

Journal of the International Society for Teacher Education

Educating Teachers for a Better World

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It is with genuine appreciation for their time and expertise that JISTE thanks the following individuals for their reviews of manuscripts considered for this issue.

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JISTE is an official, refereed publication of ISfTE. The goal of ISfTE is to publish six to eight articles in each issue. Using the Seminar theme, articles in the first issue of each volume are based on papers presented at the previous seminar. Articles in the second issue are non-thematic or special themes. Points of view and opinions are those of the individual authors and are not necessarily those of ISfTE. Published manuscripts are the property of JISTE. Permission to reproduce must be requested from the editor.

JISTE is issued twice yearly by the International Society for Teacher Education. The subscription price of \$US75.00 is included in the annual membership fee. Additional copies of the journal may be purchased for \$US25.00. Institutional subscription to JISTE is \$US100.00 per year. To obtain additional or institutional copies email: johan.borup@gmail.com

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From the Secretary General

ISfTE continues to prosper as a vital organization despite formidable global economic downturns that significantly impact the types of resources available for full participation of its members and for its organizational sustainability. Nonetheless, I believe this society has stubbornly thrived for three reasons:

1. Our members academically prepare themselves and invariably apply their scholarship and unique talents that result in a rich bank of conceptual and professional knowledge that affirm all who believe in teacher education, its development and its role in the global marketplace of ideas;
2. Our organizational structure cultivates the core tenets of shared governance, innovation and collaborative inquiry; and
3. Our members are intrinsically devoted to the type of collaborative scholarship that promotes ongoing relations across borders.

This issue of *JISTE* captures the spirit of the above qualities in the articles, all of which, taken as a collective, present a “perfect snapshot” of who we are. The articles are testament to a memorable experience at Pontificia Universidade Católica do Rio Grande do Sul (PUCRS), Brazil, and to the type of scholarly tradition that has attracted members to this society since 1981. Brazil was the ideal setting to commemorate 30 years of this group’s work on the world stage; thematically emphasizing the

challenges of “educating teachers for a better world”.

Whether underscoring the importance of sound research based teacher education curriculum to develop competent pedagogues for better schools in a better world, affirming the enduring value of cultural and research competencies, or using new and innovative technologies to help their students derive authentic meaning from their learning experiences, our member scholars understand all too well their important role in a world that increasingly values the virtue of global citizenship. Howard Gardner (2004) argues that in such a world “societies that privilege transculturation and hybridity” are more likely to thrive and support global belonging for their citizens than those societies that “enforce compulsive monoculturalism and monolingualism” (p.255). Several articles and the book reviews in this issue of *JISTE* report on encounters of transculturation and the myopia of monoculturalism in our present world and going forward.

Gardner recommends that a school curriculum and hence teacher education curriculum for these times of globalization and global citizenship must include knowledges and skills for “fostering hybrid or blended identities” (p.256) for transculturation. We belong to multiple communities.

Collegially yours,
Forrest C. Crawford

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Gardner, Howard. (2004). How education changes: Considerations of history, science, and values. In Marcello M. Suárez-Orozco & Desirée Baolian Qin-Hilliard (Eds.), *Globalization: Culture and education in the new millennium* (pp. 235 - 258). Berkeley, CAL: University of California Press.

From the Associate Editor

All the articles in this issue of *JISTE* are refinements of papers presented at the 30th annual seminar of the International Society for Teacher Education (ISfTE). This seminar was held at the Pontificia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre in Brazil, April 11-17, 2010. It is therefore fitting that the lead article is about teacher education at PUCRS by Marta Sisson de Castro and Maria Abrahão who were hosts for the seminar. They describe the development of a new Pedagogy Course situated in its socio-economic, regulatory and cultural contexts, and ordered by well articulated theoretical formulations.

Three articles show how deeply teacher education and the teaching profession are circumscribed by external contexts. The late Cornel DaCosta, a co-founder of ISfTE, draws attention to the impact on the profession of government policies and the phenomenon of career changers entering the profession as a result of crises in the financial sector in the United Kingdom (U.K). Karen Petersen traces how government directives, in response to the increase in migration to Denmark, have determined the DSOL curriculum and in particular the content of culture education. She names resulting paradoxes for the education of DSOL teachers that arise from different definitions of culture education. Ina Borup and Johan Borup analyse a postgraduate health diploma program in Denmark and show that, among other conditions, it meets the external regulatory standards set by the Ministry of Education.

While DaCosta, Petersen, and Borup and Borup situate their work in individual country contexts, Sybil Wilson, from Canada, expands context to the whole world. In her article, which addresses the theme of the seminar, “Educating Teachers for a Better World”, she promotes a central role for education and the teacher in creating a better world for all.

The next five articles deal with bridging theory and practice in teacher education and teaching. Some are reports of research, and some deal with theoretical formulations, principles and pedagogical practices. Marilia Morosini, Alberto Cabrera, and Vera Felicetti report on a research project at PUCRS in which they identified five essential competencies for

quality professional pedagogues for the knowledge society: knowledge of areas of expertise, didactic-pedagogical action, management of educational processes, investigative action, and exercise of citizenship. The articles that follow elaborate on programs and projects that prepare teachers in the acquisition of some of these competencies.

Edward Robeck and Andrew Sharma highlight the importance of media-based approaches in making science education meaningful to teachers and students. They base their argument on the outcomes of a professional development project with K-12 teachers in the U.S.A. Jacky Pow and Wanze Li report on bridging the gap between theory and practice in an ICT course in initial teacher education in Hong Kong. Nu'man Al-Musawi from Bahrain reports on the process of developing the Research Competency Scale (RCS) that was used to assess education students' investigative competency, particularly in doing small-scale research projects.

Three Brazilian academics (Marta Sisson de Castro, Magda de Souza, and Flavia Werle) join the Principal of Escola Estadual Neusa Mari Pacheco (Vera Morais) in presenting the story of this unique community school as an outstanding example of the integration of context, theory and practice in providing a comprehensive elementary to secondary education program. The curriculum aims to equip students with the knowledge, skills and attitudes for intelligent citizenship, success in the knowledge society, and for contributing to the making of a better world.

Thank you to everyone for your contributions to this issue of *JISTE*. I would also like to express my gratitude to the reviewers for their hard work that often goes unnoticed, and my appreciation to Sybil Wilson, our dedicated and experienced *JISTE* editor for many years.

Do take time to read this issue of *JISTE* and be informed about the endeavours of your ISfTE colleagues who strive to create a better world through education.

Anna Hugo
South Africa

THE INITIAL PROGRAM OF TEACHER EDUCATION AT THE SCHOOL OF EDUCATION OF THE PONTIFÍCIA CATÓLICA UNIVERSIDADE DO RIO GRANDE DO SUL, BRAZIL

Marta Luz Sisson de Castro

and

Maria Helena Menna Barreto Abrahão

The article situates the Pedagogy Course at PUCRS in its legal, socioeconomic and cultural context; describes the essential characteristics of the innovative course as well as the underlying philosophical principles which inform the curriculum; and points to a period of consolidation after a positive internal and external evaluation.

Keywords: pedagogy course, teacher education curriculum, teacher training

The following text describes the Pedagogy Course implemented in 2007 at the *Faculdade de Educação –FACED da Pontifícia Universidade Católica do Rio Grande do Sul- PUCRS* (School of Education of the Pontifícia Católica Universidade do Rio Grande do Sul). It deals with the initial innovative proposal of a curriculum program for future teachers which is organized in two integrated transversal axes. The course articulated in this manner serves the development of pedagogical work aimed at constructing competencies, domains, and basic skills that will equip future teachers to teach in an unpredictable, uncertain world with globalized economies and information systems. First, the text briefly mentions the sociopolitical, economic, and cultural context that directly affects teachers and students in this program. Then it describes the essential characteristics of the course structure and some of the assumptions which sustain the proposed curriculum. It concludes with a brief note about the evaluation process that has followed the creation and implementation of the Pedagogy Course at the School.

The Program Context

Teacher training in Brazilian education has been marked by a constant process of redefinitions which are clearly expressed in the *Lei de Diretrizes e Bases da Educação Nacional* (LDBEN- Law of Guidelines and Bases of National Education) enacted in 1996 (Brasil, 1996). This legislation was the result of a political process that engaged several forces trying to define the future of education in the country. The law itself suggested creating the *Curso Normal Superior* (Higher School of Teacher Training) for teacher training which appeared to indicate that the training offered by universities left much to be desired. The debate which followed this new

training option emphasized the theoretical character of that training and the need for teachers to build their knowledge based on practice. Meanwhile, there was significant expansion of the number of students in Basic Education in Brazil. Oliveira (2007) shows that between 1980 and 2000 students with access to education increased significantly. The percentage of students in the age group of 7 to 14 years increased from 80 % to 96.4 %, and in the age group of 15 to 17 years, it went from 49.7% to 83%. This expansion, especially up to the 8th grade of Basic Education, created a demand for teachers.

In 2006, the National Council of Education launched further legislation (Brasil, 2006) requiring all teacher training courses to reformulate their curricula to meet a number of new recommendations. The guidelines defined principles, teaching and learning conditions, procedures to be considered in planning, and evaluation by the agencies of the systems of education and institutions of higher education in the country. From then on the teacher training course was to be the only way to prepare teachers for Early Childhood Education and the Initial Grades of Basic Education. It would then be necessary to deactivate other existing programs independent of their quality and social insertion. These courses were to be transferred to specialization (graduate course) level and thus be completely rethought and reformulated. On this foundation we constructed the new pedagogical process of the course in 2006. It was implemented in the first semester of 2007, one semester at a time. The first class of this course graduated at the end of the second semester of 2010.

The Pedagogy Course¹

The history of the Pedagogy Course at the School of Education – FACED, which has been in construction for over seventy years, has been supported by the ideas of the Marist Catholic tradition² which is used as its essential guideline, and by the permanent need for its academic organization to be relevant to contemporary times and comply with the curricular demands resulting from both legal requirements and the sociocultural transformations that permeate the community. Based on this foundation, FACED promoted further studies with a view to reformulating the Pedagogy Course so that it would be better able to meet the requirements of the social, technological, economic, and political scene of the contemporary world.

In 2006 and 2007 FACED undertook a new effort to adapt its course in consideration of the recently established legislation (Federal Law 9394/96 and CNE Resolution nº1 from 15/05/2006), and the new characteristics of contemporary society. This new Pedagogy Course (Abrahão, 2007) is intended to support students' efforts to seek their human and professional training by promoting the experience within a diffusion of a culture of faith, justice, solidarity, and peace attuned to the University Mission. In order to comply with this desideratum, the current Pedagogy Course was developed considering the following general objectives:

- to promote, by means of theoretical-practical studies, the investigation and critical reflection, human and professional training of teachers of Early Childhood Education and Initial Years of Basic Education, guided by ethical principles and affective and esthetic sensitivity with a view to constructing an equitable and fraternal society;
- to stimulate teaching as a form of cultural creation, development of the scientific spirit and reflexive thinking, encouraging research

and scientific investigation with a view to developing science and technology, creating and disseminating culture, seeking to develop the understanding of human beings and the environment in which they live;

- to arouse the permanent desire for cultural and professional improvement, stimulating knowledge about the problems of the present world, particularly the national and regional ones, providing specialized services to the community and thus establishing a relationship of reciprocal enrichment.

Concept of the Course and Proposed Curriculum

The proposal of this course was based on philosophical principles marked by transforming dialogical and dialectical approaches. These approaches were seen from the perspective of the humanistic culture found in social and Christian ethics. The personal and professional training of the future teacher is a fundamental aspect at an institution which directs reflection and action to humanize teaching. Academic excellence is important and unquestionable, and it is equally considered that human excellence must be an integral and basic dimension of the course.

Proposal for the methodology of the course was based on four foundations: the *dynamics* of the educational process in its controllable and uncontrollable aspect; the *non-linear* aspects inserted in the school reality and in daily learning; the *reconstruction of knowledge* which is never repeated; and the *dialogical* aspects of educational processes and the ambivalence of the educational phenomena because they contain unity in multiplicity. This concept of education, developed from a broad perspective in the program, should arouse in the student possibilities of understanding the importance of the development of what is now called 'continued education'.

The Pedagogy Course/Program has a minimum class load of 3,240 hours of academic work distributed as follows:

- 2,820 hours dedicated to formative activities;
- 300 hours dedicated to Supervised Traineeship in Early Childhood Education and in the Initial Years of Basic Education;

¹ Adapted from FACED/PUCRS. *Projeto Pedagógico*.

Curso de Pedagogia 1/40K – 2006 (Dig.). Based on: Abrahão, M.H.M.B. O Curso de Pedagogia da FACED/PUCRS. *Educação*. Porto Alegre/RS, ano XXX, n. especial, p. 87-102, out. 2007.

² Marist refers to Mary, mother of Jesus Christ and is the religious order which maintains the University.

- 120 hours of theoretical-practical activities entering further into specific areas of interest to individual students.

At every stage (level/semester) of school work several areas/dimensions of knowledge and learning are considered, all of them converging into an integrating axis that pedagogically traverses the teacher education program. The *transversal axis* was created based on the foundation of the *reconnection of knowledge* (Morin, 2002).

The new Pedagogy Course at FACED consists of eight integrating axes (see Figure 1) that transverse the education, preparation, and qualification of new teachers. These axes are at the service of the development of the pedagogical work which constructs competencies, domains, and basic skills that will equip new teachers to do their work in an unpredictable, uncertain world, yet which they can understand, and so be committed to the improvement of human life on the planet. These axes require from the student full knowledge and development of creativity, autonomy, critical thinking skills, and the historical, sociological and psychological perspectives of the human phenomenon for competent and committed professional action. In concrete terms, it is the development of investigative skills through *Pesquisa e Prática* (Research and Practice) that transverses the different components of each level thus instilling the principle of research as an educational practice throughout the program. The eight axes are described next.

The *first transversal axis* covers the *educational contexts*. At the beginning of the course students face the scenario and environments that will be the object and nature of their studies. The students will deal with problems and situations proposed by the teachers in the first level/semester in order to develop the students' critical understanding through constructing alternative perspectives and possibilities to (re)construct this educational context.

The *second transversal axis* proposes an overview of the educational scene. At this level the students will examine *early childhood education and the initial years*. The questions asked are: How are pedagogical practices constituted? What are the epistemological perspectives adopted by the

teachers? What are the insertions of this educational space in relation to the communication and information technologies? These and other questions permeate the construction of knowledge at this level.

The *third transversal axis* deals with *education in non-formal spaces* by challenging the students to understand these spaces as emerging possibilities from a historical perspective of the social and economic movements, the theories of education, and through systematized reflections on the pedagogical work of teachers in a society with a globalized capital.

The *fourth transversal axis* proposes reflection on *inclusion* in a society that is exclusive in its ideas, policies, and practices. Future teachers are thought of as agents who leverage projects by exerting the construction of counter logics which will help define future paths from a multicultural perspective, thus creating an educational system which will welcome and respect differences among people.

The *fifth transversal axis* aims at investigation and practice in relation to the issue of *student learning*. Here learning takes on the dimension of theoretical and practical application. Future teachers broaden their horizons by directing their work towards student learning.

The *sixth transversal axis* concerns *pedagogical work*. In this context, future teachers are challenged to investigate curriculum and literacy processes through the lens of culture and values that constitute the heart of teaching, pedagogical work. They are practical-reflexive and are expected to act as professionals trained to permeate their work as teachers with multiple references from interdisciplinary perspectives (Schön, 1992).

The *seventh transversal axis* concerns *reconnecting knowledges*, that is linking knowledges, and relates to the complex relation between theory and practice that emerges from the professional performance of future teachers on the job market. Thus, future teachers will be open to the different and varied flows of the milieu where they will teach, experiencing the interaction of theory and practice in a *supervised traineeship*.

