachers in particular circumstances need to know that certain school districts and courts make important distinctions between political disclosure and advocacy. Freire’s idea of advocating for issues of justice, liberation, and the progressive teacher, therefore, may collide with some state and district policies and laws. But, of course, Freire (1996) was accustomed to such circumstances and was willing to argue for, act on, and suffer because of his convictions.

A fourth dimension of ethical integrity for Freire is connected to his “universal human ethic” (Freire, 1998, p. 21). A teacher’s ethical integrity, therefore, may be nourished through studying ethical theories and constructing—or reconstructing—a theory that helps give her the confidence to make informed moral judgments. Freire (1998, p. 21ff) acts on his chosen ethic in ways that enable him to maintain his own ethical integrity, including condemning as well as affirming personal, institutional, and governmental actions. For instance, he supports the importance of affirming that all peoples are “Subjects of decision” (Freire, 2003b, p. 43) and condemns the

exploitation of labor and the manipulation that makes a “rumor into truth and truth into a mere rumor. ... the fabrication of illusions, in which the unprepared become hopelessly trapped and the weak and the defenseless are destroyed. ... making promises when one has no intention of keeping one’s word” (Freire, 1998, p. 23).

Given this orientation, it is easy for Freire (1998, pp. 23-27, 114-116) to reject any ethic that is elitist, hypocritical, pharisaical, fatalistic, or neoliberal. Moreover, he objects strenuously to an ethic of profit as well as to an ethic of postmodern pragmatism. In another context, he declares his objections to what he labels “a mean and greedy ethic” (2007, p. 26). When considered from another perspective, Freire’s ethical orientation puts him at odds with some postmodern ethical thinkers (Foucault, 1984; Rorty, 1979) and places him, to a degree, in the company of a number of critical theorists, critical realists, post-postmodernists, and pragmatic idealists (Bhaskar, 1989; Giroux, 1992; Putnam, 2002; Wagner & Simpson, 2009) who argue for reinterpreting empirical research and reconstructing ethical theories to place a qualified emphasis on transcultural ethical virtues.

For Freire, a universal ethic is an assumption that seems essential if world-wide justice and humaneness are to be promoted. Hence, he rejects the idea that ethical values are only historical and local constructions (Foucault, 1984). Yet he appears to think that each ethical situation is unique and needs analysis as a particular issue, not a concern that can easily be solved by referencing an ethical principle or consequence. Likewise, he appears to disagree with the notion that a universal condemnation of oppression and exploitation is merely one valid ethical statement among many other, even contradictory, claims (Rorty, 1979). But it seems unlikely that Freire would demand that all future teachers have to agree with him.

Freire goes on to say that it is critical that the powerful and privileged do not, by themselves, “define or determine” good taste and behavior (Freire, 2005, p. 22). Instead, like Habermas (1987), Freire envisions conversations where

each voice is heard and considered and where ordinary power relationships are greatly reduced and, ideally, eliminated. If not, most of the powerful will probably continue to promote forms of ethics that advantage themselves and disadvantage others. In the end, an ethically informed teacher helps to foster a “progressive, democratic, happy, and capable school” (Freire, 2005, pp. 96, 145). Or, to restate the notion, the teacher who possesses ethical integrity joins with other teachers to become “instigators of happiness” and justice (Freire, 2005, p. 145).

Conclusions

At this point, some heretofore implied criticism and affirmation of Freire’s ideas will be made explicit. Happily, Freire encourages us to think for ourselves (Freire, 2005, p. 29) and to reinvent his ideas in our own situations (Macedo & Freire, 2005, p. x), not blindly accept and apply his ideals. Even so, he does not want us to dismiss his ideas as if they are totally irrelevant to our situations. He wants us to recognize that the problems of which he writes are not isolated to Brazil but found in most, if not all, countries to varying degrees (2005, pp. 69-70).

For our purpose, four observations about Freire’s view of teacher preparation need attention. First, we think Freire’s threefold emphasis on teacher preparation contains significant ideas for us if we are interested in recovering, promoting, sustaining, or expanding democratic values, especially in settings where democracy is “drowning in corruption” (Freire, 1996, p. 120). If, as Dewey (1916/1985) proclaims, “Democracy has to be born anew every generation, and education is its midwife,” it makes sense to consider Freire’s democratic theory of teacher preparation. Teacher educators in both evolving and devolving democracies will find useful insights and suggestions.

Second, although discussions of university-wide responsibility for teacher preparation are widespread, many institutions still appear to ignore this responsibility (Darling-Hammond, 2006; Goodlad, 1990). Studying Freire’s views will provide a provocative springboard for

meaningful institutional discussions, if not a means to university-wide responsibility. Clearly, the study of the professional, political, and ethical domains needed by teachers can be only partially addressed in many educator preparation programs if there is not university-wide input.

Third, the development of ethical integrity and the character qualities that Freire suggests is a topic that needs sustained and critical attention. Some institutions may decide that the challenges in this domain are too numerous and complex to pursue. Among the problematic features and challenges of Freire's perspective is how a faculty might understand its role in helping to develop ethical integrity among its students, avoid a dogmatic approach to ethical theorizing and thinking, and promote flexibility in candidate selection. The likelihood is that a close relationship between teacher preparation programs and field-based experiences also presents challenges, e.g., dialoguing and negotiating with school districts will probably be both time consuming and taxing. Even so, some institutions may see this realm of teacher preparation as a vital part of their programs and accept the challenges encountered as a way to develop reflective democratic dialogues, collaborations, and policies. To completely ignore the ethical development and

qualities of future educators, however, seems highly questionable in a society that professes to value diversity, respect, equality, freedom, and justice (Wagner & Simpson, 2009).

Finally, any faculty that seeks to recreate the ideas of Freire in its own circumstances seems well advised to ask how aspiring teachers who critically reinvent his ideas will be able to maintain employment in communities that object to many of his core values, especially his political beliefs. Teachers who emphasize such ideals as social justice, critical thinking, and democratic educational cultures but find themselves employed in unreceptive if not hostile environments, may need special emphases in their preparation if they are going to be able to secure and retain positions. Thus, if we utilize or recreate the political dimensions of Freire's ideas in our own teacher preparation programs, we appear to serve our students well when we anticipate the additional challenges they may face as educators. This responsibility takes on additional meaning if we recall that one of Freire's stated aims in promoting progressive educators is to develop secure, confident teachers.

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SUBJECT DISCIPLINE KNOWLEDGE CRITICAL FOR HIGH SCHOOL TEACHERS: A CASE FOR SCIENCE AND MATHEMATICS

Debra Panizzon

The results from research over at least three decades are presented and critiqued showing that subject discipline knowledge and pedagogical knowledge are necessary but insufficient for competent teaching. The crucial element is pedagogical content knowledge (PCK), which is the blending of subject discipline knowledge and pedagogy. While PCK is relevant to all subject areas, it is especially critical for teachers of science and mathematics where there is a world-wide shortage of competent teachers. Science and mathematics teachers require a sound level of subject discipline knowledge in order to develop the necessary PCK.

Keywords: discipline knowledge, pedagogical content knowledge, pedagogy

In his paper, *A Personal Response to those who Bash Teacher Education*, Berliner (2000) discusses and argues a case against twelve myths or criticisms of teacher education including two that are particularly pertinent to the topic of this article: "All you need is subject matter knowledge; the rest is a waste of time," and "Any reasonably smart person can teach; all you have to do is follow the textbooks. Everything is laid out so well these days" (p. 358).