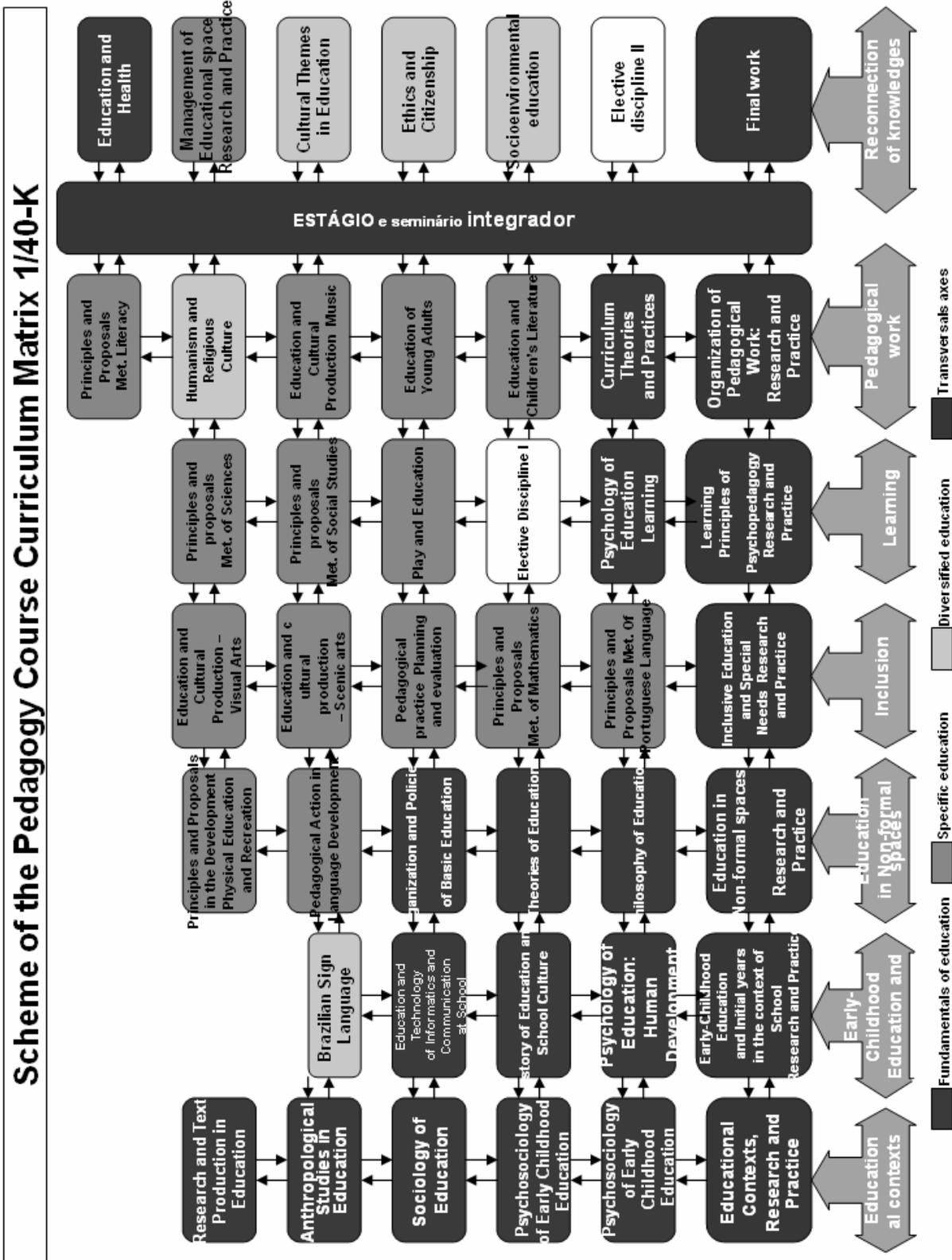


Figure 1. Scheme of the Pedagogy Course Curriculum Matrix 1/40-K

The *eighth transversal axis* is the final work during the *integrating seminar*. This provides an opportunity for a *reflexive synthesis* of the learning constructed during the course. Each student has a portfolio which was constructed during the first semester of the course. Additions are made and enriched during the different levels/semesters by the action of the components of Research and Practice. This formative process through which those involved reflect, write and (re)signify knowledge and understandings about themselves, the other, and the relations that they establish within their field of knowing-how-to-do (Josso, 2002) is evaluated. Nóvoa (1992, 1995) advocates the thesis that new teachers are very much at risk of reproducing, unthinkingly, at the beginning of their careers, the model of the teachers that they had when they were students. Thus, it is urgent and necessary to appropriate new concepts in a teacher training course, in order to develop transformative action.

Besides the transversal axes by levels, the organization of the Course Curriculum Matrix develops a *Transversal Meta-axis* represented by the intention of reflexive education of the future teachers. A transversal meta-axis in an open curriculum allows this curriculum to function as a factor to construct sense and meanings, involving the permanent reflection of different convictions and (un)certainties. This transversal meta-axis will be the pedagogical possibility present in all transversal axes during the students' training, thus connecting the previous life experiences of the future teacher to the theoretical-practical approaches developed during the course.

Another innovative aspect proposed by the Pedagogy Course is the *semi-distance modality* to develop some disciplines of the curriculum matrix.

The semi-distance modality, like open education, is characterized by using varied models of teaching and learning, depending on appropriateness to the cultural background of the students at whom it is aimed. The transposition of the 'classroom' learning environment to a virtual learning environment occurs with the help of three electronic technology resources that allow a radical displacement from the traditional classroom. They are computer technology, multimedia technology and web technology. These technologies allow transmission, exhibition, search, access, analysis, storage and management of information.

The Curriculum in Action

The Pedagogy Course at FACED/PUCRS is currently being consolidated. It has been positively evaluated by the specific department in the Teaching System (Ministry of Education – MEC Ministry of Education), and also by other private evaluation systems which work by consulting with peers and representatives of civilian society. Moreover, every semester the university evaluates the courses that are part of the different colleges of the university complex, systematically listening to and scientifically validating students, teachers, and managers. At this level too, the course of the School of Education has had a positive evaluation. Although this positive aspect in terms of institutional evaluation and the concept of the course with an inclusive proposal for curriculum development that are part of the Pedagogical Project previously described are innovative and consistently founded, one dimension refers to what was planned and the other regards its implementation. This recognizes the dynamic nature of teacher education and is in accordance with good standards of planning.

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THE FINANCIAL CRISES SINCE THE LATE NOUGHTIES (2000s) AND THE BANK 'DRAUGHT': CAREER CHANGES FROM INVESTMENT BANKING TO TEACHING IN THE UK

Cornel DaCosta

The author gives a brief historical overview of the development of initial teacher education in the UNITED KINGDOM (U.K.) as backdrop to present changes. He focuses on two recent major changes. One is the entry of career changers into the teaching profession, and in particular professionals from the banking sector consequent to the banking crises of the late 2000 decade. The other is the impact of government policy on the teaching profession during the ten year period, 1997-2007.

Keywords: career changers, government reform, teacher autonomy, teacher differentiation

This exploratory study emerged after observations that growing numbers of professionals in investment banking were seeking career advice on changing from banking into teaching. Some of these bankers had anticipated the 2009 financial crash and had endeavoured to move into teaching before it occurred, but increased numbers sought this option once there was a full blown crisis that began with the collapse of Lehman Brothers in September 2009. This paper explores, despite the paucity of data, why teaching became a choice for some of these career changers, how they made the transition and how such a career change affected them as well as pupils and schools.

This exploration is set in a time when much Government reform in education and other sectors in the U.K. was implemented. As a consequence of these reforms the teaching profession was facing significant changes from a former culture in which teachers enjoyed a degree of professional autonomy to one in which they had to follow the 'dictates' of a Government agenda on the teacher's function and role. Indeed, other established professions in the public sector, such as the National Health Service, also faced the demands of new government thinking over their roles and the delivery of services. But in the private sector, some professionals such as accountants, solicitors, barristers, estate agents and investment bankers managed to retain much of their autonomy although they began to feel indirect pressure for reform from the government of the day.

History of Initial Teacher Education in the U.K.

Historically, the teaching profession in the U.K. has had an interesting development. Briefly, the systematic training of teachers and with it the

prospect of a teaching profession began in the 1840s when the State took steps to ensure a supply of teachers for the elementary schools which it funded (Maclure, 1965). By 1845, there were 22 training colleges in England and Wales that developed out of the voluntary religious schools in existence at the time. In 1846, a pupil-teacher system was introduced in these institutions. Promising school pupils of thirteen years of age were selected and apprenticed to an accredited master who taught them until 18 years of age. At that point they competed for a scholarship to a training college for a further period of training (Curtis and Boulwood, 1966). Also in 1846, teaching certification was introduced whereby, following examinations, certificates were awarded for one, two or three year courses.

In 1847, practising teachers were permitted to take examinations and thus become certificated. Moon (2007) indicated that these certificated teachers became the elite of the profession. By 1900, 30 percent of the elementary school teachers had trained and obtained certification. Another 25 percent had not trained but had passed the necessary examinations for certification and the remaining 45 percent had neither training nor certification. Training of teachers for secondary schools effectively began in the first six University Day Training Colleges opened in 1890. They offered certificate or diploma courses. Their main contribution was to give academic respectability to teachers by combining vocational aspects of teaching and research-based studies in subjects like psychology and history.

Professional bodies helped to enhance the teaching profession. The National Union of Teachers was

founded in 1870; the Headmistresses in 1874, the Headmasters in 1890, the Assistant Masters in 1891, and specialist associations increasingly raised the social status of teachers by emulating the established professions (Kelsall and Kelsall 1969). This quest for professional status is well summed up in the quote below:

What...the teacher desires is, that his 'calling' shall rank as a 'profession, that the name of the 'schoolmaster' shall ring as grandly on the ear as that of 'clergyman' or 'solicitor' [from *The School and Teacher* publication, October 1855].

Over time, the status of teachers was raised progressively through the elimination of untrained teachers and the dismantling of barriers between elementary and secondary schools. In 1944 a tripartite system of schooling for secondary pupils was established but this eventually gave way to comprehensive (all inclusive) secondary schooling (Judge 1984). Despite such changes, working class children have consistently underachieved and their entry into higher education has lagged considerably behind middle class children (DaCosta, 2000).

There were also closer ties established between training colleges and the universities in order to unify professional education and training. Recommendations from a number of official reports helped to bring about better consolidation in the teaching profession. These include the McNair Report (1944) and the Robbins Report (1963) although the latter report dealt peripherally with teacher education as it was primarily about the expansion of university education. By this stage, there were 146 teacher training institutions in total. Of these, 98 were provided by local education authorities and 48 by voluntary bodies. In recognition of their raised standards, these training institutions became known as Colleges of Education.

With the school population growing, expansion of teacher training was necessary and in 1965, a binary policy in Higher Education was proclaimed which laid the foundation for the establishment of Polytechnics to share the higher education function with universities. For a while, the colleges of education were placed in relative isolation between two powerful higher education sectors: polytechnics

and universities. This changed when the first five colleges of education became departments of education in the new polytechnics that developed in the early 1960s. Thus expansion of teacher education took place in the polytechnics rather than in the universities. This process was extended further in 1967 and 1968. In order to generate a degree of coherence in the provision of teacher education, the James Report (1972) made many recommendations and was a precursor to a significant change in that, teacher education was no longer to be confined to institutions of higher education but was to have local schools as partners in initial teacher education. This also meant being equal partners in the assessment of teachers' competence.

There were other significant changes over time. Earlier, the two year certificate in education gave way to a three year programme. Then certificated courses gave way to a three year general degree as well as a three year honours degree. However, as many qualified teachers did not continue in teaching for a variety of reasons, further changes were initiated in the polytechnics in the first instance, to allow potential teachers to take a modular undergraduate programme. After graduating, they took a one year postgraduate certificate in education (PGCE) to gain qualified teacher status (QTS) that was a licence to teach. The 48-week full-time PGCE programme was also closely linked to training in schools. This kind of arrangement considered the fact that significant numbers of trained and qualified teachers would leave teaching and that the transferable skills acquired would be useful in other occupations.

Multiple Pathways into Teaching

Much flexibility regarding entry into teaching exists today. Furlong (2008) claims that there are some 36 different ways into teaching and foresees the time when training for teaching could become available as wholly in-house training in schools. For now however, the main avenues tend to be via the PGCE obtainable in a variety of ways including through part-time study and training in schools with qualifications accredited and certificates awarded by universities. Teaching in state schools requires one to have QTS. However, seven percent of school pupils are educated in fee-paying schools in the private sector that do not require their teachers to

have QTS. Generally, their degree qualification in a subject specialism, but with no studies in education is enough to secure a job in the private schooling sector. However, many teachers in private schools ensure that they have QTS as it allows them to move into the state sector, if they wish.

Many professional fields such as law, medicine, and business are making it possible for their graduates to transition into other fields. This trend fits with the practice of multiple ways to enter teaching. It is in this context that we now see investment bankers becoming teachers in state and private schools. Some of them will enter through the PGCE route; others who choose the private school sector will work without QTS. Given their academic studies and professional experience, many will likely find positions teaching mathematics, science, Information Technology or modern languages, all of which are traditionally areas of teacher shortage.

Investment Bankers Entering Teaching

With the crises in the banking sector in recent times, investment bankers are entering teacher training/education programmes as well as entering teaching directly. This development in the teaching profession is a new phenomenon so it has not yet been studied by researchers. There is only a small body of evidence, mostly statistical and anecdotal, about bankers and other professionals entering the teaching profession. Peter Walker and Rachel Williams (2010) reported that increasing numbers of former bankers, lawyers and managers were moving into teaching, and that statistics suggested that career-changing professionals could eventually outnumber new graduates on teacher training courses (The Guardian, January 4, 2010).

Statistics from the Training and Development Agency for Schools' (TDA) website (www.tda.gov.uk/) indicated that there was a 35% year-on-year rise in the number of career changers applying to train as teachers during 2009/2010. This was a faster rate than that for applications from students or graduates starting their first career, which increased by 19% and 27% respectively. Career changers were in the minority in initial teacher training, with 13,500 people from other professions applying for courses in that year, as against a total of 29,000 students or recent graduates. However enquiries about teacher

training from people currently in other careers had increased enormously. In 2009, 70% of all people who asked the TDA about teaching courses were in another profession, twice the 35% figure seen in January 2008. It is the agency's opinion that should this trend continues career changers could eventually form a majority of new entrants to teaching.

Graham Holley (2010), chief executive of the TDA saw this trend as a "substantial change" for the profession as a whole and likely to have positive implications for the classroom. He said:

There's been a wider change in societal attitudes to teaching. It's no longer seen as just a safe, solid career. These new teachers want to inspire people, give something back to society. Particularly in secondary entrants, they find they can use their passion, for example maths or science, in a way they couldn't when they were in accounting or banking (para. 4).

The initial catalyst for such a shift was the economic recession, a notable shift, given that teaching is one of the few professions where employers struggle to attract sufficient numbers of applicants. Holley (2009) observed that 2009 was the first year in which the TDA met and exceeded government targets for entrants into teacher training courses in all areas. Many of the early career changers were from the badly-hit financial sector. The influx of highly motivated outsiders – bankers, middle managers, architects and pharmaceutical industry workers— into a profession which has a reputation for occasional insularity, even sometimes complacency, has the potential to stimulate changes in schools, but also create some tension, according to Holley (2010). In the absence of research data, anecdotal reporting provides some credible information that helps to support the TDA's statistical evidence about career changers entering teaching. In an unpublished paper Stephen Robinson shared this piece of biography of a disillusioned financier become teacher.

BHP¹ (a City financier disillusioned with the high life) quit the mad Manhattan world of investment banking with such exquisite timing that friends in

¹ A pseudonym

the financial sector still assume he must have seen the credit crunch coming. Now 30 months later, he walks to work through the back streets of Croydon (South London) to teach maths to teenage boys. And he has never been happier. BHP grew up in South London, read engineering at Cambridge and then embarked on a stellar 16 year career in banking, which took him from Goldman Sachs in London to JP Morgan in New York, where he ended up running a division of 120 traders. Every other week he would find himself on a long haul flight to one or other parts of JP Morgan's global empire; when at home in New York he would on many evenings sit in various Manhattan bars recruiting a replacement for the dealer he had sacked earlier that day for underperforming. He never saw his two daughters now aged 11 and nine.