Both of these myths have been resisted in teacher education for a considerable time with the populace now recognising the need for teachers to understand how students learn in order to implement pedagogical strategies that maximise learning for all students (Darling-Hammond, 2000). Part of the reasoning underpinning this change is the realisation that learners are not passively accumulating factual content but rather are actively constructing new ideas and restructuring their own existing conceptions (Driver, 1983). Given the nature of learning, teaching by the textbook is a limited and limiting strategy; it is used most frequently by inexperienced teachers or those who lack the necessary subject content knowledge (Pardhan & Mohammad, 2005).

In relation to the two myths above, a counteractive view is gaining momentum. It says: "If teachers are good pedagogues they can teach anything." Endorsed by educational advisors this statement is often made in public forums with little research evidence to support the claim

(Ingersoll, 1999). While this way of thinking fits within an economic-rationalist model allowing for breadth of subject coverage by a school staff, it reduces the depth of expert knowledge available to senior students and early-career teachers.

For school science and mathematics this perception is problematic in that there is already considerable research evidence extending over at least three decades indicating that a lack of subject knowledge in these subjects impacts the confidence and self-esteem of primary teachers to such an extent that science is often not taught in primary schools in many countries (Goodrum, Hackling & Rennie, 2001). If the *pedagogy only* myth was supported this situation would be non-existent in primary schools given that primary teachers are considered to have greater pedagogical knowledge when compared to their high school peers (Darling-Hammond, 2000).

Hence, the focus of this article is to discuss how subject discipline knowledge contributes to teachers' development of pedagogical content knowledge (PCK), which is a key component for teaching (Lederman, Gess-Newsome & Latz, 1994; Loughran, Mulhall & Berry, 2004). While the case is made using evidence from science and mathematics, the position is relevant to all discipline areas. To provide a context around the significance of the problem, the findings from a recent study conducted in Australia are presented.

Having this contextual basis, the seminal work of Shulman (1987), who defined the key domains of teacher knowledge that still influence the field of teacher education, are explored in relation to relevant literature from science and mathematics education.

Contextual Research Study

In 2004 and 2009 two studies (Harris, Jenz & Baldwin, 2005; Panizzon, Westwell & Elliott, 2009) were undertaken exploring the qualifications of Australian high school science teachers. While all teachers in Australia must have a teaching credential, there is no national standardisation

regarding the actual discipline qualifications of high school teachers. The major findings from the Panizzon et al., (2009) study are summarised in Table 1.

Clearly, there are a number of potential issues highlighted by these findings but those relevant to this article are the proportions of unqualified high school teachers of senior physics; the differences between the under 40 and over 40 cohorts of science teachers when the future workforce is considered; and the inequity evident for teachers and students in rural schools.

Table 1

Major findings around teacher qualifications for high school science teachers in South Australia

Years 8-10 teachers (junior high school)	Years 11 and 12 teachers (senior high school)
16% unqualified due to insufficient subject discipline knowledge. Teachers either completed a number of science units as part of their education degree (as is done with primary teachers) or were teaching outside of their field (e.g., English teacher teaching science).	42% of senior high school physics teachers were unqualified. When considered in relation to age, 61% under 40 years-of-age were unqualified compared to 37% of teachers over 40.
22% of country teachers* unqualified compared to 14% of city teachers**. A chi-square analysis revealed statistically significant result ($p = 0.0281$).	92% of teachers under the age of 40 teaching senior physics in rural schools were unqualified compared to 33% for city schools. Statistically significant using chi-square test ($p = 0.0014$).
	28% of senior chemistry teachers unqualified. Of this, 36% under 40 years-of-age were unqualified compared to 24% of teachers over 40 (no statistical significance).
	38% of rural teachers of chemistry unqualified compared to 25% of city teachers (no statistical significance).
	25% of senior teachers of biology were unqualified. Of this, 24% under 40 years-of-age were unqualified, which compares favourably with 25% of teachers over 40.
	8% of teachers of biology under the age of 40 in rural schools not qualified compared with 29% for city schools (no statistical significance).

*Teaching in schools in country or rural locations **Teaching in schools in city or metropolitan locations

Teacher Impact and Quality

Does it really matter that individual teachers are not qualified? Teacher quality emerges as a critical factor in the school effectiveness literature even though there is some difficulty in determining the degree of teacher impact (Hattie, 2003). Recent access to large-scale international student data sets for science, mathematics and literacy, such as those provided by the Program for International Student Assessment (PISA), along with the application of multilevel statistical techniques make it possible to undertake comparisons across countries, within countries, and across schools. These meta-analyses are powerful in that they provide generalisable patterns of findings that are comparative. For example, work by Cresswell (2004) identified that around 10-18% of the variation in student achievement in PISA relates to differences between schools, with an additional 50% of variation attributable to differences between classrooms in the same school. So, while there is often much consternation about across school comparisons, PISA analyses indicate that there is actually greater variation in student achievement between classrooms in the same school than across schools (OECD, 2004).

What impact does the individual teacher have anyhow?

Focusing further on individual classroom teachers, Darling-Hammond (2000) stresses the cumulative effect of teacher impact. Students who experience ineffective teachers over an extended period demonstrate significantly lower achievement and learning improvements than students allocated to effective teachers (p. 2). Hence, the findings in Table 1 are a concern for high school students either being taught by teachers who are inadequately prepared or teaching out of their field (National Academy of Sciences, 2006; Story, 2007). So, the first point to make is that individual teachers do make a difference and teacher impacts are cumulative.

Identifying the criteria of an effective or quality teacher is a major task and certainly not the focus of this discussion. However, reports such as *How the world's best-performing school systems come out on top* (Barber & Mourshed,

2007), *Gaining ground in the middle grades: Why some schools do better* (EdSource, 2010), and *What makes school systems perform: Seeing school systems through the prism of PISA* (OECD, 2004), which are based upon large-scale data sets provide generalisable research findings. Each of these reports states categorically that teachers require a high degree of subject discipline knowledge either as a prerequisite for entering teacher education programs (e.g., as evident in Finland) or accrued during their preservice education as compulsory units or courses (e.g., as in primary and middle schooling).

Interestingly, a review of studies exploring the impact of teacher qualifications on student achievement produces either inconclusive or conflicting findings. In an analysis of 33 studies, Byrne (1983) found a positive relationship between these two variables in only 17 of the studies with no relationship in the remainder. Similarly, Ashton & Crocker (1987) found only a positive relationship in five of the 14 studies they reviewed. In contrast, Monk (1994), in his meta-analysis of 2, 829 students from the Longitudinal Study of American Youth (LSAY), found that university-level mathematics courses completed by high school science teachers positively impacted their teaching of the physical sciences and student achievement.

Having a science major is positively related to pupil performance for juniors, even when controls were included for content course-taking by teachers. This result suggests that the coherence of a major contributes to pupil performance above and beyond simply accumulating courses in a given subject area (p. 137).

A more recent study by Wenglinsky (2000) using multilevel structural modeling to analyse National Assessment Educational Progress (NAEP) data in the United States (U.S.) found that teachers with academic majors or minors in the subject area for which they were teaching produced greater improvements in student achievement in both mathematics and the sciences. This finding held even after controlling for teacher pedagogy, professional development, class size, and student demographics.

The inconsistency of findings in this area relates to two main issues. The first is that the majority of these studies report on preservice or graduate teachers from primary, middle and high school teacher education programs. There are two major considerations about how this research is reported and used by educational authorities.