He felt he was being sucked dry....and he found himself reading tracts by the Dalai Lama, searching for some sort of spiritual guidance. And then he suddenly quit and moved with his family back to London. He says that he did not anticipate the financial crash starting with the Lehman collapse but noticed that hundreds of former bankers were entering the teaching profession. Thus when the headmaster of Trinity School in Croydon advertised for new maths teachers he (the headmaster) was surprised to find that of the 40 applications he received, half were from those who had worked in finance in the City. He was quick to see the advantage of hiring talent from outside the profession and recruited BHP along with three others to teach maths at his school. One of these other recruits, also a former banker likened teaching to acting because one is performing before the boys all day. He said, "In an office, you can hide behind your computer if you're having a bad day but you can't do that in the classroom.

Thousands of laid-off City workers who are having to rethink their careers are finding teaching attractive. More striking are those who have chosen to leave a world of six or seven figure salary/bonus packages for a profession with a salary of around £26,000. After several years' experience, a department head in a private London school—where salaries tend to be higher than in the state sector—can expect to earn between £45,000 and £60,000. While there has been a lot of public anger over the 'antics' of banks, their heavy draughts (bonuses) and

their engagement in reckless casino capitalism following which several big banks have had to be rescued by governments, the majority of the people working in the City are inclined to take a different view. They tend to claim that many of the bankers accumulated bonuses and pensions that were vested entirely in the shares of their own banks, and therefore they have seen paper fortunes wiped out. For them a teacher's salary is now a welcome and safe income.

There clearly is a need for rigorous study of how this new kind of teacher who has made a career shift from investment banking or another profession to teaching is coping. Observations and anecdotes of a tiny sample of investment financiers suggest that they are adjusting reasonably well, but this evidence is from those who are working in private and independent schools with less challenges, and higher salaries than comprehensive schools. These ex-financiers now teachers appear to welcome their transition, despite the huge reduction in their incomes. Systematic studies over time will tell whether the entry of personnel from banking into teaching is a gain for the profession. In the next section of this paper, attempts are made to show that at the same time that career changers are choosing teaching, the teaching profession has been under considerable government pressure to reform itself (Beck & Young 2005).

Political Stimulus for Change in the Teaching Profession

The government stimulated change in the teaching profession may not be noticed by newcomers to the profession, but it has been a source of tension to those in the middle of their career. The momentum for reform lay in Tony Blair's insistence that what mattered most in society was "education, education, education." He was consistent and persistent with this theme for the duration of the ten years (1997-2007) of his tenure as prime minister of the U.K. So why such a concern with education, and with teaching in particular?

According to Furlong (2005) Blair's major aim was to make teaching a 21st century profession. In Green Papers from the Department for Education and Employment (DfEE, 1998a, 1998b) Blair emphasised the need to change the ground rules of what teacher professionalism actually meant in order

to align that professionalism closely to the government's agenda, for "Education is the best economic policy we have" (Furlong, 2008, p. 730). What was sought was a change in education from a social policy to an economic one to help the U.K. compete with other nations economically. Thus a major change was demanded by Government by which education for its own sake and for personal development in the social milieu was now to become an education for economic production, national prosperity and social justice leading to high waged employment (Furlong 2008). These ideas were incorporated into educational reforms that were centrally directed, and for Blair, these were the most important reforms since state education began.¹

The reforms had to first address the problem in the supply, retention and quality of new teachers (Moon 2007). Teaching had to be made a more attractive career and one way to do this was to address the 'problem' of the relatively undifferentiated teacher in terms of occupational tasks and comparable rewards. Undifferentiation was seen as having a negative impact on the attractiveness of teaching (Furlong 2008).

Roles, responsibilities and working practices had to be reformed. Above all, the traditional professional autonomy of the teacher had to be seriously questioned and curtailed because such autonomy was now seen as idiosyncratic and personalised. In this situation, teachers did not learn from each other. Teacher training should be less theoretical and more practical, and so should be based in schools rather than universities. Schools already would operate within a national framework and so best practice would be determined not by university instructors or the teaching professionals but by Government. There would need to be accountability to the schools, parents and communities and above all to the Government. Thus, fundamentally, there was to be a challenge to traditional notions of much cherished professional autonomy in teaching (Furlong 2005, 2008).

¹ Public elementary education began with the Forster's Education Act, 1870

What changes actually came about to realise this powerful desire for teaching to be a 21st century profession?

a) Teachers' salary was increased by 10% to make it comparable to starting salaries for other graduates. This move generated a 30% increase in applications to the profession (McKinsey Report 2007).

b) There were compromises (golden handshake) in order to fill positions in subject areas where it has been traditionally hard to recruit, such as mathematics and science.

c) The Teacher Training Agency (TTA) was transformed into the Training and Development Agency (TDA).

d) The TDA received strong support for marketing the profession using recruitment techniques similar to those in business, for example, high profile TV/media advertising campaigns.

e) There were rigorous quality systems put in place with penalties for underperforming providers. Nationally agreed entry requirements were stipulated and nationally defined standards for the award of Qualified Teacher Status (QTS) had to be met according to Government definitions of 'good teaching'. These definitions were regularly updated.

f) Recruitment of 'new' (non-traditional) entrants (older applicants, those with family commitments, career changers) was encouraged.

g) There should be the recognition that teaching may not be a career for life.

h) Drawing on the American example of the Teach for America scheme, the Teach First Programme was launched (2002) as a means of recruiting outstanding graduates into teaching, knowing that they may stay in the profession for only a few years.

In short, there was a progressive and significant diversification of the system and according to Furlong (2008) 36 different ways to enter the teaching profession became available in England. Many of these new routes allow for entry 'on the job'. Consequently today, some 18% of teachers

enter the profession through an employment based system. There has been a substantial re-tooling of the teaching profession and the number of newly qualified teachers has increased substantially.

In terms of consequences of these reforms, there emerged a more differentiated teaching workforce with greater opportunities than in the past for promotion in leadership with pay rewards, and different types of classroom assistants and support staff. There were also new roles and designations, for example, Advanced Skills teachers, teachers in leadership roles and even a new body, The National College of School Leadership. New classroom teacher gradations in salary appeared, such as, teachers on the main pay scale, teachers on the upper pay scale and Excellent Teachers.

There also was a Fast Track Teaching Programme for accelerated promotion. Having increased numbers of teaching assistants available freed teachers to do more teaching and learning. These teacher assistants received support on the job and opportunities for training to obtain graduate status and QTS. The number of support staff increased substantially and by 2006, there were some 270,000 teachers in post, twice the number as there was in 1997 when Tony Blair first emphasised “education, education, education.”

Changes were introduced into the school system as well; professional development was now demanded of everyone, and especially of those in managerial and administrative roles. Professional development took centre stage (Brighouse 2008). Schools had to take responsibility both for identifying development needs and for providing the means for addressing these needs because professional development was now an integral part of everyday activities for all teachers. School focussed and school based professional development activities were to be linked to national strategies and developed within an increasingly explicit national framework. Teachers had to demonstrate that they had consistently achieved national standards in their classroom performance. In summary, political stimulus for change in the teaching profession led to changes in teachers’ salary, teacher recruitment, professional development, governance of the profession, quality control in teaching, and marketing the profession

Understandably, there was much apprehension and even anger over such a rapid change in the teaching profession. Teachers’ unions and especially the National Union of Teachers— the largest and most powerful of the teaching unions – were vocal in their resistance. There was much discussion about the intensification of the work of teachers, the terrors of performativity (Ball, 2003), and about teacher stress and burnout. But the majority of the profession changed and recruitment into teaching increased consistently.

In fact, the entry into teaching of increased numbers from other professions, referred to earlier, has been a boon to the educational thinking of New Labour (political party). The traditional concept of professional knowledge as ‘owned’ and controlled by the profession and made available in appropriate measures for pupils has shifted to a technical rationalist concept of professional knowledge that is open and, for control, is evaluated by external agencies appointed by Government. In this vein of technicism, understanding of ‘what works’ has distanced teachers’ knowledge from university knowledge to classroom practical knowledge. With this change the teacher’s traditional quest for academic/ professional knowledge has been marginalised. According to Furlong (2008), professional identities have been threatened by the rising tide of marketisation, external regulation and the audit culture. Personal values of teachers have been sacrificed for a new kind of teacher vocationalism.

Concluding Remarks

In a recent study of teachers and principals Hogan and Gobinathan (2008) suggested that there has been a de-politicisation of the teaching profession in which healthy debate [of educational issues] is being replaced by an all pervasive politics of compromise. By way of a comparison, Hogan and Gobinathan suggest that Singapore had moved beyond a technical rationalist conception of the profession whereas the U.K. was promoting that approach as a solution to educational challenges. Instead, Singapore was searching for a more open forum of teacher professionalism that would support the development of ‘thinking schools’ which might become the test beds of inquiry and innovation necessary to maintain Singapore’s position in the global economy. So could it be that, in a few years,

Tony Blair's narrower, technical rationalist vision of professionalism will come to be seen as anything but the most appropriate model for the 21st century (Furlong 2008)? It is possible, even probable, that a new government could move further in this direction and abandon the traditional route into teaching via Initial Teacher Training with links to universities in favour of totally school based training. This would be cheaper but would lead to a significant weakening of research and theory based knowledge as foundational to the teaching profession. The new

career changers like investment bankers who are entering teaching would have had theoretical knowledge through their varied degree level subjects but not in education. They would not have had intellectual encounters with the educational thinkers, past and present, whose works have anchored the teaching profession and guided its development through eras of fundamental research based directions especially in the areas of teaching and learning.

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Note 1: Prior to, and during the writing of this paper, Cornel DaCosta discussed his ideas for it with his colleague and close friend Moti Gokulsing. This was his preferred way of working – testing ideas with peer academics to establish intellectual issues through discussion and critical consideration, all of which led to the paper he presented at ISfTE 2010. Following his untimely death, just a few months later, Moti reviewed the paper again, and made a few minor adjustments to make it better fit for JISTE publication purposes. Our sincere thanks go to Moti for doing exactly what Cornel would have wished him to do.

(Colin Mably)

Note 2: This article is published posthumously. Cornel died September 10, 2010.

Author Note

Cornel DaCosta, PhD., immigrated to London, U.K. from Kenya. He taught at the Institute of Education, University of London and at the University of East London. He was Adjunct Professor of Florida State University, U.S.A. He co-authored three textbooks on higher education with M. Gokulsing. He was a cofounder of the International Society for Teacher Education (ISfTE).

A Personal Reflection: Cornel presented a first draft of this fascinating paper at the 30th Anniversary Seminar of ISfTE in Brazil, April 2010. I was the paper group leader for Cornel's group and was delighted to have my old friend in the group – not only because of our long relationship through the decades of marvelous ISfTE history, but because Cornel brought to every group his exceptional and unique sense of humour and his always profound insights into the issues and developments in our profession and the socio/political context within which we all work and play. I so clearly remember Cornel's presentation, laced with the wit and charm that the title of this paper reflects, and his explication of this fascinating development in career change patterns in the U.K. as well as the larger reform possibilities for the profession that hinge on the ever-shifting political tides. As co-founder of ISfTE, Cornel has given all of us a treasure of professional development and personal engagement opportunities that include colleagues from all over the world. And he gave us a chance to know a special person. We will miss him and we will remember the gifts he gave us over the past 30 years.

(Jim Greenberg)

CULTURAL AWARENESS OR A NATIONAL MONOCULTURAL DISCOURSE: STRUGGLES AND INFLUENCES IN DSOL CURRICULUM AND TEACHER EDUCATION

Karen Bjerg Peterson

This article traces, over 30 years, how specific political agenda and ideology in Danish society have influenced DSOL curriculum and how those changes, have been reflected in various DSOL curriculum documents. An examination of selected documents reveal a recent tendency in DSOL curriculum to define culture education as focusing mainly on adult foreigners' adaptation to Danish Culture rather than on intercultural competence, cultural understanding and cultural awareness. This reflects a tendency in Danish society towards a national monocultural discourse that is exclusionary and detrimental to preparing members of the Danish society for a global, interconnected, multicultural world.

Keywords: culture, culture education, DSOL curriculum, DSOL teacher education

Since the late 1970s an increasing number of adult foreigners from developed and moreso developing countries have settled in Denmark. Whereas in the late 1970s about 0.7 % of the total population were migrants this percentage rose to about 10.5 % in 2009. Table 1 below shows some of the biggest migrant groups in Denmark in the year 2004 and the languages spoken by these groups. Researchers have, however, indicated that already in the mid 1990s about 70 to 100 different languages were spoken in Denmark (Stensig, 1996). Since the mid 2000s migration to Denmark has primarily consisted of people coming from former Eastern European countries especially from Poland (Kornø Rasmussen, 2008).

Whereas the teaching of Danish to adult speakers of other languages (DSOL) in language schools was established by the Danish Government in the late 1970s, teacher education for preparing the teachers was developed in the late 1990s (Bjerg Petersen, 2007). The Teacher Education program for teaching DSOL includes, among other subjects, culture education as teachers of DSOL working at language schools need a many-sided education to teach for intercultural competence, cultural understanding and cultural awareness. DSOL teachers are obliged to teach *culture education* to adult foreigners according to a centralised DSOL curriculum. Over the period of approximately 30 years of teaching Danish to

adult speakers of other languages, the DSOL curriculum has been changed several times.

Culture education has become an essential part of the DSOL curriculum and the content of culture education has changed significantly. Furthermore, concepts of culture in anthropology and sociology have been changing. The goals of culture education have differed vividly according to whether culture and culture education are perceived in terms of positivism and essentialism or in terms of constructivist and relational understandings. Thus, in an increasingly heterogeneous Danish society it is now crucial how culture education is defined in the DSOL curriculum. Accordingly, this article aims to explore how specific political agenda and ideology in Danish society have influenced the development of the DSOL curriculum. Changing understandings of culture education are examined and particular attention is given to curriculum changes after 2003. The findings in the article are based on studies of curriculum documents from three different periods, which in a historical perspective have regulated DSOL teaching in Denmark. The three periods are:

Period 1 from 1970/1986 to 1998 comprising: Law No. 355 of 4 June 1986 on education of adult immigrants; Order No. 450 of 3 July 1986 on education of adult immigrants; Consolidation Act No. 655 of 29 June 1994 on education of adult

immigrants and others; Decree No. 58 of 23 January 1995 on education of adult immigrants and others.

Period 2 from 1998 to 2003 comprising: Act no 487 of 1 July 1998 on teaching Danish as a second language for adult foreigners and others at language centres; Decree No. 941 of 15 December 1998 on teaching Danish as a second language for adult foreigners and others at language centres; and

Executive Order No. 108 of 19 February 1999 on evaluation and assessment of Danish as a second language for adult foreigners and others.

Period 3 after 2003 comprising: Act No. 375 of 28 May 2003 on Danish education for adult foreigners and others; and Order No. 1014 of 10 December 2003 on Danish education for adult foreigners and others.

Table 1

Largest Migrant and Language Groups in Denmark in the Year 2004

1. January 2004 Migrants (Danish & foreign citizenship) Original countries:	Migrants	Migrant descendants	Total	Percentage of all foreigners in Denmark	Languages:
Turkey	30887	23370	54257	12,30%	Turkish/Kurdish
Iraq	20701	4970	25671	5,80%	Arabic/Kurdish
Germany	22484	2766	25250	5,70%	German
Lebanon	12101	9689	21790	4,90%	Arabic
Bosnia-Herzegovina	18153	2820	20973	4,70%	Serbo-Croatian
Pakistan	10689	8561	19250	4,40%	Urdu
Yugoslavia	12263	5485	17748	4,00%	Serbo-Croatian
Somalia	11774	5589	17363	3,90%	Somalian
Norway	13862	1626	15488	3,50%	Norwegian
Sweden	12199	2023	14222	3,20%	Swedish
Iran	11730	2483	14213	3,20%	Persian/Farsi
Poland	10877	2148	13025	2,90%	Polish
Vietnam	8643	3812	12455	2,80%	Vietnamese
Great Britain	10682	1243	11925	2,70%	English
Sri Lanka	6815	3509	10324	2,30%	Tamil
Afghanistan	8986	1247	10233	2,30%	Afghanistan
Morocco	4948	3851	8799	2,00%	Arabic/Moroccan
Other	110008	19042	123050	29,20%	Other countries
All	337802	104234	442036	100,00%	All countries

Curriculum and Culture Concepts in this Study

In this study, the concept of *curriculum* is based on Anglo-American and Scandinavian research traditions in curricular studies (Goodlad, 1979; Goodson, 1992; Gudem, 2008). Goodlad, an American researcher, identified curriculum as formal in terms of written documents, e.g. laws, regulations, syllabus, course description and

instructions (Goodlad, 1979). However Goodson (1992), another American researcher, emphasized that curriculum is often thought of as given, timeless documents although they are produced in specific historical time. In this article, curriculum and curriculum documents are understood *as concrete, historical and politically related documents* and so they may uncover— sometimes hidden— political,

educational and ideological positions and understanding of content (Goodson, 1992). Referring to the critical social scientist Bernstein, Goodson outlines that the general distribution of political and social control in a society allows politicians and policy makers of different political ideologies choices to have a significant influence on curricula: "... how a society selects, classifies, distributes, transmits and evaluates the educational knowledge that it considers to be public reflects both the distribution of power and the principles of social control" (as cited in Goodson, 1992, p.47). In cultural and anthropological studies, different concepts of *culture* have been discussed for several years. In order to form the basis of the study and analysis of culture education through DSOL curriculum documents, some of the main positions will be very briefly outlined.