1. Given that each of the educational contexts varies, reviews of the research should deal separately with the three groupings of teachers. Yet, this is often not the case with findings from middle school teachers generalised across to senior high school teachers (Darling-Hammond, 2000).
2. The emphasis on preservice teachers disregards the impact that classroom experience has both on the restructuring and development of discipline knowledge and pedagogical expertise. Hence, equivalent studies undertaken with experienced teachers would likely generate quite different results (Azri & White, 2007).

The second issue regarding research findings is the way in which teacher qualifications are defined. With the majority of the studies in this area presenting data from the United States (U.S. there appears to be wide diversity (LaTurner, 2002) regarding:

- how many subject discipline courses preservice teachers undertake in their teacher education programs;
- the length of time allocated to these courses;
- the number of courses constituting a major or minor; and
- whether these are education or discipline-specific courses.

This latter issue picks up on the earlier quote by Monk (1994) in that it is not merely the number of science or mathematics courses completed by preservice teachers that matters, but about the connectivity and coherence between these courses so that teachers build and construct the necessary knowledge and understanding for teaching high school students over the duration of their studies (Story, 2007). Given the absence of substantive comparative literature in this area around teacher qualifications for other countries, it is valuable to consider more critically the

research around teacher knowledge and the way in which this develops with time so that the novice becomes an accomplished or expert teacher (Berliner, 2001).

Teacher Knowledge

The second point to explore around the *pedagogy only* myth is: What is deemed as necessary teacher knowledge? Are qualifications around the discipline knowledge important? If so, why? In addressing these questions the seminal work of Shulman (1987) and his components of teacher knowledge are used as a framework, given that these still guide teacher education programs worldwide (Darling-Hammond, 2000). The components include: content knowledge, general pedagogical knowledge, pedagogical content knowledge, curriculum knowledge (i.e., materials and programs), knowledge of learners and their characteristics, knowledge of educational contexts (from classroom to broader community), and knowledge of educational purposes and values and their philosophical grounds.

While all are essential for teacher education, the discussion in this article is structured around content discipline knowledge and pedagogical content knowledge as these are specifically related to the discipline.

Content Discipline Knowledge

Understanding this component involves much more than the acquisition of facts or packets of knowledge, or being able to calculate set algorithms, which is the perception of some educational advisors (Ingersoll, 1999). In defining this component, Shulman (1987, p. 9) conceived that

A teacher is a member of a scholarly community. He or she must understand the structures of subject matter, the principles of conceptual organisation, and the principles of inquiry that help answer two kinds of questions in each field: What are the important ideas and skills in this domain? How are new ideas added and deficient ones dropped by those who produce knowledge in this area?

Importantly, he argued that “subject matter is a nearly universal vehicle for instruction, whatever the ultimate goal” (Shulman, 1987, p. 7), if students are to develop conceptual understandings so as to be able to solve problems, think critically and creatively, in addition to learning facts, principles and procedural rules. To facilitate these student outcomes, the study of a discipline must provide a teacher with a basis of the content knowledge (i.e., facts, concepts), substantive knowledge (i.e., explanatory framework), syntactic structure (i.e., way in which new knowledge is generated), and beliefs about the subject matter (Deng, 2007). An understanding of these areas is critical because they influence the decisions made by the teacher in selecting the relative importance of particular content and how this might be sequenced to enhance student understanding of the subject discipline (Grossman, 1990).

Given this background there is evidence in the science and mathematics education literature that high content discipline knowledge is a critical factor for high school teacher effectiveness. Particular examples include:

- Curriculum design, lesson planning and the implementation of instructional practices to address the learning needs of students rely on teachers drawing upon their own tacit understandings of substance, structure and syntax of the discipline so as to plan, instruct and assess their students appropriately (Borko & Putnam, 1995; McDiarmid & Clevenger-Bright, 2008).
- Limited knowledge of mathematics restricts teachers from being able to promote conceptual understanding among their students even when they are competent pedagogues (Ma, 1999).

Limited mathematical and scientific knowledge encourages teachers to rely upon traditional pedagogical methods, such as teaching by the textbook and memorization, because they are unable to teach through reasoning or for conceptual understanding (Pardhan & Mohammad, 2005). Additionally, many of these teachers are either unable or unwilling to engage with inquiry approaches in their

classrooms or even allow students to undertake laboratory practicals (Singer, Hilton & Schweingruber, 2005).

- Ensuring that students achieve learning goals and skills around laboratory experiences requires teachers to have a broad understanding of both the processes and outcomes of scientific research, which is not possible if they themselves are relying on textbook learning (Singer et al., 2005).

A recent longitudinal study by Azri and White (2007) designed to explore the changes in senior high school science teachers’ knowledge of a scientific concept over time provides valuable insights that help to explain a number of these research findings. By following 22 teachers (with degrees in biology, physics and chemistry, and a teaching diploma) for 17 years from their preservice education, Azri and White identified three key findings.

1. Change in teacher discipline knowledge is multifaceted, with unused knowledge being lost with the construction of new knowledge occurring, resulting in increased understanding, structural reorganisation and integration.
2. A critical mass of discipline knowledge and interest is necessary for development, continual expansion, reflection and integration to occur. Hence, it is critical that teachers teach within their chosen fields.
3. Given that the school curriculum impacts teacher content knowledge (i.e., knowledge organisation and source) most extensively, it is important that teachers have rich scientific knowledge because it ensures greater freedom for them to “experiment pedagogically” with their students (Azri & White, 2007, p. 246). Without this rich discipline knowledge they are likely to rely on textbooks and traditional teaching approaches in the classroom.

Seemingly, content discipline knowledge is critical because it gives teachers scope within their classrooms to incorporate aspects of the discipline they consider most appropriate for their students. While curriculum certainly directs this focus, in the absence of a sound conceptual understanding, science and mathematics teachers come to rely too heavily on textbooks, which are known to perpetuate alternative conceptions and lead to teacher-directed lessons (Ingersoll, 1999).

Pedagogical Content Knowledge

In addition to generic pedagogical knowledge (i.e., questioning effectively, assessing for understanding, designing curriculum), Shulman (1987) recognised a “special amalgam of content and pedagogy that is uniquely the province of teachers, their own form of professional understanding” (p. 8). He referred to this as pedagogical content knowledge (PCK) because it blended mastery of the content and of pedagogy into an understanding of the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations – in a word,

The ways of representing and formulating the subject that make it comprehensible to others ... [It] includes an understanding of what makes the learning of specific concepts easy or difficult: the conceptions and preconceptions that students of different ages bring with them to the learning (Shulman, 1986, p. 9).

This quote identifies important insights that are not possible when teachers do not have sound understanding of their discipline knowledge. For example, understanding students’ conceptions and how these are likely to develop along with the kinds of alternative conceptions possible only emerges from an understanding of a specific discipline area. So, while a teacher may have a major in biology, he or she will not have the necessary understanding of chemistry to grasp the complexity of student thinking around these conceptual components. Subsequently, content discipline knowledge is required so that the teacher can identify which concepts to teach and in what order while simultaneously selecting and implementing the most appropriate strategies (including simulations, investigations) to encourage students to develop scientifically accurate conceptions (Krauss et al., 2008). When science teachers are not confident in teaching a branch of science (e.g., chemistry) they are likely to fall back on the use of textbooks as a survival strategy, which disengages students in the longer term and often leads to distorted views about the nature of science (Ingersoll, 1999; Pardhan & Mohammad, 2005). This situation becomes even more critical when high school teachers are required to teach subjects for which they have no subject discipline

knowledge (Azri & White, 2007; Watson, Steele, Vozzo & Aubusson, 2007).

Shulman (1987) considered that PCK was relevant to all key learning areas. However, it is within primary and high school science and mathematics education where substantive research literature exists around this teacher component. In this literature, PCK forms the critical link between content discipline knowledge and pedagogy (Ball & Bass, 2000; Gess-Newsome & Lederman, 1999; Krauss et al., 2008). For example, while questioning is an important generic pedagogical strategy, using questions in physics that encourage a deeper conceptual understanding requires an open style approach with more than one answer possible. However, teachers who lack the necessary content knowledge are unlikely to put themselves in such a situation so tend to rely on closed questions, which allow them to direct student thinking and stay within the confines of their own knowledge (Azri & White, 2007).

PCK is also important within specific branches of science. While all science teachers understand how to set up and orchestrate a routine practical with their students in laboratories, the degree to which a science teacher is able to make the most of this situation will depend on his/her understanding of the subject discipline. For example, during an investigation of reaction rates with Year 8 students, iron nails were set up in test tubes containing copper sulphate solution. With time the nail became encrusted with copper while the solution lost its blue colour. This is expected, but with a chemistry background and an understanding of what is chemically occurring in this situation the teacher notices that a white powder is also forming on the edge of the tube and directs the attention of students to the event. Given that a white crystal should not be forming, the teacher is able to use the observation to enhance learning by encouraging students to explain what may have caused this atypical reaction. Alternatively, the teacher with a major in biology teaching this same Year 8 class may either miss or not understand the significance of this observation and so the learning opportunity is missed by students.

Exploring this component further, Windschitl (2002) postulated that it is the lack of substantive discipline understanding of particular branches of science along with a teacher's lack of authentic scientific research experiences in these areas that ultimately inhibits the implementation of open inquiry or even guided inquiry in junior high school science classrooms. While textbooks provide recipe-driven experiments that inexperienced teachers can follow, there are many inaccuracies about the ways in which these portray science that teachers with the appropriate discipline knowledge and experience are able to rectify.

Clearly, the experience of the teacher is consequential (Loughran et al., 2004), with PCK a critical component in the expert and novice literature. Cochran-Smith (1997) discusses this aspect suggesting that new or novice teachers have “incomplete or superficial levels of PCK” (p. 2), with some of the issues around PCK for novices in science and mathematics including:

- A reliance on unmodified subject matter knowledge without a coherent framework for guiding teaching;
- Implementation of broad pedagogical strategies without considering students' prior conceptions, abilities, or learning preferences; and
- Difficulty understanding the link between subject discipline knowledge and pedagogical ideas.

Here again it is not the pedagogy that is undermining the teaching but the subject discipline knowledge. Deng (2007) sheds additional light here suggesting that there are differences between the academic discipline (concepts and principles that scientists need to know) and the school subject (concepts and principles that students need to know). In his view, it is the role of the science or mathematics teacher to *transform* the discipline knowledge into the school subject. This is done through critical reflection and interpretation of the subject matter using different ways to represent the information (e.g., analogies, metaphors, problems) so as to meet the diversity of students in the classroom (Shulman, 1986). However, this is difficult in the absence of substantive discipline knowledge.

Insights around the specificity and complex interplay between subject discipline knowledge, general pedagogical expertise, and PCK is demonstrated by the findings from emerging programs to retrain experienced teachers to teach high school mathematics and science. For example, a recent study by Watson et al., (2007) conducted in Australia, found that even with six months intensive subject discipline knowledge in physics and chemistry, experienced high school teachers went into “survival mode” in their transition to teaching science. They were unprepared for managing a science lesson even though their pedagogical expertise was high. In other words, there was little translation of this professional knowledge into the different teaching context. Importantly, a number of the issues discussed in these pages around conducting practicals in laboratories, how to engage students in science, understanding scientific conceptions, and the representations likely to be held by students were missing from the teachers' understandings. Hence, the researcher's quote, “It cannot be assumed that the experienced teacher can teach anything and can manage any classroom” given that “content knowledge as specialised science subjects” is necessary, not just sufficient (p. 152).

Conclusion

Having high school teachers with the necessary subject discipline knowledge for teaching is critical if we are to sustain our future workforce, particularly in areas like science and mathematics where there are already shortages in many countries. As quoted by Professor Linda-Darling Hammond (2010) in an interview around teacher education:

The better prepared teachers are, the longer they're likely to stay in teaching and the more likely they are actually to enter teaching. So, teachers who are coming through these new five-year teacher-education models that give a bachelor's degree in a content area, plus a master's in teaching and a full year of student teaching are very rigorous and very tightly coupled ... Usually, more than 90 percent enter the profession, and of those, about 90 percent are still there several years later. (Section 8)

This article is not suggesting that a teacher with a bachelor's degree in science (with physics major) and teacher qualification is guaranteed to be a competent teacher. Equally though, there is enough research evidence to indicate that competent science and mathematics teachers require a sound level of subject discipline knowledge in

order to develop the necessary PCK. Clearly, the level and balance between discipline knowledge, pedagogy, and PCK must be considered carefully not only in our teacher education programs but also in the professional learning opportunities we provide for our teachers once they are in our schools (Berliner, 2001).

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JUSTIFICATION OF A MULTIDISCIPLINARY APPROACH TO TEACHING LANGUAGE IN BOTSWANA JUNIOR SECONDARY SCHOOLS

Deborah Adenihun Adeyemi

This article attempts to justify the multidisciplinary approach to instruction by a review of the literature and an examination of relevant documents. It also builds a rationale for the use of multidisciplinary approaches to instruction in teaching English in Botswana's junior secondary schools. Finally, the paper provides a brief illustration of the teaching of a topic using the multidisciplinary approach and its attendant implications for pedagogy.

Keywords: English language curriculum, integration, multidisciplinary approach

All subjects at the secondary school level in Botswana, except Setswana (the national language and a compulsory subject for all citizens) are taught in English. Therefore students must have English language skills to study their other school subjects and write examinations in those subjects. The Botswana Junior Secondary English Curriculum (Republic of Botswana, 1996a) says this of English:

It has significant importance in the field of education and its function as a medium of instruction and service subject links it directly to the achievement of all fifteen aims of the Basic Education Program. (p. ii)

The Botswana Basic Education Program (Republic of Botswana, 1995) is a document that spells out the educational philosophy, skills, and competencies that should be attained by individuals after the mandatory ten-year basic education program. A part of the aims pertaining to language development states that students must "Develop the ability to express themselves clearly in English, both orally and in writing, using them as tools for further learning and employment" (p.8).

The current Junior Secondary English Syllabus (Republic of Botswana, 1996a) details the objectives and expected outcomes for learners of English as follows:

- Communicate accurately, appropriately and effectively in speech and writing, both in and outside school;
- Understand and respond to what they hear, read and experience in a range of situations, setting and media;

- Enjoy reading a range of literature, not only fiction but also general interest works and materials; and
- Convey information and logically order and present facts and ideas based on other subjects of the curriculum. (p.ii)

These expected outcomes of the study of English in junior secondary schools reflect the importance of the development of English language skills in the Botswana education system. English is an official language as well as a medium of instruction in schools and institutions of higher learning. It is a major language of communication within the country, the Southern African region of which Botswana is a member, the continent of Africa, and globally (Mooko, 1996). It is equally assumed that English has become a global language of commerce, economics, technology and international relations; this cannot be overlooked.