Culture Concepts and Understandings of Culture Education

Several researchers in the fields of anthropology and cultural studies stress the complexity of the term 'culture' and outline various understandings of the concept (Kroeber & Kluchhohn, 1952; Geertz, 1973; Hall, 1980, 1992; Tylor, 1873). Often culture concepts are divided into two main categories of definitions or understandings referred to as either *essentialist* or *relational* culture concepts.

Essentialist culture concepts. Essentialist or positivist culture definitions understand cultures and nations as fixed empirical categories or 'substancy systems' (Hastrup, 1989), often coupled with mainly monocultural perceptions and understandings of cultures and nations existing within 'market borders' (Hylland Erikson, 1994). The understanding traces back to former 18th century European concepts and the understanding of the German philosopher Herder who describes language, religion, thought, art, science, politics, law, customs, norms, tools, weapons, and transport equipment as part of a nation's culture (as cited in Fink, 1988). In continuation of this tradition, Tylor (1873) defined the concept of culture in the following way: "Culture or civilization ... is that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society" (as cited in Geertz, 1973, p. 47). About one hundred years later, the British social scientist Hall (1992), within

the essentialist tradition, defines a concept of a nation following the concept of culture in emphasising "... origins, continuity, tradition and an idea of a 'pure, original people or 'folk'" (Hall, 1992, p.292).

Relational understanding of culture. Unlike the essentialist and rather fixed understanding of cultures and nations, the American anthropologist Geertz (1973) introduced a hermeneutic and constructivist inspired understanding of the two concepts, culture and nation. In opposition to the traditional view in anthropology represented by Tylor and others, Geertz introduced his idea of cultural patterns and culture as "historically created systems of meaning in terms of which we give form, order, point and direction to our lives" (Geertz, 1973, p. 52). Geertz is famously known for the following quotation: "Culture is the fabric of meaning in terms of which human beings interpret their experience and guide their action" (Geertz, 1973, p. 52).

The Danish anthropologist Hastrup (1989, 2003) pushes the understanding of Geertz by emphasising the reverse relation between humans and culture when she says, "not only is [wo/man] a product of her/his culture, but she/he is also constantly co-author of reality" (Hastrup, 1989, p.21). Consequently, the concept of nation 'as pure, original people' or 'folk' has changed and has been replaced by an understanding of a nation as a structure of cultural power. Hall (1992) emphasises that, "a national culture has never been simply a point of allegiance, bonding and symbolic identification; it is also a structure of cultural power" (p.296). As a result of seeing culture and nation as relational and interactional rather than as fixed, essentialist categories, the understanding of culture education has changed.

Teaching Culture Education

When teaching within the essentialist positivist paradigm, culture education is approached as training and adaptation to the specific culture (ways of living) of the nation-states in which foreigners are settling. In contrast, within the relational and constructivist concept of culture, culture education focuses more on concepts of cultural awareness and on developing cultural sensitivity. This different perspective has had a huge impact on the

understanding of goals and purposes of culture education in the end of the 20th and the beginning of the 21st centuries. The British researcher and teacher educator, Michael Byram (1989, 1995), has developed the notion of intercultural competence and intercultural communicative competence as the aims of culture education. Tomalin and Stempleskis' (1993) theoretical work on cultural awareness has had international impact on understandings of culture and culture education as means to develop cultural sensitivity. Similarly, the American researcher Claire Kramsch (1996, 1998) has developed ideas of culture education within teaching English as a Second or Foreign Language in the United States (U.S.A.) focusing on concepts of polyphony and change of perspective. In Denmark, researchers have introduced similar concepts of ethnographic fieldwork in culture education based on theories and methods in anthropology (Andersen, Lund & Risager, 2006; Bjerg Petersen, 2000; Risager 2006).

DSOL Curricular Studies and the Changing Understanding of Culture Education

Taking an historical perspective on prescriptive DSOL teaching in Denmark it has been possible to identify three periods of curriculum development over 30 years, with embedded understandings of culture and culture education.

Period 1: 1970/1986 to 1998

The first DSOL curriculum in Denmark was developed in 1986 in response to increasing immigration of adult foreigners coming to Denmark either to work or as refugees (Kornø Rasmussen, 2008). In one of the first paragraphs of the Education Act from 1986 the intentions for language and culture education for adult migrants were made clear: "The education shall primarily consist of instruction in Danish language. Instruction in Danish is given based on Danish culture and society. In addition, an education in Danish culture and Danish society is given" (Order 450, 1986, § 2, with author's emphasis). This quotation as well as other parts of the DSOL curriculum from this period projected a culture concept and an understanding of culture education mainly based on positivist and essentialist understandings of culture as fixed, indisputable, given national ways of being. In a publication from 1993 from the Ministry of Education, there is a similar understanding, that

culture education of adult foreigners has to be based on fixed knowledge. It is, however, outlined that "experiences and knowledge from the adults' home country should be the background to understand and relate to life in Denmark" (Undervisningsministeriet, 1993, p. 24).

Period 2: 1998 to 2003

With the introduction of Act No. 487 in 1998 the DSOL curriculum expanded notably and the understanding of culture education changed significantly. It is now indicated that culture education has to develop participants' insight into different cultural forms and develop participants' *cultural awareness*, meaning awareness of Danish culture. Thus, "the students based on their cultural experiences should achieve ... insight into cultural forms in Denmark" (Decree No. 941, 1998 – with author's emphasis), and, "Education shall encourage participants' active use of Danish language and should develop their awareness of Danish culture ... (Act No. 487, 1998, § 1 – with author's emphasis). Despite the focus on Danish culture in these regulations, they point to a more relational concept of culture by using such terms as "cultural forms" and "cultural awareness" and "insight" rather than only adaptation. Although extensive work and much investment had invigorated the development of DSOL curriculum materials with this new insight in the late 1990s, the curriculum was in force for a relatively short period.

Period 3: After 2003

A change of the Danish Parliament in 2001, when Social Democratism was replaced by a conservative government, resulted in a totally new law for teaching DSOL (Act No. 375, 2003) and the development of a new DSOL curriculum after 2003. This direction was in keeping with the interest in changing educational policy and curriculum throughout the whole educational system in Denmark from primary school to university (Bjerg Petersen, 2010; Nordenbo, 2008). Studies of DSOL curriculum after 2003 indicate significant changes, especially in the understanding of culture education. Worth noting is that all formulations about cultural awareness and other progressive education concepts were removed from the curriculum documents in 2003 and replaced by the earlier culture conceptions from the first period, 1986 - 1994.

Thus, the purpose of language and culture education after 2003 is described as follows: “The purpose of education in Danish as a second language is ... that adult foreigners as fast as possible ... should obtain necessary Danish language skills and knowledge of cultural and social conditions in Denmark in order to carry out work ...and to be able to support themselves” (Act no 375, 2003, § 1 – author’s translation and emphasis). It is further stressed that the education has to be based – not on participants’ general cultural knowledge – but on their “background knowledge of Danish conditions.” (Order No. 1014, 2003).

Furthermore, a special culture education curriculum with ten mandatory content components was introduced. This content is either related to canonised and fixed subjects on Danish history and culture or to work related subjects. However, despite the good intentions of focusing on adult foreigners’ working skills the DSOL curriculum documents after 2003 compared with former documents seem to narrow the focus of culture education towards adaptation to Danish society and conditions. This focus is based on the essentialist, positivist notion of culture. This direction has been embedded in other laws, e.g. the new laws on naturalisation that introduced multiple-choice tests on Danish culture and history as one of the conditions for obtaining Danish citizenship (CIS, 2006). More recently the government suggested that not only Danish citizenship but also residence permission for adult foreigners in Denmark need to be linked to testing in Danish culture education and foreigners’ adaptation into the Danish society (Regeringen, 2010).

Analysis of Patterns: Culture Education in DSOL Curriculum Documents and Teacher Education

Based on the culture theories outlined in this article, the understanding of culture and culture education in the DSOL curriculum documents during the periods from mid 1980s to late 1990s, and again after 2003, represent a rather essentialist, positivist view of culture concepts whereas the period from 1998 to 2003 is characterised by a relational understanding focusing on culture education as cultural awareness. However, during all three periods of curriculum development the focus is neither on the cultures of the participants, nor on global or multicultural understanding, but on nationalistic culture education

in which Danish society, traditions, history, etc. are expected to be the core subjects. Whereas on one side the understanding of culture education in curriculum documents for teaching adult foreigners in Denmark has changed several times, teacher education for preparing DSOL teachers developed in 1999 and aiming to give teachers broader understandings of different culture concepts and culture education, of intercultural communication and competence, of multiculturalism and other themes on the other side has not been changed. Thus DSOL teacher education in the 2000s is facing several paradoxes.

A National and Monocultural Discourse in DSOL Curriculum

The analysis of DSOL curriculum documents for this article resulted in ‘culture education’ being defined after 2003 as an *essentialistic national and primarily monocultural discourse*. This is an expanded version of the first period (1970/1986 to 1998) discourse. Within the boundaries of discourse theory, the French philosopher Foucault (Foucault, 1969/2002; 1975/1977; 1976/1998; Moss, 1998) defines a discourse as thought patterns penetrating various disciplines characterised by rules and regulations and partly regulating the thought patterns in terms of excluding opposite or other perceptions. Regulating thought patterns emerge strongly in the curriculum documents which give direction to teaching according to the changing definitions of culture education which have been traced over the periods, 1970/1986 to after 2003. The essentialist understanding of culture education in the post 2003 curriculum documents is not found in DSOL teacher education, thus giving rise to a situation of Foucault’s discontinuity in the discourse.

In teacher education there is the opposite understanding of the relational and constructivist culture positions. Despite having learned these views in teacher education, DSOL teachers in the 2000s are compelled to base their teaching, not on adult foreigners’ general cultural experiences and their knowledge about various culture concepts and different approaches to culture education as a constructivist discourse would dictate, but solely on participants’ knowledge about Danish society, and on the fact that obligatory subjects introduced in culture education after 2003 are related to only

Danish circumstances and work. This is at the heart of the national and monocultural discourse which is registered in other laws, documents, and education policies in the 2000s.

In the case of culture education specifically, political and ideological interests emphasising Danish only aspects of culture and culture education have influenced and changed the understanding of culture education for adult foreigners in Denmark through the instrumentality of DSOL curriculum documents. (Bjerg Petersen, 2010). As it has been stated by Goodson (1992) changes in the distribution of political power have influenced the selection, distribution and classification of educational knowledge in culture education in opposition to different concepts of culture currently advocated in cultural and anthropological studies. The result is that both teachers and teacher education in the 2000s in Denmark are facing some paradoxes.

Firstly, after 2003, the teacher's knowledge and focus changed towards an interest in more positivist culture concepts and approaches to culture education more to meet the new requirements of the legislated DSOL curriculum, and to help students pass the citizenship tests. Secondly, in their teacher education program teachers are gaining educational knowledge of language and culture as part of both global flows and local complexity (Risager, 2006).

This view is contrary to the DSOL curriculum they must teach, which is developed with an essentialist positivist view of culture concepts. Unless they work through these differences or discontinuities, teachers may perceive themselves as facing contradictory interests as they try to use their newly acquired knowledge to tackle the multifaceted challenges and problems that a Danish only approach in culture education poses for their adult students of multicultural backgrounds. Finally, the introduction to broader concepts of culture in teacher education raises the awareness of the teachers of how to include rather than exclude the background and experiences of adult foreigners in the curriculum for the students' benefit and the future of Danish society. In responding to the challenge, teachers are likely to have to choose to work outside the boundaries of the present DSOL curriculum.

Conclusion

Given the global and increasingly local complexity of a modern western society like the Danish one, where in the future even more people of various cultural and educational backgrounds will live together, it is necessary to examine and rethink DSOL curriculum development in order to both regain a broader view and understanding of culture education and achieve a more genuine inclusion of foreigners in the Danish society.

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A PROCESS EVALUATION OF POSTGRADUATE HEALTH DIPLOMA PROGRAMMES IN DENMARK

Ina K. Borup and Johan R. Borup

This article describes the evaluation of the health diploma programme (HDP) carried out in University College Sjælland (UCSJ) in 2008, and discusses how the Postgraduate and Further Education Department (EVU) could fulfil the obligations stated by the Ministry of Education. An additional objective was to provide EVU with data needed for further program development. Data sources were questionnaires on 15 health diploma modules that all enrolled students completed in 2008, examination results, and module syllabi and literature lists used by the lecturers and students. Data was analyzed in relation to the curriculum set by the Ministry of Education. The results showed that students' appraisal of time for supervision, teaching, subject relevance, student benefit of personal and professional skills, sense of personal involvement and degree of development as well as examination results complied with government demands.

Keywords: health diploma programme, process evaluation, satisfaction evaluation

According to ministerial demands in Denmark, all University Colleges have to be in the forefront concerning a high level of bachelor education in nursing science and educational science. These programmes are core in Danish University Colleges. In addition postgraduate and further education at the diploma level in health science and educational/pedagogical science are subject to government requirements of evaluation as stated in the mandatory developmental contract between the Ministry of Education and the University College. The Ministry of Education develops the official curriculum for diploma programmes in general. The Department for Postgraduate and Further Education (Efter- og Videre Uddannelse (EVU)) at University College Sjælland (UCSJ) evaluated all diploma modules in 2008 based on mandatory questionnaires completed by the diploma students in order to fulfil government requirements which are aligned with that in the Bologna Process (www.ond.vlaanderen.be/hogeronderwijs.bologna).

The main objective of the Bologna Process since its inception in 1999, stated in the European Higher Education Area (EHEA) (www.ehea.info) was meant to ensure more comparable, compatible and coherent systems of higher education in Europe. This is measured by the European Credit Transfer System (ECTS), which is a numerical system that ascribes a workload value to education, for example, one academic year counts for 60 ECTS points.

In order to determine if the ministerial demands were met and also to improve and develop the

diploma programmes in general, the UCSJ wanted to determine students' perceived satisfaction with all diploma programmes. These consist of a range of modules that are offered every year by EVU in UCSJ. A diploma programme (60 ECTS) consists of one obligatory module (9 ECTS points) and four subject-specific modules (9 ECTS each) and the final examination project (15 ECTS points). This study evaluated the 2008 Health Diploma Programme. In this report, two types of evaluation used in the study and the different aspects of the study are described. At the end there are comments on the value of programme evaluation in postgraduate professional programmes.

Two Types of Evaluation

Process Evaluation

In this study the approach to evaluation was inspired by Stufflebeam's description (Stufflebeam, Madaus & Kellaghan, 2000) of process evaluation as an ongoing check on a plan's (programme) implementation, including documentation of the process and any change in plans.. Stufflebeam's systematic process evaluation builds on a few important points: basic considerations and required information. Basic considerations include object, purposes and clients. Focus on the object and clarify precisely who or what is the focus of the evaluation. Define the purposes, focussing the research questions needed to get results without overlap between the different purposes. Required information includes a list of all available materials to be used for the investigation. The World Health Organisation (WHO) defines process evaluation as

“aimed at enhancing your current programme by understanding it more fully” (Workbook 4, 2000, p. 8). Ideally, process evaluation assists in the identification of “active ingredients” of treatment and “assesses whether a programme is meeting accepted standards of care” (p. 8). Stufflebeam’s description combined with the definition of WHO frame the way that process evaluation and student satisfaction were discussed in EVU.