As a result of the above it becomes important that every citizen of Botswana demonstrates a high degree of literacy and proficiency in the English language in order to develop the skills necessary to achieve the national educational and social objectives of an educated and informed nation of vision (Republic of Botswana, 1997). In pursuance of the stated objectives, this article intends to argue for the multidisciplinary approach to the teaching of the English language across the content areas in the secondary education curriculum. It is the view of this author that because of the importance attached to the teaching and learning of the language and the difficulty of learning

English as a second language (L2), its teaching should be reinforced and connections made with its relevance in the acquisition and use of knowledge in all other disciplines across the curriculum.

From the experience of this writer as a secondary school English teacher for over two decades, the penchant of other subject teachers to blame English language teachers when their students cannot read or write effectively in other subject areas is the norm. Those teachers most often fail to reflect on their own methods of teaching to see if it enables their students to make the necessary connections with skills and knowledge across the subject boundaries.

Objectives of this Article

The objectives of this article are:

1. To justify the use of the multidisciplinary approach to instruction in the teaching of the English language at the junior secondary level in Botswana;
2. To evaluate the role of collaboration in multidisciplinary instruction;
3. To give a brief illustration of the teaching of a topic with the use of the multidisciplinary approach to instruction.

The Difficulty of Learning English as a Second Language

The importance of the study of English in the educational and social spheres of life in Botswana cannot be over-emphasized. English is used as a “lingua franca”, the medium of instruction, and the official language in government, commerce, and business. Nonetheless, it is equally appropriate to point out the difficulty of the teaching and learning of the language in L2 context in the country. For example, Honey (2000) maintains that for most African students, English is learned as a third or fourth language.

In Botswana English is a third language for many students, especially for those students from minority groups whose mother tongue (L1) is not Setswana (the majority language and national language). This situation means that students have to overcome the hurdles of learning their L1 in order to

come to terms with the learning of the L2 or L3 as the case may be. Honey (2000) further sums it up:

In those villages pupils pore laboriously over social studies textbooks, written in English and struggle to understand what they say. Laboriously, because it is a fact that English is the second language (though in practice effectively the fifth) for these pupils. . . . Suddenly, much of their learning in many other subjects of the secondary school curriculum – is now to take place in this half-understood medium of English. (p. 26)

Therefore, this writer suggests that a multidisciplinary approach to the teaching of English would help to alleviate the problems that pupils have with the study of English in this context. Teaching the subject from a multidisciplinary point of view would ensure that students have adequate exposure and reinforce their development of language skills. While doing this, they would acquire and develop a wider range of vocabulary needed for communicative purposes as well as transferable knowledge to study other content subjects across the secondary school curriculum.

The Botswana Secondary School System

Botswana operates a ten-year basic education program comprised of seven years in primary education and three years in junior secondary education which culminates in the award of the Junior Secondary Certificate (JC) (Republic of Botswana, 1995). After this point, a student may opt for a two- year senior secondary school education or a vocational, secretarial, or commercial training program. The senior secondary school level ends with the award of the Botswana General Certificate of Secondary Education (BGCSE) which enables the holder to be considered for tertiary level education in a university or college. The context for this article is the junior secondary setting.

Brief Literature Review

The Place of Multidisciplinary Instruction in Education

The curricular concept of integrating or connecting school subject areas has gained significant attention as a plausible solution to developing a more relevant approach to teaching

and learning (Adelman, 1989; Cheek, 1992). Access to information is a key component to students' success and should be provided equitably among a diverse group of learners. A multidisciplinary approach to instruction supports learning by providing students with a variety of opportunities to learn, develop skills, and demonstrate understanding of concepts, themes, topics, or knowledge across the disciplines in a school curriculum. It also provides students with links to connect otherwise discrete bits of knowledge and enhance their ability to recognize and apply prior knowledge to new, related learning situations (Mathison and Mason, 1989). Integrating learning through multiple disciplines or multidisciplinary instruction is the focus for the discussion in this article.

Multidisciplinary learning potentially provides students with a more comprehensive experience that unifies knowledge and fosters greater understanding than that which could be obtained by examining the parts separately. It is a methodology that helps students make connections (Langa & Yost, 2007). Also, Lucan (1981) argues that

A child sees the world as one unit and naturally asks questions which cut across artificial subject divisions. An integrated approach to learning attempts to follow the child's natural ways of learning, viewing the world as a whole, the teacher's role being to provide experiences and to assist the process by suggesting further lines that may be followed. (p 59)

In support of multidisciplinary instruction, Bransford, Brown, and Cocking (2002) state that research indicates that usable knowledge is not the same as a mere list of disconnected facts. The multidisciplinary approach is an enabling one as it empowers students to see the connections, generalize, and transfer knowledge to a variety of problem solving situations. In addition, it allows students to gain and apply knowledge, skills, and strategies in multiple subject areas that make them construct meaning in a more integrated way. More importantly, the approach is suitable for addressing the instructional needs of the mixed ability group of students in the average Botswana secondary classroom by providing them with a more comprehensive

learning environment that is rich and interesting. The fact that the different disciplines borrow knowledge from each other potentially makes the classroom amusing, interactive, and thought provoking (Bransford et al., 2002).

The use of the multidisciplinary approach further permits the teacher to combine a variety of methods, techniques, and technological devices. It is believed that multidisciplinary teaching gets the whole school, teachers, parents, and community involved because it facilitates team and collaborative activities. Teachers share classroom activities, worksheets, and resources with each other to facilitate their students' learning. The parents also get involved as they work collaboratively with teachers to address students' learning needs and problems. Students also learn collaboratively as they do group or pair projects and presentations. In fact, everyone benefits as the students see their curriculum come alive to address issues in the classrooms, across subject areas, in the school as a whole, as well as in the community.

A school district in Michigan, U.S.A., that used multidisciplinary team teaching recorded sustained enthusiasm from the staff, parents, and students; increased attendance rates; and improvement in standardized test scores (Bolack, Bialach and Dunphy, 2005). Also, multidisciplinary instruction helps teachers better utilize instructional time and look more deeply into subjects through a variety of content specific angles. It helps teachers plan instruction suited to individual student needs. Another benefit of multidisciplinary teaching is that students have a chance to work with multiple sources of information, thus ensuring they are receiving a broader and more inclusive perspective than they would from consulting one textbook (Wood, 1997).

More importantly, multidisciplinary instruction allows for the use of literacy activities that are beneficial in language teaching and learning. It is also useful in L2 language learning contexts especially in Botswana as it enables learners to build experiences that are meaningful, related, and contextual in order to enhance their development of

language skills that can be transferred to content area learning. Furthermore, multidisciplinary approach to the teaching and learning of English in Botswana secondary classrooms is supported by the National Commission on Education (NCE) (Republic of Botswana, 1993) which states, “the compartmentalization of subjects should be avoided and every effort should be made to establish linkages between the subjects in a holistic way” (p. 153).

All the above arguments favoring multidisciplinary instruction probably inform the English language syllabus (Republic of Botswana, 1996a) which recognizes the role of English as, “a service subject that helps to bring different insights into content materials across the curriculum” (p. ii), and the suggestion to teach it from a multidisciplinary perspective.

The Role of Collaboration in Multidisciplinary Instruction

The notion of multidisciplinary instruction assumes that a topic, concept, or theme is better taught and understood when more than one subject is involved in the teaching and learning of the subject matter. The approach also recognizes and values the role of other stakeholders in the educational process such as, collaborative teaching teams, subject clusters, parental and community involvement in teaching, and other collaborative school and learning activities. To heighten the sense of collaboration needed in multidisciplinary instruction, Hennings (2000) says that teachers today are unleashing the power of communication by introducing learning strategies that rely on social interaction, dialogue and collaboration. She states further

In teaching language for instance, one needs to look at aspects of language such as speaking, reading, writing and listening. Again in teaching a composition topic such as, ‘Advertising’ will use music, art, technology, psychology--to teach effectively. (p. 8)

Considering all these viewpoints, it can be argued that the teaching of English in Botswana junior secondary schools would encourage critical awareness of related concepts across the curriculum. Such concepts include justice, the

environment, citizenship, human rights, moral and emotional development, family, and community life in ways that touch on personal and social experiences. It also makes sense to assume that such connection of disciplines to the teaching of language can help to develop morals and value judgments which represent the ideals of the basic education program (Republic of Botswana, 1994, 1995,) and Vision 2016 (Republic of Botswana, 1997). Students can also have the added advantage of increasing their academic and vocabulary knowledge of the disciplines while working on related topics in the different subject areas. In order to achieve the objectives of multidisciplinary instruction, it is important that teachers employ practical and reflective strategies associated with other subjects in the school curriculum. This can be done by teaching across subject boundaries as suggested by Jweid and Rizzo (2004).

The approach would enable learners to ask questions which cut across artificial subject divisions and see the whole exercise from a “holistic” angle. In this way, related subjects are utilized in teaching, and ultimately enabling students to make connections between and among disciplines for a more comprehensive understanding of humans and their interaction with their total environment. Moreover, many of the inhibitions such as the lack of exposure associated with the teaching of English with many students would be minimized. Also, students would attain fluency and proficiency in the language both for study and life outside the school setting in wider global contexts.

An Illustration of Teaching the Topic “Family” Using a Multidisciplinary Approach

As indicated earlier, multidisciplinary instruction allows students to become involved in comprehensive instruction. Consequently, an attempt will be made to briefly illustrate the teaching of the topic, ‘Family’ through the multidisciplinary approach with the use of moral education, social studies, and Setswana which are subjects in the junior secondary curriculum for Botswana. The topic is a selection common to the junior secondary school syllabus in at least four subjects. The teachers of these subjects can team up to plan instructional units on the identified topic. Students

would then be expected to borrow from the disciplines to tackle issues and build skills in language learning while acquiring knowledge of the disciplines at the same time.

For example, the topic, “Family” is found in these four subjects in the junior secondary school curriculum: English (Republic of Botswana, 1996a), Setswana (1996b), moral education (1996c) and social studies (1996d). In English language studies, the topic is taught as ‘My Family’ and in Setswana it is ‘Lelwapa’ (meaning family institution). In social studies, the topic is discussed as ‘Family Institution’. Students can also explore the same theme in moral education where it is discussed as ‘Cultural values related to family life in Botswana’. In the English program, students are expected to acquire and practice the following skills in connection with the topic:

- Reading: A passage about ‘My family’.
- Listening: How family members help at home.
- Speaking: A brief talk on, ‘My family tree’.
- Writing: An account of a recent family celebration.

In Setswana, students may do the following:

- Reading: The Traditional Family
- Listening: The modern nuclear family
- Speaking: Debate “The Modern versus Traditional Family”
- Writing: A letter to a friend about my family.

In social studies, students may:

- Explain and define the concept of family;
- Give types of family;
- Explain the responsibilities of men and women in the family and society; and
- Describe ways in which the family as an institution is part of the culture.

In moral education students may:

- Describe different types of family;
- Describe the role of family in the moral development of a child
- Identify ways in which people are socialized; and
- Explain the cultural norms and values of family life in Botswana.

The suggested topics can be developed by a team of teachers as a unit to be taught according to the time line identified by the team, and then modified to suit individual teachers’ and students’ needs. They are not rigid prescriptions. They can also be modified to suit teachers’ instructional strategies to include parents as a resource to students on the topic about past and present family practices and norms to make the subject real to life for the students. Also, in teaching the topic/theme a multidisciplinary approach encourages many more creative activities such as drawings, school visits to traditional family settings, cartoons, poems, and stories. The above activities as examples indicate that the topic ‘family’ cuts across many school disciplines and has the potential to show the interrelationships within and between subjects. This then makes the mapping of themes/topics easier for the willing and collaboration-oriented teachers. The junior secondary curriculum has many topics that favor the multidisciplinary approach to. The curriculum is further made relevant by presenting information to students in a holistic manner which empowers them to see connections between bits of information, to make generalizations, and to transfer knowledge to a variety of problem solving situations in real life.

Pedagogical Implications of Multidisciplinary

Instruction

Critics of multidisciplinary instruction (Gatewood, 1998; Barton and Smith, 2000) argue that multidisciplinary teaching, if not properly planned and executed, may contain pointless busywork and activities created solely to affect a link to a theme or topic. They are also concerned that it may not prepare students very well for high stakes standardized tests. There is the fear that it may discount the value of deep subject specific knowledge. Nonetheless, appropriate teaching methods that address the individual and collective needs of students are required on the teaching and learning continuum. The use of different approaches to improve learning should always be explored by teachers who are intent on making a difference. Multidisciplinary instruction is one of the options available for effective instruction at the junior secondary level in Botswana. Moreover, it is a

credible foundation upon which academic habits can be inculcated in students.

For teachers of language in particular, a multidisciplinary approach to instruction allows for the teaching of the subject to embrace the communicative paradigm for effective development of skills and competencies required to achieve the educational and social objectives of the teaching of English in Botswana schools. For teachers of all disciplines, it is important that their methods and approaches aim towards the all-round development and welfare of their learners by taking into consideration the needs, problems, abilities, and limitations of students. In this regard, multidisciplinary instruction provides the scope for an inclusive instruction that involves collaboration among the various stakeholders in educating the country's children and youth.

Concluding Comments

Multidisciplinary instruction is vital in the present global setting because of the belief that the global world is a

culturally and linguistically diverse entity that can best be understood from a holistic angle to address many of the unusual problems of modern civilization. To emphasize this, Spiro and Jehng (1990) say that workers and learners must be able to adroitly use, or transfer information often learned in other settings especially, in situations where complex problems must be solved in volatile conditions.

The multidisciplinary approach to teaching tries to minimize the divisive effects of the traditional single discipline approach that fostered isolation and compartmentalization of knowledge. Multidisciplinary instruction enables learners to recognize contrasting perspectives, synthesize, think critically, and re-examine the world we take for granted (Davis, 1997). It makes students tackle complex issues in meaningful ways. Therefore, it is an approach that should be explored, encouraged, and made easy for teachers to utilize in instruction. Finally, it is an area of teachers' professional knowledge that is open to more research to determine the extent, variety, and success of its use in actual instructional practices.

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EARLY CHILDHOOD TEACHER INDUCTION: A CONSTRUCTIVIST PERSPECTIVE

Amy Truesdell Wolf and Josephine Agnew-Tally

This article reports on a project by faculty members at a mid-western United States teacher education program who were concerned about the attrition rate among early childhood teachers. They name some causes of attrition and describe four induction strategies to alleviate attrition. The four strategies, grounded within a constructivist framework are: reinventing the pedagogy of teaching, providing experiences with young children, providing professional development beginning with the pre-service teacher, and organizing and facilitating mentoring support groups.

Keywords: constructivism, early childhood teachers, teacher attrition, teacher induction

Faculty members at a mid-western United States teacher education program, concerned with attrition rates of early childhood teachers identified possible causes of attrition and developed induction strategies to alleviate them. Faculty members explored and identified strategies to introduce preservice teachers to the field of early childhood education. These induction strategies, which were grounded in Constructivist theory, supported early childhood teachers as they completed their pre-service education, began their career, and made a long-term commitment to the teaching profession. The concept of teacher induction has been adopted by most school districts in the United States; however, according to Strong (2005) the features of a highly effective induction program have yet to be defined.