Evaluation of Satisfaction and Teaching

Measures of client/student satisfaction (WHO, Workbook 6, 2000) lie somewhere between ‘process’ and ‘outcome’ measures and as such address the reliability of educational programmes provided in a consistent and dependable manner, and the responsiveness of the lecturers or the willingness of the education providers (EVU) to meet the students’ needs. According to Brown (2000) United Kingdom (U.K.) nurses were highly satisfied with their chosen courses and considered that it had improved their job performance significantly. Other aspects of the evaluation of postgraduate nurse education include an example from Hong Kong where Simsen and Holroyd (1995) documented the needs of local networks to equip the postgraduate nurse for expert practice.

According to Seldin (1999) there are two important premises for evaluation of teaching. The first is to have an explicit goal that is based on a clear point of view on quality in teaching. For example, high quality in teaching can be that which supports the students’ learning activities; that which motivates the students; or that which supports learning at a higher level. Secondly, it is crucial that the purpose of the evaluation is clear. Evaluation as management control would be planned differently than evaluation of teaching activities, which should enable improved understanding the next time the subject is presented. Seldin (1999) claims that it is advisable that the evaluation of education focus on learning and development in a way that administration, lecturers and students will gain from being part of the evaluation process. This approach is supported by Platzer, Blake and Ashford (2000) who claim that the whole programme of study within the culture of higher education enables some of the students to develop their critical thinking and professionalism.

Performance in the classroom is important and therefore focuses on evaluation of learning., But far more important are: planning, choice of goals, subjects, materials, examination forms, teaching strategies and evaluation forms which create the framework for students’ work and learning (Langbein, 1994; Trout, 1997). Hence the present study investigated the evaluation process in the health diploma programmes at EVU based on the students’ written evaluations from 2008, which include questions about teachers’ and students’ performances. Different views on good teaching guide teachers to identify implementation problems and to make needed changes in the learning activities, and to identify or predict shortcomings in the educational design and procedures for implementation (Seldin, 1999).

In evaluation designed to assess and improve services two questions were considered at EVU: which type of evaluation was needed to guide future decisions, and could the needed evaluation be based on already available evidence or required new information. EVU determined that evaluation of processes within the institution was important (process evaluation) and that the evaluation effort be directed towards the activity and the goals for a specific activity (satisfaction evaluation). Thus the objective of the study reported here was to describe and analyze evaluation of the health diploma programme as it was carried out in UCSJ in 2008, and discuss how EVU could fulfil the obligations stated in the Developmental Contract between UCSJ and the Ministry of Education, 2008-2012. An additional objective was to provide EVU with data needed for further development of the health diploma programmes and for other postgraduate professional programmes, as applicable.

Methodology

Research Questions

To what extent were the students satisfied with the health diploma programme?

To what extent were the students satisfied with the supervision?

How did the examination results comply with ministerial demands?

Participants

In 2008, 157 students began the postgraduate health diploma programme of 15 modules. Each student participated in one or more modules, usually two modules per year, so there were different numbers of students in each module. Of the total number of students 87 per cent were nurses, one per cent was midwives, four per cent were physiotherapists, five per cent were occupational therapists, one per cent was bio-analytics and one per cent had other professions at the bachelor level. Most of the students (104) had more than ten years clinical work experience in the health sector, 37 had five to ten years, and 16 had less than five years. In the module, Clinical Supervisor Education, six of 22 students had only two to three years of experience in the clinic. In Denmark most of the students who take health diploma programmes are between 30 and 50 years of age with many years of experience in their field.

Data Collection

The study is a quantitative study based on a mandatory evaluation questionnaire developed by UCSJ and completed anonymously by all students at the end of each module. The lecturer collected the completed questionnaires. The questionnaire had items about students' reasons for choosing a health diploma programme, introduction to the diploma study, impact of the teaching style, study days without lectures, the examination project, and practical expectations, and provided space for other comments. A total of, 24 questions were common to the questionnaires for all modules. There were additional items specific to each module. This report deals only with the items common to all modules.

Five aspects or dimensions were assessed in order to describe outcome and satisfaction regarding every topic within the modules: professional level, performance, relevance for practice, personal and professional benefit, own engagement. Students responded to items using a 5-point scale, 1-dissatisfied to 5-highly satisfied. To investigate to what extent the health diploma programme was based on new science, all reference lists were analysed to identify the scientific publications used in the modules. To investigate if the syllabi and the examination projects fit the research-based

expectations in the curriculum, the teachers' recommended literature was analysed.

Lecturers' supervision of students and students' level of satisfaction with that supervision were assessed on amount of time, content, and personal and professional benefits. The obligatory seven-grade scale from the Ministry of Education was used to analyse the examination results. A mark of 10 or 12 means very good to excellent; 7 is average; 4 is acceptable; 02 meets minimum expectations; 00 and -3 are unacceptable. (Ministry of Education, <http://eng.uvm.dk/Uddannelse/General/Marking%20Scale.aspx>). This marking scheme was developed within the framework of the Bologna processes.

All examination projects were based on ministry guidelines and so had the same structure that included a reference list. This list as well as the module syllabus prepared by the lecturer and literature lists used by lecturers and students revealed to what extent new scientific publications and the newest research literature were used by students and lecturers. For a systematic review of the literature used in the diploma programmes in 2008 the UCSJ bibliographic databases were used. According to Hemsley-Brown and Sharp (2003), a systematic approach to literature review attempts to identify the best available evidence to answer specific questions. Such an approach prioritises evidence from empirical studies that have the most appropriate design and are of the highest quality. The systematic analysis of examination projects, the evaluation questionnaire, lecturers' syllabi and curriculum and students' examination results provided the EVU with a good indication of students' satisfaction with the health diploma programme.

Findings

Student Satisfaction with the Health Diploma Programme

Most of the students (107) had high preliminary expectations of the programme; 44 had average expectations and two had low or no expectations before they enrolled. More students (128) expressed satisfaction with their introduction to the programme; 22 were partly satisfied and three were not.

Students chose which modules to take from among 15 available. Most enrolled in two over the course of a year and among them covered 121 topics or themes. For each topic students had to indicate their satisfaction on five dimensions: lecturers' professional level, lecturers' performance, relevance for practice, personal and professional benefit, and their own engagement in the education process. In

total they responded to 6365 of 7020 (90.7%) possible questions. The data in Table 1 shows that students were well satisfied on all five dimensions of their experience in the programme: relevance for practise (86%), professional level (81%), own engagement (77%), performance (73%), and personal/ professional benefit (71%).

Table 1

Student Satisfaction with Dimensions of the Health Diploma Programme

Scale 1 to 5 in numbers (n) and percentage (%)	1 (n)	%	2 (n)	%	3 (n)	%	4 (n)	%	5 (n)	%	Sum (N)
Professional level	31	(2.4)	54	(4.2)	157	(12.3)	482	(37.5)	560	(43.6)	1284
Performance	43	(3.7)	103	(8.1)	190	(14.8)	425	(33.5)	507	(39.9)	1268
Relevance for practice	28	(2.1)	39	(3.0)	113	(8.7)	400	(31.2)	707	(55.0)	1287
Personal, professional benefit	32	(2.5)	103	(8.1)	234	(18.6)	473	(37.6)	417	(33.2)	1259
Own engagement	23	(1.8)	51	(4.0)	215	(16.9)	544	(42.9)	434	(34.4)	1267
Total	157	(2.5)	350	(5.5)	909	(14.3)	2324	(36.5)	2625	(41.2)	6365

Student Satisfaction with Supervision

In each module the students had time for supervised studies (normally two hours, but more for the final examination). They evaluated the supervision received from lecturers with questions about satisfaction with time, content and

personal/professional benefit. They were about equally satisfied on all three factors: time given (73%); content (72%) and personal/professional benefit (73%), but more than 25% were not satisfied (See Table 2).

Table 2

Student Satisfaction with Supervision

Scale 1 to 5 in numbers (n) and in percentage (%)	1 (n)	%	2 (n)	%	3 (n)	%	4 (n)	%	5 (n)	%	Sum (N)
Time given for supervision	3	(2.3)	13	(10.2)	19	(14.8)	32	(25.0)	61	(47.6)	128
Content in the supervision	2	(1.6)	11	(8.7)	22	(17.3)	36	(28.3)	56	(44.1)	127
Personal, professional benefit	1	(0.8)	9	(7.3)	23	(18.7)	39	(31.7)	51	(41.5)	123
Total	6	(1.6)	33	(8.7)	64	(16.9)	107	(28.3)	168	(44.5)	378

Use of Current Literature

The evidence from reference lists from teachers' and students' work in 15 modules (Table 3), shows that most listed scientific publications were published after 2004 (178 references), fewer between 2003-2000 (92 references) and even fewer before 2000 (58 references).

Examination Results and Ministerial Expectations

Table 4 shows that nearly half of the students (69) graduated with the highest levels (12 and 10) on the seven –graded scale; 48 students graduated at a somewhat average level and 34 passed with the least acceptable levels (4 and 2). According to ministerial demands one third of students should pass with the highest level.

Table 3

Scientific Publications Used in 15 modules in the Health Diploma Programme, 2008

Publication year	before2000	2000-2001	2002-2003	2004-2005	2006-2007
Number of publications	58	36	56	100	78

Table 4

Examination Results on the Seven-grade Scale

The 7 grades	-3	00	2	4	7	10	12
numbers of results on each mark	0	3	7	27	48	48	21

Discussion

The most important findings of this study were that the students’ health diploma programme at EVU, UCSJ was experienced professionals who had high expectations of the programme. While they indicated that they were generally satisfied with the programme, they were less satisfied with the professional level and performance of the lecturers. Although the lecturers had master’s degrees and some years of experience as a minimum qualification, 20 per cent of the students did not find their professional level and performance at the level they expected.

Most of the students with low satisfaction levels were among those with many years of experience. Rabin (1998) points out that “humans are often more sensitive to know their current situation differs from some reference level than from the absolute characteristics of the situation” (p.13). A common manifestation of this is raising expectations but not increased satisfaction. When objective conditions improve satisfaction levels may actually decrease, because the reference point has changed. People usually want a better situation than their current one, no matter what the current one is. This might be the situation for the students who expressed low satisfaction with the lecturers. According to findings from Viitanen’s study (2001), participants in a Finnish postgraduate health education programme, with conditions comparable to the Danish programme, expressed satisfaction with the lecturers in terms of content.

A total of 328 different publications were used in the programme and 178 of them were based on the newest research literature within the actual subject (theme) for the modules. The use of the library database confirmed that most lecturers used the newest scientific literature in their reference lists. The students’ examination projects also showed that they used the newest available scientific references. There were only 58 publications before the year 2000. Some of them might very well have been “classic masterpieces” and foundational resources for the module theme. Or a recent publication might have been the newest edition or translation of an older publication.

All module syllabi and all examination projects followed the overall curriculum. The projects challenged the students to be adventurous, but they followed well-known procedures and models. Harmaakorpi and Mutanen (2008) argue that practice does not motivate the production of new knowledge for knowledge production in professional research and in professional practice is controlled by different priorities. However practice is constantly concerned with searching for better solutions to practical problems; practice is concerned with innovation. The value of this innovation is dependent on the usefulness of the results in a specific situation. More than 25% of the students were average or not satisfied with the supervision they received from their lecturers. This indicated that work needs to be done to improve supervision to meet all students’ needs. Nearly half of the students graduated with the highest levels of

examination marks. This was very satisfying. It might be said that high satisfaction ratings were influenced by high marks, but the evaluation questionnaires were completed before the examination took place.

Discussion of Methods

This study has some strengths and weaknesses. It was based on evaluation questionnaires that all students completed at the end of the modules in keeping with tradition. The strength is that there was 100% completion rate and the questionnaires were completed anonymously. Development of simple course evaluation questionnaires for post-secondary students has been a serious wish of universities world wide for years. Post-secondary institutions would like to have a simple instrument for measuring educational quality across subjects, departments and institutions. But to attain such a goal risks being too general and unclear about what the student is asked to respond to. In this study evaluators had no influence on the development of the questionnaires and realised that some of the questions were of a more abstract nature. According to Delucchi and Pelowsky (2000),

abstract questions are more difficult for students to answer in specific and concrete ways. They conclude that questionnaire results are unreliable; therefore supplemental alternatives must be developed in order for lecturers to improve education from student feedback. This weakness applies to the questionnaires in this study.

Implication for Lecturers in Postgraduate Professional Education Programmes

This study indicates that lecturers, especially in postgraduate professional programmes as in health education and teacher education, should be attentive to the evaluation tool used for course and clinical feedback and consciously use the results for programme improvement. Evaluation is about guiding the development and implementation of individual programmes as much as it is about regularly providing data for institutional decision making and for promoting growth among students and lecturers. If used prudently, information from the less satisfied and dissatisfied students can contribute to the development of attainable high quality education programmes.

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Acknowledgement

We thank proof-reader Marci Brown for language review.

EDUCATION: A DOOR TO A BETTER WORLD

Sybil E. Wilson

This world is not one world, but four worlds differentiated according to levels of income, education and human development (HDI). The article presents the thesis that to improve the HDI of countries is to make for better living for individuals and hence a better world. Evidence is presented that education that focuses first on primary education is one key element for effecting improvement. Such an educational program should include at a minimum: reading, number and technology literacy, citizenship education, general academic education, enterprise education, and leisure activities. The educator in any world, has an important role in effecting improvement; but it, is not to do what technology can do better – present information – but to help learners select, critique, and process information in the creation of knowledge and meaning for responsible citizenship and a satisfying life.

Keywords: basic education, better world, human development

In his famous song “Imagine”, John Lennon (1971) envisions a world with
 “... all the people... living life in peace...
 Sharing all the world ...and the world will be as one.”

Unfortunately this is a far off dream. There is not peace in the world today; there are conflicts of varying intensity in too many countries at present. We do not share the entire world; there is famine in some places and abundance in other places; there are excesses of riches and of poverty. To imagine and begin to work for a better world than this one, we need to see the one in which we now live. So, in the first part of this article, I provide an image of this world in economic, educational, and human development terms. I then move to the question of a better world. In the third section I focus on the centrality of basic education in creating a better world.

I. This World

The countries of this world have always been grouped into two or three or four worlds according to level of wealth and development. The simplest grouping has been the two worlds of rich and poor, industrialized and agrarian, developed and under-developed, North and South. After World War II the world split into two large geopolitical blocs and spheres of influence. There were the bloc of democratic industrial countries within the British/West European/American influence sphere, known as the "First World", and the Eastern bloc of

the communist socialist states, known as the “Second World”. The remaining three-quarters of the world's countries, not obviously aligned with either bloc, were regarded as the "Third World." The collapse of the Soviet Union in 1991 dramatically changed this three-world configuration. Another way to see the world is through the four-world model, first, second, third, and fourth worlds.

The First World remains the first world: wealthy, democratic, industrial countries, highly technologised, highly developed in-migration countries. In spite of across-the-globe location, they are commonly referred to as “the West” or “the North.” This world has about 1B people, a falling birthrate, and an economy that is capitalist and free market. Countries in this world have a high gross national income per capita (GNI) of I\$20,000 (International dollars) and above, a high to very high Human Development Index (HDI) of .9 and above and a high Education Index (EDI) of .9 and above, (United Nations, 2009).

The countries in this world are high economy countries, although with the recent (2008) global economic meltdown, this world is not quite as sure of itself as it has been. It has many anxieties, among them: low birthrate, accommodating new immigrant groups, integrating different cultural ways, managing and growing the economy to maintain a high standard of living, erosion of old established values, providing for an aging population, fear of becoming a have-less country, fear of war, and fear

of terrorism. So, good as it seems for them, they want a better world in which there is stable government, full employment, security from war and terrorism, and a good education for their children. According to the indices of income, human development, and education, there are 66 of these countries (United Nations, 2009).

The Second World. In this world there has been probably the most significant shift in the positioning of countries, from a monolithic Communist bloc to several individual vigorous nations with different philosophies of government and social systems. In this world are countries with an economy that is consistently and moderately developing over an extended period. Some of them are industrializing rapidly, are at the forefront of the technological revolution, and have a fast growing economy. Martin (2006) estimates that this world may have about 3B + people by mid-century. They have upper middle economies with a GNI of I\$5000-9999, a high human development index (HDI) of .8-.899, and similarly a medium to high Education Index (EDI). There are 46 countries in this group, and like the First World countries, they are across the globe. The people in these countries want a better world which promises higher incomes, guaranteed employment, good education for their children, and a better quality life.

The Third World. While some countries that were in this world are now in the Second World, most remain the same, the developing countries of Africa, Asia, the Middle East, and Latin America. This world includes capitalist, free enterprise countries, and former communist countries; very rich countries and very poor ones. These countries have a low middle to low income economy, a GNI of I\$2500-4999, a medium HDI (.500-.799), and a similar mid to low Education Index. There are 55 of these countries across the globe. According to Martin (2006) this world might have about 3B people by mid-century. Most of all, the people want education, productive employment and stable government. The countries of the Second and Third worlds are grouped as “developing countries.” They strive against many odds, such as huge International Monetary Fund (IMF) loans, unstable governments, high unemployment levels, and a growing younger population.

The Fourth World. In this world are destitute countries that are caught in a cycle of worsening poverty, disease, civic violence and social chaos. They are plagued by wars, famine, rampant epidemics (e.g. malaria), and they suffer from the absence of a strong professional class. They have a low income economy with a very low GNI of I\$2500 or less, a low HDI (.000-.499), and a low Education Index (below .5). There are 43 such countries, and most are on the continent of Africa. This world may have about 2B people by mid-century (Martin, 2006). A better world for them is having the basics of life: clean water, safe shelter, sanitation, schools for their children, food, absence of war, and work.

A Summary Note

We live in one world, yet four different worlds. By the four-world model, we see the extreme of the very rich, highly developed countries, and the very poor and destitute countries. In between are the Second and Third world countries that are mostly moving upwards in economic growth and towards a higher level of human development. One of the constant desirables of people in all four worlds is education for their children. This is looking at things from a global perspective, but the four different worlds exist within a country, as enclaves of enormous individual wealth contrasted with areas of poverty and the middle classes in between.

II. A Better World

Lennon’s dream of a better world:

“Imagine no possessions... I wonder if you can
No need for greed or hunger... A brotherhood of man
Imagine all the people... Sharing all the world”

is a dream for all peoples in all four worlds. The one Earth that we inhabit is marked by inequality, uneven distribution of resources and opportunities. Sharing all the world could improve the human development level for all countries and create a better world for everyone. According to Jeffrey Sach’s calculations (Martin, p. 298) it would take the equivalent of only 0.7% of the GDP of the First World to change this situation of poverty in the Third and Fourth worlds. What does a better world look like seen through the lens of human development?

Defining Human Development

Human development is a process of enlarging people's choices and attaining a level of well being. It focuses on choices –what people should have, be, and do to be able to ensure their own livelihood. Human development is concerned not only with basic needs satisfaction but also with development as a participatory and dynamic process. It applies equally to less developed and highly developed countries, to countries of all four worlds. Of course income is necessary for development but not sufficient for human development, for income is not an end in itself. In its human development work, the United Nations (2009) uses three indicators to determine a country's level of development and its people's well being: longevity, education, and standard of living.

Longevity is determined by life expectancy at birth. A long life is valuable in itself and results from adequate nutrition and good health.

Education (Knowledge) is necessary for a productive life in modern society. One essential component of a measure of educational level is literacy rate; literacy being a person's first step in their education, in their learning and knowledge building. To this is added participation at levels of education for a more robust indicator of education level. So the Education or knowledge component of human development (HDI) is comprised of a measure of literacy (two thirds) and enrolment rate at primary, secondary, and tertiary educational institutions.

Standard of Living is probably the most difficult of the three indicators to measure simply. It requires data on access to land, credit, income, and other resources. The most readily available measure is income, but per capita income is difficult to determine with any accuracy. It is distorted by the use of bartering, the presence of nontradable goods and services, the preference for memory over paper records, and the anomalies from exchange rates, tariffs and taxes. In some countries people do not need excessive financial resources to ensure a decent living and a quality life; in other countries they do.

People do not isolate the different aspects of their lives. Instead, they have an overall sense of well-being. The HDI (Human Development Index) as a

composite index of the three factors — longevity, education, and standard of living— seeks to capture this. The index was developed in 1990 by Pakistani economist Mahbub ul Haq and Indian economist Amartya Sen to shift the focus of a country's development from national income to people centred policies, and to convince international policy makers to move from concentrating on economic advances only to the well-being of people (United Nations, 1990).

It is said that “the primary objective of development is to benefit people” (United Nations, 1990, p. 9) for people are the greatest asset of a nation. People are both the end of and the means to development. People are both the assets and the beneficiaries of human development, expressed in the quality of life that they enjoy. A better quality of life means having: better nutrition and health services, greater access to education, more secure livelihoods, better working condition, security against crime and physical violence, satisfying leisure hours, and a sense of participating in the economic, cultural and political activities of their communities. These markers echo the seven foundations of a better world from the *Better World Handbook* (Jones, Haenfler & Johnson, 2007). People also want higher incomes as one of their options; but income is not the sum total of human life, rather it is human well-being; it is the human common good (Chomsky, 1997, 1998). Lennon had it right; that can only come by *sharing all the world*.

When youths around the world were asked what makes for a better world, they said:

We want peace. We want a clean environment. We want to be sure of a job. (A First World youth)

I dream to have a world in which there is no boundations [boundaries] of caste, religion, state, country, colour... No poverty, no corruption. In that world dignity, love, happiness and responsibilities will spread there [their] magic... (A Second World youth)

A world that is peaceful, hopeful, clean, drug free and safe. (A Third world youth)

A world fit for children is a world fit for everyone! My country has endeavoured to make this real by

introducing free primary education. This will lead us to a better world. (A Fourth World Youth)

A Summary Note

Looking at a better world through the lens of human development, one can conclude that there are needs in the whole world for the well-being of people. The expectations and attainments may differ somewhat for First world and Second or Third or Fourth world peoples. But the end of human development is all people's well-being which means a number of things, but primarily a long and healthy life, a high level of education, and a comfortable standard of living. While income is not an end itself, and may not translate directly into a high level of development, it is an important means to achieving a quality life in a better world.

In the next section the focus is on education as a path to that quality of life and a better world, yet recognizing that none of the three human development indicators stands alone; they are interlinked; the results of all working together is better than that of any one alone.

III. Education for a Better World

Education is a major component of well-being and is a key factor in determining whether a country is developed, developing, or underdeveloped; whether it falls in the first, second, third or fourth world group. It is also a main factor in determining satisfaction with life. In his attempt to show life satisfaction in different nations, White (2006), an analytic social psychologist at the University of Leicester (U.K.), developed the "Satisfaction with Life Index". In his calculation, subjective well-being correlates most strongly with health (.7), wealth (.6), and access to basic education (.6).

Bok (2010), who has been examining the growing body of research on happiness and well-being, declares that "any serious attempt to increase well-being should give a prominent place to education" (p. 156). Governments should consider the implication of such research for social policy which includes educational policies and programming. Many would agree with the World Confederation of Teachers (2003) that the first step towards a better world is to achieve education for all in all nations. What follows are selected case stories of the

intentional and successful use of education for creating a better world for a nation.

Country Stories of Development and Education

From the mid sixties to the mid nineties, the economies of the South East Asian countries grew faster than all other regions of the world, led by the "four Asian Tigers" (Hong Kong, Singapore, South Korea, and Taiwan). In about 11 years, (1966-1977), these four "tiger countries" pulled themselves out of the Third World into the First World with developed, advanced economies. In the report of his study of these four South East Asian countries Morris (1996) looked particularly at the role of education in their development. He concluded that:

1. Paramount to development was the role of primary schooling in providing a basic level of literacy, numeracy and social cohesion in the period of each country's early industrialization. Literacy rate in all four countries soared and today it is 99% for Taiwan and South Korea, 94.4% for Singapore, and 94.6% for Hong Kong (based on 2007 data from United Nations, 2009). Literacy, which comprises two-thirds of the education component of the HDI, was foundational to economic takeoff.

2. Education was intentionally used to promote social cohesion and a sense of national identity. In all four countries moral/civic/character education was a compulsory subject in the school curriculum. In Hong Kong it was integrated across the curriculum, elementary to secondary, with the aim of cultivating in students the proper moral attitudes and social values (Hong Kong, 1981). In Singapore, civics and moral education has been a compulsory subject at all school levels, and it is strongly emphasised (Hodge, 2008). The Education Act for South Korea sets moral education as one of nine fundamental subjects in the elementary school curriculum, necessary for a productive civic life. In Taiwan civic and moral values is a curriculum subject in junior high school (Taiwan Ministry of Education, 1994).

3. Access to education provided the principal means for personal socioeconomic advancement. When growth [in the economy] occurred, this was ploughed back into improving the country's infrastructure, including transport facilities, housing, medical services and education, so the benefits of

economic growth were broadly distributed so as to improve the well-being of everyone.

4. The expansion of education at the three levels was sequential with most money being spent initially at the primary level. This is a key to development, given that the primary level is where basic literacy education begins.

5. In the early transition from low income status, each of these four societies invested heavily in the expansion of general academic education rather than in technical or vocational education, believing that, “The needs of employers were primarily for diligent, literate and trainable employees” (Morris, p. 102). This direction is interlinked with civic education and early literacy. Together they ensure a literate adult population.

The result from this study of four countries confirmed a much earlier meta-analysis of various studies on the rate of return on investment in education. Psacharopoulos (1985) showed that the rates of return were highest at the primary level, and the returns for general education were greater than those for technical and vocational education. It would seem that these studies affirm the centrality of education as one of the indicators of human development. The question for educators then is, what kind of education?

What Kind of Education?

The focus here is on basic (primary, elementary, foundational) education. From the “Four Tiger” country stories it would appear that, in order to move to a better world that ensures improved well-being for everyone, there is a minimum of three requisites that basic education provides: universal literacy, a general academic curriculum at the primary level, and civic/ moral citizenship education as part of that curriculum. Once such a foundation is in place, Bok (2010) says people should live life so as to enjoy themselves and pursue the things that give their life meaning: employment, health, family time, friendships, civic and community activities, and leisure activities. From the body of research with cohorts of retirees in the U.S.A. (Bender and Jivan in Bok, 2010; Yang and Yang in Bok, 2010) that shows moderate to high satisfaction with life in retirement, Bok offers the perspective that education must do more than prepare people for employment.

Education should “try to cultivate a wide range of interests and prepare students for a variety of pursuits that tend to increase satisfaction with life” (p. 157).

For our modern world basic education must also include technology literacy. It is generally expected that computer technology will continue to revolutionise the world at an increased pace and that the technology will generate much more affluence in the future world, just as the steam engine, electric power, and machine tools revolutionized the world of the 18th and 19th centuries and created affluence for some. Since technology will be a huge factor in creating affluence and a means for the “bettering” of the world for everyone, it merits some space here, specifically its role in education.

The Role of Technology. In the 21st century the computer is the park or the shopping mall or the village library. Computer technology is becoming more and more public and accessible, and so is becoming what Martin (2006) calls a “global common goods.” It has the power to create numerous types of global common goods that have not existed before and to create them in abundance. The Internet and software are such goods. They are accessible to many now (with the potential to be accessible to everyone) and provide many opportunities for the development and rapid distribution of other global common goods.

Some examples follow. The Lawrence Livermore National Laboratory (California, USA) which mapped the human genome puts an extraordinary quantity of new knowledge on the Internet and anyone in the world can access it free of charge. Google is moving on with developing a digitalized library of all existing books. Anyone anywhere in the world will have access to that library, perhaps free, perhaps not. Most of the world’s great books for which copyright has expired are already available free on the Web. There is a massive amount of educational materials on the Web – some more valuable than others— that is free of royalties. Once such materials are on the Web, they can be shared. Computer technology makes such sharing possible, a step in the direction of Lennon’s plea to share the world. The most valuable future “common goods” might very well be education facilities on

digital media that can be accessed almost everywhere.

What about Access? Not everyone in all the worlds is benefiting from the technology revolution, but the potential exists to share this “common goods”. Much of the information on the Web and digital media could be free of charge and designed for global use, if the privileged were eager to share. Digitalised materials can be produced in multiple languages and made to be acceptable in countries with different forms of government, different cultures, different social arrangements, and different religions. Courageous creativity using the technology is not limited to people in the First World or in any one country. South Korea was the first country in the world to provide high-speed internet access in every primary, junior, and high school, and along with Taiwan, they became world leaders in information technology. Bangalore is known as the *Silicon Valley of India* because of its position as the nation's leading IT exporter. Estonia ranks fourth among the European Union countries for the high use of e-services by its citizens. (http://www.vvk.ee/public/dok/Internet_voting_Estonai.pdf).

Although countries like the United States (U.S.A.) with its unrivalled Silicon Valley has tremendous advantage in technology, innovation is becoming globalised. Brazil, Chile, China, Colombia and India were among the Second and Third World countries that participated in the inaugural institute for large scale innovation (ILSI) in San Francisco, June 3-5, 2009. The purpose of the institute was to “create an agenda for global stewardship and collaboration regarding large scale societal and innovation issues.” (<http://www.largescaleinnovation.com/ILSISummit062009.pdf>).

Technology, as a “global common goods” will allow us to build up more affluence everywhere, but, as said earlier, a high income does not necessarily buy well-being. More important is that which gives meaning to life, and thus to a better world. Martin (2006) and Bok (2010) and educators all over the world are in agreement with Havel (1998) that education may be the single most powerful means for getting us there. It may not be the fastest or easiest way, but “it is the most effective one ...the

most sustainable solution for the improvement of long-term global problems” in the collective wisdom of a group of 20 undergraduate students from the U.S.A. (Briggs, 2003, para. 1).

A Basic Education Program for a Better World

An educational program for bettering the world starts with basic education; that is education at the elementary level, up to Grade 8, recognizing that Grade 8 is the end of public formal education in many countries. From the evidence so far, we know that reading and number literacy, technology literacy, civic and moral education, and a general academic curriculum are foundational. We also know that education correlates strongly with health and that physical and mental health are nurtured by various types of leisure activities that can be pursued long after schooling age and into the retirement years. We know that cultivating broad interest beyond work and participating in civic and community affairs contributes to well-being. Keeping these as outcomes for a basic and foundational education, an elementary (up to Grade 8) school program might look like this:

Literacy – reading in the first language, numeracy, culture, and technology. Technology literacy must extend beyond knowing how to use the computer to include critical media study that engages with questions of the economics, politics, and ethics of technology. Cultural literacy is important because we live in an increasingly globalised world in which transcultural encounters are inevitable.

Academic subjects. With the world getting smaller and migration across national and language borders increasing, a second language should be included in the usual academic subject list of language, mathematics, science and health, social studies, and artistic studies. Since information in all subjects is widely available through the technology, the teaching/learning challenges are for students to create knowledge out of information; to differentiate useful and useless information; and to view information through some kind of moral lens.

Civic and moral education is about developing civic pride, community participation, ethical standards, and moral integrity. However, such education goes further; it is education to become “doubly conscious” (DeJaehere, 2009), that is,

seeing one's identity through the eyes of others and in community. It is about knowing the laws of the land and the mores of the community to help in addressing such local, national and global issues as sustainability, energy use, environmental care, child poverty, gender inequities, and income disparities. It is education that "problematizes and (re)constructs citizenship to address civic realities of exclusion and discrimination" (DeJaeghere, p. 226), excesses and scarcity, wealth generation and distribution.

Leisure activities. Active leisure pursuits that can be carried over into adulthood are needed to counter the sedentary lifestyle that the various forms of technology encourage. Such pursuits are good for physical and mental health. Cultivating broad interests and participation in artistic and community activities initiated in early educational experiences can become a habit into the retirement years.