Attrition Rates

To develop effective induction strategies to address the realities of attrition, it is first important to understand causes of attrition. In the field of education in the U attrition is evident with one-quarter of beginning teachers expected to leave the field within the first four years of teaching. Fifty percent of urban teachers leave the field after only five years of teaching. Additionally, a majority of individuals completing a university teacher education program either resign from teaching after a few years of employment or never enter the teaching profession (Haberman, 2005). Early childhood teacher turnover in the United States is higher than the national average with thirty percent of program staff members leaving the field each year. Early childhood

teachers grapple with low salaries, inadequate benefits, poor working conditions, and a limited number of qualified mentors due to the lack of public funding. According to the National Association for the Education of Young Children (NAEYC, 2003) there is a critical shortage of early childhood teachers.

Attrition is further compounded with additional stress placed upon beginning teachers. In the United States, teachers must meet state and federal policies requiring that they not only serve every child, but also succeed with them (Kardos & Johnson, 2007). As a result, beginning teachers are under additional pressures to ensure that every child can pass examinations. The move toward such an accountability system has placed a heavy burden on all teachers, including those serving young children.

Teacher Induction Strategies

With a heavy emphasis on accountability and testing, Constructivist teaching strategies, which support successful teaching and teacher induction are sometimes difficult to implement within the current context of schooling. Instead of teaching to the whole child, teachers feel forced to teach to the test. "Teachers, like the students they teach, are disempowered as attempts to reform education focus on telling teachers (and everyone else) what to do rather than empowering them to investigate and research what is best for their students" (Fosnot, 1989, p.6).

Darling-Hammond (2006) agrees that effective induction strategies must be empowering rather than disempowering for beginning teachers. Induction strategies should be experiential, grounded in inquiry and experimentation, collaborative, connected to and derived from teachers' work with their students, sustained and intensive, and connected to other aspects of school change. It is important to keep in mind the causes of attrition while defining strategies that empower pre-service and in-service teachers. The investigators of this study identified four areas that were grounded in constructivist learning theories and research on teacher induction, which may overcome attrition. These four areas are: reinventing the pedagogy of teaching, early experiences with children, professional development beginning with the pre-service teacher, and support groups mentoring

Reinventing the Pedagogy of Teaching

To reach students, it is important to engage in self-reflection by examining the ways in which information is delivered to students and make changes to be more effective stewards of education. Adding courses and changing requirements have had little effect upon how teachers cope with the demands of teaching (Fosnot, 1989). Instead, it is important to consider reinventing the pedagogy of teaching, and to do so within a theoretical framework, such as constructivism.

Constructivist education builds an individual who is self-reliant and motivated. To cultivate a constructivist educator, we need to remain "close to the interweaving of objects and thoughts, of doing and reflecting, theory and practice, emotions and knowledge" (Rinaldi, 2006, p. 141). As a result, educators develop a passion for learning themselves. The passion for learning results in a passion of learning by everyone involved.

As faculty in this study reinvented teaching according to constructivist theory and practices, teacher candidates became excited to go to class. A student said, "We can really learn now that we are responsible for our own education." Additionally, the students in class became less dependent upon faculty input, and came to class prepared to

discuss ideas and current literature. The reinvention of the pedagogy of teaching not only excited the pre-service teacher and faculty members; it also helped them understand how they might answer the question of accountability. Reflective dialogue that was tied to experiences enabled students to learn how to be accountable for learning. The pre-service teachers made learning visible in the early childhood classroom. Furthermore, as faculty engaged students in the learning process, the faculty members demonstrated accountability for learning in the college classroom through the use of projects, scoring guides, and classroom dialogue.

The success in this project resulted in faculty members continuing to meet with one another regularly to engage in dialogue regarding methodology. Stories, ideas and transcripts from classes were analyzed to help faculty reflect upon teaching and learning. Furthermore, faculty members visited one another's classes to gain further insight and perspective.

Experiences with Children

Observation assignments are a mainstay in many education programs. However, most observation occurs at the beginning of the education program where students are less likely to know what to observe and may gain little from the observation. Reflective field research is needed to engage students to be able to formulate critical questions and responses about teaching and learning (Fosnot, 1989).

The early childhood faculty members in this study determined that teacher candidates required experiences with children from diverse populations and ages. As a result, practicum experiences were expanded from two credit hours over one semester to six credit hours over three semesters. The practicum experiences were embedded in projects that were tied to "Strategies and Pedagogical" courses. Furthermore, field sites were investigated by faculty so that students and faculty were able to work together with mentors in the field who had similar values of education. With the support of mentor teachers and

university faculty, students were able to work and learn from their experiences with diverse, young children.

To fully consider the diversity of young children, it is necessary to think globally. In this era of globalization many universities worldwide have decided that global education and internationalization, defined as “the process of integrating international, intercultural, or global dimensions into the purpose, functions, or delivery of post-secondary education” (Knight, 2003, p. 2), should become a priority for their future development. Experience with children of diverse backgrounds supported the pre-service teacher in learning what to expect in different situations. As a result the pre-service teacher was better prepared to work in diverse environments when they graduated into the job market.

Professional Development Beginning with the Pre-service Teacher

Personal and professional development and education are something we construct ourselves in relation with others, based on values that are chosen, shared and constructed together. It means living and living ourselves in a permanent state of research. (Rinaldi, 2007, p. 137)

As the early childhood faculty in this study envisioned the ideas of lifelong learning, it was determined that students needed opportunities to learn from not only the faculty, texts, and other students, but also from professionals and researchers in the field of education. Engaging in dialogue with educators in the field and understanding the perspectives of known researchers, helped pre-service teachers continue the process of lifelong learning. To further such engagement faculty, staff and pre-service teachers joined a community collaborative project to increase professional development opportunities.

Participation in these professional communities helped the pre-service teachers understand the realities of teaching. Although teachers were engaged in early teaching, the professional communities helped them gain a better understanding of the issues facing in-service teachers daily.

Additionally, professional communities helped the pre-service teachers to network with others and build relationships for future employment opportunities.

Support Groups and Mentoring.

Teacher education programs in the United States have been under fire for not preparing teachers for the realities of teaching. Furthermore, the first year teacher often feels that personal philosophies are compromised by the demands of testing and accountability (Massey, 2006; Turley, Powers, & Nakai, 2006). The early childhood faculty in this study recognized the need to support beginning teachers so that they did not feel alienated from their values and philosophies. The faculty of two higher education institutions joined together to support graduates from both programs. Monthly support group meetings were held to provide graduates with the confidence to follow their values and philosophies. Although the group began as a support system for beginning teachers, veteran teachers continued to attend the monthly meetings. Faculty members facilitated dialogue and brought resources to the group. However, learning truly occurred as veterans became mentors for the beginning teachers. Beginning teachers continued to communicate their values and how to make those values evident to all participants in the education system.