Enterprise education is about "taking initiative to achieve a self determined goal that is part of a future vision, in order to achieve one's own meaning in life, while sharing the achievement with others" (Luczkiw, 2001, p. 2). It is about learning to be innovative, creative and sharing in work and leisure for personal and community well-being. It is about learning responsible leadership and intelligent followership. It is about being entrepreneurial in creating a livelihood, and so is especially important in the countries with high unemployment and in those Second, Third and Fourth World countries where Grade 6 or 8 is the end of formal education for many.

The Educator's Role

Information is exhaustive and accessible through technology. Therefore the work of educators at all levels, primary through university and professional schools is not to supply more information. Rather it is to help learners access, select, and process that information critically, ethically, and for action, whether that action be self-directed (as for one's identity) or other directed (as for civic engagement). Educators have a major role in helping students create knowledge from information and in modeling for students how they can further their own education while working to make the world a better place through responsible citizenship.

Conclusion

The indices of human development as well as the evidence from research affirm that education is foundational and pivotal to having a better world for all people. That is a world in which people can live a long, healthy, and meaningful life and share resources and services to make that happen. Our 21st century computer technology has the potential for providing access globally to a key resource, i.e. knowledge, a requisite for and outcome of education, innovation and work and a basis for individual and community well-being. The technology releases educators from information giving so they can focus their teaching more on knowledge creation, skill development, and the critical and ethical dimensions of what they teach. Such educational engagements can lead to action in local, national, and global contexts for a better world.

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Note: This article is an abridged form of the keynote presentation at the 30th annual seminar of the International Society for Teacher Education at Pontificia Universidade Católica, Porto Alegre, Rio Grande do Sul, Brazil, April 11-17, 2010.

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PROFESSIONAL DEVELOPMENT OF PEDAGOGUES: COMPETENCIES AND QUALITY INDICATORS

Marília Costa Morosini, Alberto F. Cabrera, and Vera Lucia Felicetti

This article reports on the first phase of a research project which focuses on the development of competencies and their indicators required of quality professional pedagogues in the knowledge society. Faculty in the undergraduate and graduate teacher education programs in the College of Education at the Pontifícia Católica Universidade do Rio Grande do Sul (PUCRS) in Brazil identified and elaborated five essential competencies using the focus group method. They are: knowledge of the area of expertise, didactic-pedagogical action, management of educational processes, investigative action, and exercise of citizenship. The research points towards the need to move on to the next phases of the project dealing with the analysis of student thinking and that of the employers and civil society as a whole.

Keywords: Brazil, pedagogy, professional development, PUCRS, quality indicator, teacher competency

With the advent of globalization, more freedom of economic activities among countries, and the universalization of the knowledge society, the need for high quality professionals in all areas of human resources is increasing. This demands thinking about quality academic education in general, and specifically for the professional development of the graduate of the Pedagogy Program at the the Pontifícia Católica Universidade do Rio Grande do Sul (PUCRS). This program prepares teachers who work with students in the initial years of schooling. The teachers who are graduates of higher education programs return to university for their teacher education. They are participating in the educational process, as teachers and as learners, illustrating the cyclic dynamic of the teaching and learning process (Felicetti, 2010). They hope to become competent teachers.

What is Teacher Competency?

Quality education for teachers means preparing them for teaching effectively. This means that they can produce demonstrable results in terms of the acquisition and use of competencies (Cabrera, 2010; Cabrera & La Nasa, 2008). What does this mean? According to Sugumar (2009) competency can be defined as: “An underlying characteristic of an individual that is causally related to criterion referenced effective and or superior performance in a job or situation” (p. 3). The author goes on to say that competency refers to the knowledge, skills and attitudes that the teacher should demonstrate in

his/her career. For Rios (2001), competency is a set of high quality knowledge and skills. This definition is similar to that of Braslavsky (1999) which refers to teaching competency as the capacity to work with knowledge and the awareness of the results of this knowledge. For her, competency simultaneously involves knowledge, means for doing things, and values and responsibilities for the results of that which was achieved. On the other hand, Perrenoud (2000) understands competency as the ability to mobilize various cognitive resources in order to confront different situations.

Fernandes (2006) points out that, in the teacher’s work, competency is configured in interrelated dimensions of technique, policy, ethics and aesthetics put into practice. This conveys the existence of two ideas related to the development of teaching competency. One idea is about planning and the other idea is about implementation or execution of professional knowledge (Vogt & Rogall, 2009; Medley, 1978). According to these authors, a competent teacher demonstrates the ability of expression and questioning while interacting with the students; this is the implementation of the skill. A competent teacher knows when a skill is adequate or not; this is the development of the skill. Development is aimed at the objective of teaching, at having knowledge of the discipline, including the anticipation of how the class and learners can be developed. Implementation requires adjustments in the teaching methods and/or

classroom management strategies, as well as diagnosing student understanding and the needs for support or changes. A complete competency demands recognition of when the skill can be utilized and if it is being utilized correctly. This evidences that both dimensions of a competency - planning and implementation - are interconnected; for example, the teaching plan can be modified, but rarely abandoned (Shavelson & Stern, 1981).

Medley (1978) indicates that competency can be *preactive* or *interactive*. Interactive competency is about the performance of the teacher while with the student, and preactive competency is what the teacher does when the students are not present. When the teacher plans, diagnoses the needs of the students, and reflects on the experiences they had, the teacher is demonstrating preactive competencies. When the teacher implements instructional strategies, minimizes and/or deals with disciplinary problems in the class, or adapts classroom practice to the individual differences of students, the teacher is displaying an interactive competency. This means that teaching competency is formed by a knowledge set represented by academic education, classroom practice, and life experiences, all of which contribute to the construction of a unique professional competency that is performed in a specific teaching action and situation.

For Medley (1977), the experiences that teachers have during the education process contribute to changes in the performance of their competencies, intervening in ways that can change the students' learning experiences and consequently modify their learning results. The distinction between planning competency and execution competency mentioned by Medley (1978) and Vogt & Rogalla (2009) deserves attention, since it enables one to better focus the indicators of each competency. With respect to the various definitions of competencies, Brazilian ministerial documents on teacher education consider them to be the "ability to mobilize multiple resources, including theoretical knowledge and professional and personal life experiences, to answer the different demands of work situations" (Brasil, 1999).

Education by competencies, at different levels and in different modalities of teaching, has been the object of numerous curricular reforms, at national

and international levels over the years. In the United States, in the 1960's and 1970's, studies on teaching competency were focused, for the most part, on two types of approaches: on the one hand, based on personal characteristics of a competent professor, and on the other hand, based on the description of the practice performed by the professor (Mager & Beach Jr., 1976). From these studies emerged the curricular models known as Competency Based Teacher Education (CBTE) and Performance Based Teacher Education (PBTE). These models have influenced the education of many American teachers for at least 15 years, decisively impacting teacher education (Cooper, 1989; Oliva & Henson, 1989; Gimeno Sacristán, 1989).

In Brazil, at the end of the 1990's, the curriculum for competencies emerged as a "new" paradigm, promoting the idea that schools need to be adapted to the job market and be in tune with changes in the society. The "teacher model" established in the Benchmarks for Teacher Education – RFP (Brasil, 1999) aimed to establish relations between student and teacher performance, consistent with a teacher education program that is based on competencies. The next sections of the article review government proclamations on teacher education and teacher certification, describe the development of a set of competencies and their indicators, and elaborate the competencies.

Desired Competencies for the Future Teacher of the Pedagogy Program at PUCRS

According to the National Curricular Guidelines for the Undergraduate Program in Pedagogy (Brasil, 2006), teaching certification is required of all teachers in Childhood Education and the initial years of Primary School, in Middle School Programs, in the Normal modality, in Professional Education Programs and in other areas in which pedagogical knowledge is expected. According to these guidelines, teaching is understood as an educational action and a methodical and intentional pedagogical process. The pedagogical process involves planning, doing, reviewing and re-planning. This means that the pedagogical process is an intentional and deliberate process, since it aims to promote significant relations between learning and the knowledge already produced; that is, it enables access to culture and to the knowledge produced by

society over time.

In line with this understanding, Cunha (2006) writes about the educational action as being the “intentional exercise that employs human energies capable of producing a pedagogical effect, going from the project to its realization” (p. 444). Educational actions and pedagogical processes are built in social, productive and ethnic-racial relations which influence principles, concepts and objectives of pedagogy; that is, they develop together with cultural and scientific knowledge, in the socialization and construction of knowledge, and in aesthetic and ethical values naturally connected to the learning processes (Brasil, 2006). Thus the Pedagogy Program should provide, through theoretical-practical studies, experiences in planning, implementation and evaluation of educational activities, and opportunities for investigation and critical reflection. This will also enable the application of philosophical, anthropological, historical, political, linguistic, sociological and other forms of knowledge to the field of education. This implies that the undergraduate (future teacher) of the Pedagogy Program, will work:

with a repertoire of information and skills composed of a plurality of theoretical and practical knowledge, whose consolidation will be proportioned in the exercise of the profession, founded in principles of interdisciplinarity, contextualization, democratization, pertinence and social relevance, ethics and affective and aesthetic sensibility (Brasil, 2006).

In this government directive for the education of a teacher one can note the overlap between planning, implementation and evaluation, which are areas of competencies necessary for the structuring and performance of the teacher’s work. The conceptions presented above, taken from the literature and government directives, guided the research reported in this article.

The Construction of Competencies

The research project, *Competencies, Indicators and Learning Practices in the Pedagogy Program – Teaching Certification at PUCRS* developed in several phases. The process and outcome of the first phase are reported here. Between January 5th and

12th 2010, the faculty of the Pedagogy Program and the Graduate Program of the College of Education (FACED) at PUCRS formed a working group to construct desired competencies and their indicators for the graduate of the Pedagogy Program.. Meetings were moderated by Professor Cabrera. In the initial meeting, the Pedagogical Project of the Pedagogy Program was discussed in detail in relationship to curriculum theory, the desired profile of the future pedagogue, directions set out in government documents (Brasil, 2006) and teaching regulations of FACED and the university. These materials framed the discussions.

After the initial meeting, the faculty group was divided into three smaller focus groups, in order to analyze, discuss and identify competencies. The results were then presented in the large faculty group, when more discussions, analyses and understandings took place. The outcome of this process was agreement on a set of five competencies (see Table 1). Indicators were built from these using the same process. The last activity of this phase was the identification and elaboration of educational practices that convey the competencies. A discussion of the educational practices is beyond the scope of this article.

According to Veiga & Gondim (2001), the use of focus groups was an appropriate methodology for the process of constructing the competencies, since the focus group can be characterized as a resource in the comprehension and construction of perceptions and the representations of the questions being studied. Morgan (1997) defines the focus group as a research technique that collects information through group interactions. This is what occurred in the elaboration of the competencies, indicators and educational practices. The use of the focus group methodology was a way of exploring a topic, with the aim of delineating and extending it further. The members of the group were knowledgeable in the practical and theoretical interests of the research and so could engage knowingly with significant issues and contemplate pertinent questions.

Pedagogical knowledge allied with specific knowledge of the subject content become necessary competencies especially when related to learning situations, such as: observing students during activities, identifying student learning errors

(Carraher, 2002), and identifying the content to be used and relating it to the respective learning objectives (Perrenoud, 2000). When professors (teachers) observe their students, they perceive whether the students understand the content or not, and can address any difficulties. For example, in Mathematics: If a student makes a mistake in calculations involving multiplication, the professor

may ask the student to show and explain how he/she is solving the calculations. In this way, it is possible to identify the error during the multiplication process. Error and obstacle identification enable the use of practices adapted to overcome them. Therefore, specific knowledge in a subject area of teaching needs to be connected to pedagogical knowledge in that area.

Table 1

Desired Competencies for the Future Teacher of the Pedagogy Program of PUCRS

COMPETENCIES	INDICATORS
1. Knowledge of the area of expertise	1. Permanently training, to improve communicative skills and better apply the theory in practical situations.
2. Didactic-pedagogical action	2.1 Builds theoretical references and works with various languages in order to improve communication to the students; 2.2 Plans, executes and evaluates educational actions; 2.3 Applies different pedagogical practices, in different educational contexts, having teaching and learning processes in mind;
3. Management of educational processes	3.1 Works and coordinates teams, working on different projects related to the student; 3.2 Participates in the elaboration, implementation, and evaluation of the educational processes/projects; 3.3 Develops strategies to solve school conflicts (with students, families, the community) through dialogues with students, families, teachers and the community.
4. Investigative action	4.1 Identifies and understands problem situations regarding: socio-cultural and school reality; classroom management; individual and group differences; learning difficulties; psychosocial difficulties (drugs, bad treatment, negligence, abandonment and others); problems caused in situations in day to day education; 4.2 Reflects on personal and professional life, in relation to himself, to others, in the socioeconomic and cultural context.
5. Exercise of citizenship	5.1 Respects differences, manifesting an attitude of tolerance in relation to the various human characteristics, establishing dialogical relations in groups, in different spaces of coexistence; 5.2 Participates in class groups, clubs, social movements with commitment in the transformation of self, others and society; 5.3 Behave with solidarity.

The competency area of knowledge expertise for a graduate of FACHED's Pedagogy Program for teacher certification is aimed at the development of subject knowledge, pedagogic knowledge and knowledge of the content in teaching. The three types of knowledge need to be developed during the initial phase of the teacher education program and be continued during in-service studies after graduation. They form the basis for teacher initiatives and teaching decisions. Acquiring new knowledge, new perspectives, or new ways of interpreting is necessary, since "These discoveries, in turn, are one source of changes in practice" (Shulman, 1998, p.11).

Didactic-pedagogical action. Braslavsky (1999) refers to didactic-pedagogical competency as one of five competencies required of a teacher in the 21st century, in order for the teacher to make the teaching and learning processes productive. For the author, pedagogical-didactic action is aimed at the capacity of knowing, getting to know, selecting, evaluating, utilizing, perfecting, creating and recreating strategies of effective didactic mediation. Didactic-pedagogical action, as a competency, refers to the construction of theoretical references that can form the basis for the teaching action in a way that the teacher can feel more confident about his/her practice, since this construction establishes ties between scientific, empirical or personal theories and practice. In this way, the possibility of choosing or adapting learning activities becomes greater. To foster pedagogical choices and adaptations knowledge of the learning process and an understanding of appropriate theories are necessary.

For Braslavsky (1999) it is vital that teachers apply "selection criteria to a series of known strategies to intentionally intervene, promoting student learning and creating other strategies where those available are insufficient or not pertinent" (p. 29). Theories build bridges to the exercise of practice and the evaluation of the practice. This construction comes linked to knowledge of the processes of adapting and/or restructuring theories for different educational contexts. Thus, the didactic-pedagogical activity is an implementation competency; that which the teacher performs directly with the learner through activities, exercises, examples, demonstrations, metaphors and other pedagogical

practices, organized or reorganized according to the learners' characteristics, prior knowledge, and learning styles, while still being consistent with the socio-cultural and socioeconomic reality. Teachers who develop this implementation competency based on the planning competency, build their own theory and method or techniques pertinent to the learning and teaching process and context.

Investigative Action. Investigation is understood as the verification of something through information from various sources. The investigative action is the manifestation of the act of investigation under a vast spectrum of premises that compose the universe of research in focus. Investigative action is a competency necessary for the graduate of the Pedagogy Program, since it implies the identification and understanding of numerous situations that affect the teaching and learning process. These factors can be directly related to the characteristics of the students and the context in which the teacher works. Based on this identification, the teacher can understand how to better work with the intended subject content, since he/she comes to know when previous ideas become obstacles or precursors in learning (Giordan & Vecchi, 1996). From this identification and understanding, the teacher can develop and apply appropriate strategies in teaching.

By identifying and understanding problem situations regarding: socio-cultural and school reality, class reality, individual and group differences, learning difficulties, and psychosocial difficulties, the teacher can consider these realities in implementing teaching actions. Therefore, this competency aims to identify and understand the realities of the learning situation in order to build new or adapt known strategies in the classroom.