Not only did the support group assist beginning teachers as they started their career, through the meetings faculty members became more aware of the realities of teaching in today’s society. The monthly engagement with experienced teachers provided faculty with a better frame of reference to prepare pre-service teachers for the realities of teaching without compromising the values of teaching. These group meetings exemplified Rinaldi’s (2007) point that

Those who participate in an educational process, in fact bring their own growth and development into play, and do this on the basis of their own expectations and their own plans. There is a constant relational reciprocity between those who are educated, between (sic) those who teach and those who learn. There is participation, passion, compassion, emotion. (p. 141)

Conclusion

The NAEYC (2003) has confirmed that there is a teacher shortage in the field of early childhood education. Therefore teacher education strategies are needed that can help curb attrition and place high quality educators to work with the youngest citizens. Effective induction strategies that are grounded in a constructivist philosophy of teaching and learning can serve to alleviate the attrition rate of early

childhood educators and motivate educators to remain dynamic and excited about their career. The constructivist approach is particularly appropriate as it fits the context of our post-industrial world where critical and creative thinking; the ability to synthesize, organize, and think abstractly; collaborate; and cooperate are essential skills (Fosnot, 1989).

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Book Reviews and Recent Publications by ISTE Members

Halloway, W., & Maurer, J. (Eds). (2010). *International Research in Teacher Education: Current Perspectives*. Armidale, NSW, Australia: Kardoorair Press. 366 pages. (ISBN 978 0 908244 80 5) Cost: \$A27.50

International Research in Teacher Education: Current Perspectives presents 24 researched-based papers from educators around the world. Many countries are represented in the book either by author or research participants, including Australia, Bhutan, Botswana, Brunei, Canada, China, Hong Kong, New Zealand, Papua New Guinea, South Korea, the United Kingdom and United States of America. This enables the book to provide a truly international (not just western) insight on contemporary issues relevant to teacher educators.

Quantitative and qualitative research is presented as well as historical and current, short-term and longitudinal. The papers use a variety of research methodologies such as action research, surveys, document analysis, policy analysis, reflection, case studies and interviews. Some papers present new insights into teacher education; others challenge or confirm what is already known.

The book reflects the theme of the 28th Annual seminar of the International Society for Teacher Education, “Continuing development in teacher education” and each chapter is based upon research originally presented at this seminar. The book provides a veritable smorgasbord of insight into teaching and teacher education. Specially, chapters focus on:

1. How to improve teacher education and so prepare highly qualified and competent teachers, including indigenous teachers;

2. How to prepare and educate the educators, from early career and casual teachers to more experienced teachers and teacher educators, and those working with students with special needs;
3. How to achieve better results in the classroom, with all students, including girls;
4. How to help students conceptualise, and enhance their use of multi-literacies.

The editors, Warren Halloway and John Maurer have long, distinguished careers beginning in small Australian rural schools before moving on to academia. Together they have 60 years of involvement in teacher education. This knowledge and experience is evident as they have collected a wealth of research into one easy - to - access resource. They have even provided a matrix to facilitate reader navigation of this comprehensive sample of contemporary international research in teacher education.

This book is highly recommended for teacher educators, teachers, researchers and policy makers as it provides an opportunity to, as Greenberg notes in his chapter, “look around [and] benefit from the robust policies and successful practices in place in other countries” (p. 31). It also encourages, as Greenberg proposes, “ ‘simultaneous renewal’ with schools and universities, teachers and teacher educators, law makers and policy implementers working together on collaborative and inclusive models of teacher education” (p.19)

This book can be obtained from Kardoorair Press, PO Box 478 Armidale, NSW, 2350 Australia or from their website <http://www.kardoorair.com.au>

Reviewed by

Catherine Sinclair, Ph.D., Associate Professor, University of Western Sydney, Australia. Catherine is a multi-award winning teacher educator and researcher. She has more than 30 years teaching experience at schools and universities in the areas of pedagogy and professional development. She is a long time member of ISTE and immediate past editor of JISTE.

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Publication Guidelines

The journal (JISTE) publishes articles by members of the International Society for Teacher Education (ISfTE). Exceptions are made for a non-member who is a co-author with a member, or who is invited to write for a special issue of the journal, or for other specific reasons.

Articles submitted to *JISTE* must be written in English, following manuscript guidelines (see below) and will be anonymously reviewed by referees. Each article must pass the review process to be accepted for publication. The editors will notify the senior author of the manuscript if it does not meet submission requirements.

Articles are judged for (a) significance to the field of teacher education from a global perspective, (b) comprehensiveness of the literature review, (c) clarity of presentation, and (d) adequacy of evidence for conclusions. Research manuscripts are also evaluated for adequacy of the rationale and appropriateness of the design and analysis. Scholarly relevance is crucial. Be sure to evaluate your information.

Articles should move beyond description to present inquiry and critical analysis and provoke discussion.

Articles pertaining to a particular country or world area should be authored by a teacher educator from that country or world area.

If English is the author's second or third language, manuscripts accepted for publication will be edited to improve clarity, to conform to style, to correct grammar, and to fit available space. Submission of the article is considered permission to edit the article.

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Manuscript Guidelines

- Manuscript length, including all references, tables, charts or figures should be 3,000 to 5,000 words. **Maximum length is 5,000 words.** Shorter pieces of 1500-3000 words, such as policy review or critique papers are welcomed.
- All text should be double-spaced, with margins 1 inch all around (2.5 cm), left justified only.
- Paragraphs should be indented five spaces and separated by a space.
- Tables, Figures, and Charts should be kept to a minimum (no more than 4 per article) and each sized to fit on a page 8.5 x 5.5 inches (20 x 14 cm).
- Abstract should be limited to 100 - 150 words.
- Keywords – Include four or five keywords after the Abstract
- The cover page shall include the following information: Title of the manuscript; name of author or authors, institution, complete mailing address, business and home phone numbers, FAX number, and e-mail address: Brief biographical sketch, background and areas of specialization not to exceed 30 words per author.
- Writing and editorial style shall follow directions in the *Publication Manual of the American Psychological Association* (6th ed., 2009). References MUST follow the APA style Manual. Information on the use of APA style may be obtained at www.apa.org

Future Submissions

2012 (Volume 16, Number 1)

Theme - A Challenged Teacher Education – Facts, Feelings, Formation

This is the theme of the seminar in Norway hosted by the University of Agder, Kristiansand. Participants (including those from the Distance Paper Group) are invited to revise their seminar papers, attending carefully to the manuscript and publication guidelines, and submit them to the journal for consideration. Book reviews on the theme are invited.

Deadline for Submission: **August 1, 2011**

2012 (Volume 16, Number 2)

Open submission – Members of ISfTE are invited to contribute manuscripts related to any important topic in teacher education. Members are encouraged to co-author articles with their students or colleagues who may not be members of ISfTE. Articles that explore teacher education issues such as the practicum, mentoring in other disciplines (e.g. nursing, adult education, social work education) are particularly invited. Such articles should explore the discourse in relationship to teaching at the elementary, secondary or tertiary level.

Deadline for Submission: **December 1, 2011**

2013 (Volume 17, Number 1)

Theme – Educating for Gross National Happiness: The Role of Teachers

Date for Submission: **August 1, 2012**

2013 (Volume 17, Number 2)

Open submission

Deadline for submission: **December 1, 2012**

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Front cover: These institutions' logos appear on the front cover of this issue:

The *Pontificia Universidade Católica do Rio Grande do Sul (PUCRS)* is a private institution of Marist orientation. Nowadays there are 26 Faculties, which offer 71 Undergraduate Courses, 24 Master's Courses, and 17 Doctoral Courses. The total number of students is 31,833, including the Main Campus (Porto Alegre), Viamão Campus (Viamão city), and the Uruguaiiana Campus (Uruguaiiana city- 634 km from Porto Alegre). PUCRS' performance in the Brazilian educational context is marked by excellence and growing prominence. In 2010 it obtained second place in the South Region and seventh place in the whole country in the classification of graduate program according to the last tri-annual evaluation done by the Ministry of Education.

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