Management of Educational Processes. According to Braslavsky (1999), the teacher needs to be trained to know how to articulate the macro-policy of the whole educational system with micro-policy. In other words, the classroom teaching activity includes participation in the management and organization of educational institutions and systems. According to the National Curricular Guidelines (Brasil, 2006), the participation of the teacher in the educational system involves knowing how to

program, coordinate, execute, accompany and evaluate activities specific to Education, as well as non-school educational projects and activities. It includes scientific-technological knowledge in school and non-school contexts; it involves the development of teamwork, providing dialogue between different areas of knowledge in the educational arena; and it includes critically studying the curricular guidelines and other legal determinations, in order to appropriately gather, apply, and evaluate educational results and direct them to the responsible jurisdictions. Perrenoud (2000) identifies this level of participation of the teacher as one of ten new competencies for teaching.

Exercise of Citizenship. Silva Martins Filho (2004) defines the exercise of citizenship in society and in current times, as being the representation of the defense of fundamental and indispensable values of civilization in order to optimize social coexistence. The exercise of citizenship as a competency required of the teacher includes: respect for human differences, a respect beyond that which is thought of individually and is mainly practiced socially. In other words, by demonstrating the personal commitment and values for human differences in diverse contexts, the teacher is making it possible for students to develop an acceptance of differences, as well as break the barriers of prejudice.

Active participation and dialogue in different educational contexts means that the teacher is capable of assuming a responsible role when necessary. Thus teachers model conscientious negotiation within justice, that is, the clarification of duties and rights. The participation of teachers in the

construction of a society is manifested mainly, in their being and doing as “teacher”, not isolated in specific moments, but in the totality of their practice. In acting correctly, with justice, with solidarity, with understanding of others, and in practicing what they preach — since doing produces more of an effect than speaking — the teacher is exercising and modeling citizenship.

Final Considerations

The set of competencies and their indicators (Table 1) developed in this project try to gather the capacities necessary for certification of the teacher graduate of the Pedagogy Program of FAGED, PUCRS. Three ingredients necessary for teaching are perceived in all of the competencies: knowledge, know-how (skill) and knowing how to be (disposition). Understanding teaching competency goes beyond knowledge and skills to include: attitudes, behaviors and values (Felicetti & Giraffa, 2008). The teacher can transform knowledge and skills to better develop attitudes and values for a particular educational context. This refers to the forms of expression, representation, and exposition that foster the utilization of a variety of strategies to engage with the content of the discipline so that those who do not know can come to know, and those who do not understand can do so. This requires that the teacher be qualified in Pedagogy and also in different disciplines of study. The set of competencies and their indicators can contribute to a teacher education program for the better professional development of undergraduates and alumni of the Pedagogy Program at PUCRS, and consequently improve the quality of teaching in the schools of Brazil.

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Note: This report is one aspect of an ongoing larger research project, The Political Pedagogical Project, which is supported by the Fulbright Foundation.

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STUDENT-GENERATED MULTIMEDIA AS A MEANS TO MEANINGFUL SCIENCE EDUCATION

Edward Robeck and Andrew Sharma

This article describes the outcomes of a professional development project in which a network of K-12 science educators in the United States (U.S.A..) worked with university faculty members from science education, science fields, and media studies to develop varied media tools and approaches designed to convey science ways that highlight its relevance to human activities. These media tools range from virtual field trips (i.e. videos of the teachers themselves taking inquiry-focused field trips to familiar places) to scientific visualizations and student-generated media of science concepts. In this article we focus primarily on one of those media tools—student-generated animations of science concepts—as an illustration of the role that media can have in facilitating meaning making along several dimensions in science instruction. We argue that these media-based approaches must be considered fundamental to science education that intends to be meaningful to students in the future, because of both the interdisciplinary nature of science in a social context and the media-rich environments in which students live.

Keywords: multimedia, professional development, science animation, science education

Current approaches to science education often provide students with knowledge that is difficult to apply in real-world contexts because the concepts are presented as isolated and abstracted from the situations in which they relate to human experience. Alternatively, science knowledge can be presented in contexts that demonstrate its significance to human endeavors. These types of contextualized knowledge are inherently interdisciplinary in that they rely on not only science, but also social sciences (e.g., economics) and humanities (e.g., performing arts, music), as well as potentially drawing on an understanding of technology, engineering, mathematics, and other aligned disciplines. Among the ways to facilitate teaching and learning of such contextualized, interdisciplinary knowledge are those that rely on media that draw on diverse knowledge areas. That is to say that the contextualization of science knowledge can be facilitated by instruction that incorporates media-based approaches to representing the relevance of the concepts being learned.

This article describes the outcomes of a professional development project in which a network of science educators in the United States explored uses of varied media tools to convey science in a way that highlights its relevance to human activities. These media tools range from virtual field trips to

scientific visualizations and student-generated animations of science concepts. Several activities and outcomes from this project will be shared, along with the theoretical base from which they draw scholarly credibility. The activities were designed to provide the teachers with ways to support students as they work to make sense of the content of science, and in particular, in ways that emphasize understanding the nature of the scientific enterprise as a collaborative endeavour.

Multimedia in Science Education

An important aspect of this project is the parallels that were drawn between science and science education, including with respect to the use of media in meaning making. Scientific research can be described as a process in which a scientist receives an insight into an investigated phenomenon, verifies a derived hypothesis, and finally communicates the results. Visualization, especially computer-based visualization, can support this process (Dransch, 2000). DiBiase (1990) used a two part model—a private domain and a public domain—to explain the application of visualization in the research process. In the private or internal domain, monologic thinking takes place in which scientists are expressing ideas only within themselves. Here, visualization is used for visual thinking, for exploration of spatial data on the one hand, and for verification of the data on the other. In the public or external domain, dialogic thinking (as opposed to

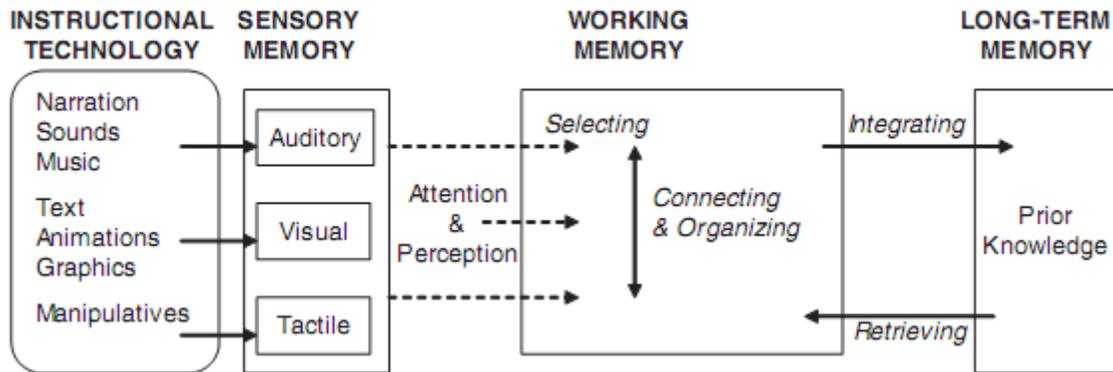
monologic) takes place where the scientist communicates with other people to present and discuss results. In this context, data visualization is used for visual communication that works to enhance comprehension (DiBiase, 1990; Dransch, 2000).

In a similar way, using visualization can support student learning in science. An individual learner can use visualizations, including those that rely on various instructional technologies, to develop an internal understanding of a particular phenomenon. As well, the results of an investigation can be presented through visual communication to a broader group of people who have to form an idea of the phenomenon investigated. Here, the media present information in such a way that people without much knowledge of a subject can perceive and understand that subject. Media such as pictures or graphic presentations as well as videos and animations can accomplish this function (Dransch, 2000).

As teachers and learners use media in these monologic and dialogic ways in instruction the learning environment becomes media-rich. Such environments are widely recognized to aid in learning in a variety of ways (Mayer, 1999; Mayer

& Moreno, 2002; Sweller, 1999; van Merriënboer, 1997). In a recent study, Korakakis, Pavlatou, Palyvos & Spyrellis (2009) found that the contribution of visualization to learning is important in a multimedia application. The study found that interactive 3D animations increased the interest of the students for the thematic unit that was presented. In another study, Moreno & Ortegano-Layne (2008) found that multimedia was better able to convey certain information as compared to text narratives. These results suggest that the lack of temporal and visual information may have imposed a burden on students' meaning-making processes while reading the narrative. Similarly, other findings can be used to generate hypotheses regarding the ways that media potentially support learning.

These hypotheses highlight a problem with current uses of media in science instruction. That is that although multimedia environments are becoming widely recognized as effective aids in learning, until recently, there has been no theoretical or empirical framework for how they support learning, as would be needed to guide the efficient design of effective new applications. To address that need, Moreno (2006) proposed a framework of cognitive theory of learning with media (CTLM) which is represented below.



(From Moreno, 2006)

Figure 1. Framework of Cognitive Theory of Learning with Media

Fundamental within this framework are three principles that apply to this article.

1. **Multimedia:** Students learn better from encounters with several forms of media than when information is presented in a single format—for example, from words and graphics used together, rather than from words alone. When more than one form of media are used, such as when relevant

graphics are added to words, learners are induced to select and connect both media, which contribute additively to constructing a mental model.

2. **Interactivity:** Students learn better by manipulating media and materials rather than by passively observing the processes or products of manipulation by others. Interactivity encourages the processing of new information by engaging students

in an active search for meaning that is required to interpret, understand, and connect ideas being represented.

3. Spatial contiguity: Students learn better when multiple sources of visual information are integrated rather than separated. Non-integrated sources of information force learners to hold one source in working memory while attending to the other; mental connections between them are less likely to occur.

Student-Generated Media—Simple Science Animations

Applying the framework provided by Moreno (2006), teachers in this project were introduced to ways to engage learners at several levels (including preservice teachers and K-12 science students) to processes in which the learners create multimedia projects. In the example we focus on here, the learners can be guided to create simple animations using a technique called “Slowmation” (Hoban, 2007) in which digital photographs are assembled in a sort of “flip-book” fashion, generally at a rate of two frames per second. In this use, the animated sequence is designed to illustrate and/or explain a science concept. Creating animations in this way promotes understanding of science content because the process generates a “need to know” so that the concept can be explained accurately in an animation (Hoban, 2007). Analyzing this through Moreno’s framework, Slowmation can be seen to incorporate the three principles of cognitive theory of learning with media: multimedia, interactivity and spatial

contiguity. That is, the students work with varied representations—in this case still visuals (diagrams, labels, photographs), physical models (which are created as the subject of some of the still visuals), and text (used to both describe the storyboarding done and to provide narration to the images)—combining those in order to convey ideas.

The students’ role with those different elements is highly interactive as they create the sequences used in the animation. Finally, the students’ generation of the animations calls for them to storyboard the ideas in sketched images and in text, and then translate those ideas to narrated still and animated visuals, which makes the various forms of media highly associated with each other in the students’ thinking. Stated in terms of the interactive media framework (see Figure 1), to create media (such as Slowmations) themselves, students must take the sensory input (from various media sources, including some they create) and perform operations on the ideas in working memory (connecting and organizing), which induces a movement of the ideas into (and, potentially out from) long-term memory.

More specific to science instruction, the use of multiple representations has been extensively explored with particular attention to the different roles that media elements can play relative to each other (Ainsworth, 2008). Figure 2 summarizes these possible relationships that can exist among different representations of an idea:

Functions of Multiple Representations						
Complementary Roles		Constrain Interpretation		Construct Deeper Understanding		
Different Processes	Different Information	Constrain by Familiarity	Constrain by Inherent Properties	Abstraction	Extension	Relation

(Adapted from Ainsworth, 2008)

Figure 2. Functions of Multiple Representations in Relation to Each Other

As students develop their multimedia projects, therefore, they will also provide explanations that more or less explicitly convey how the different media elements were meant to work together. These explanations can be analyzed within the framework indicated in the figure above, which will help to both understand the students’ uses of media elements in relation to each other and to assess the

model in this use. So, for example, a student who creates a physical model of an idea may use photographs of that model to help a viewer construct deeper understanding of ideas that are shown with other media (e.g., diagrams) before or after the photographs. Similarly, the simple models that a student makes and photographs might help to limit/constrain the meaning of an idea. When a

student is generating a multimedia product describing “clouds”, for example, the visual images can be assembled in a way that constrains the meaning of “cloud” to the term’s meaning in weather phenomena rather than its more general meaning, which could include “clouds of dust” or “cloud of smoke”. Through processes of collection, creation, selection, and assembly of different media elements (video clips, photos, narrations, etc.), students make decisions about how the media elements can work together (often without realizing they are doing so)—through various relationships shown on Figure 2—to represent ideas in ways that are clear and concise. During this process, too, the ideas move through the different aspects of memory—sensory, working, and long-term—and ultimately become available for the student’s meaning making.

Professional Development in Student-generated Media

As part of the professional development project, a group of in-service science teachers ranging from elementary to high school levels were introduced to the process of having students generate animations in a half-day workshop. This was part of a broader program of professional development in which the group explored how media tools, most of which were not created by students, could be utilized in science instruction. These media tools had the common attribute of highlighting the role of media in the practice of science (e.g., displaying data graphically in scientific visualizations), and in many cases, were created either for or by science professionals (e.g., GIS map layers, medical images, rock strata block diagrams).

Within a month of the workshop on student-generated animation, over half of the participating teachers had involved their students in creating animations in classes ranging from grade 3 to grade 10. As the group came back together to share the results of their work with students, we discussed the experience of having students create animations. In those discussions the teachers and faculty members began to see parallels between what the teachers believed to be the benefits of student-generated media to children’s learning (e.g., being motivated to engage with ideas in sustained ways, working effectively in teams, having opportunities and reasons to express their ideas to each other) and

certain trends in science literacy as described below. These benefits relate to three areas in particular; collaboration, utilizing multiple representations, and applying a systems thinking approach. In the following section we explore the relationship between instruction that makes use of student-generated media and these trends in science as illustrations of principles by which educators can engage students in science, and promote the multi-dimensional meaning-making that are fundamental to current expectations of science education.

Science as Analogy for Science Education

Much of science education is deliberately modeled after the practice of the professional community of scientists (Van Heuvelen, 1991). Debates around the teaching of the scientific method, for example, often hinge on how authentically the steps of the methods taught to school children represent how scientists do their work (Abd-El-Khalick, Waters & Le, 2008). Several important attributes are shared between the two endeavors, such as inductive reasoning, which is a central feature of both scientific inquiry and inquiry-based methods of science education (Watters & English, 1995). These parallels are largely the result of an explicit interest on the part of science educators to not only teach the content of science, but also to convey to students the characteristics of the scientific enterprise.

Considering this analogy between science and science education can also highlight the important differences between the two efforts. Science education is, above all, concerned with addressing the learning needs of children, not all of whom will become scientists. This concern for the needs of the learners gives it a different set of priorities than the professional scientific enterprise. When trends in practice emerge in science, they do so because there is some benefit to the scientific community, and those trends may or may not be beneficial to science learners. However, it is possible that invoking similar practices in both professional science and science education can yield benefits in science education as students try to understand the reasoning, practices, and priorities of the scientific enterprise. Three such trends in science that relate the experience of teachers with whom we discussed the use of student-generated media are addressed below.

Trend 1: Collaborative Technology—Scientific Visualization

Prominent among the trends that link student-generated media with the practice of science is its role as a technology that encourages collaboration. Collaborative problem solving processes, such as those that use advanced information technologies, are among the most important features in the contemporary practice of science (Chen, 2004), and is an area of rapid new developments (e.g., Keefe et al., 2008). Scientific visualization, for example, in which large amounts of data are manipulated by powerful computers to create images of phenomena, has become increasingly important in science. Many science-based corporations have special installations called HIVEs (highly immersive visual environment) to facilitate shared viewing of scientific visualizations. The value of these collaborative visualization theaters is that they allow scientists from different disciplines, as well as staff with non-science skill sets such as project managers and logistics personnel, to discuss the displayed images without the need for all of them to have the science background needed to interpret the massive amounts of raw data that go into making the visualization, or even the typical graphical modes of scientific communication (charts, graphs, diagrams, etc.) by which data are typically summarized. The scientific visualizations facilitate the bringing together of the different skill sets that various professionals bring to a problem solving situation (Park & Cho, 2005).

The role of student collaboration was prominent in the teachers' comments regarding their experience with having students generate media projects. Student-generated media provide a means for collaboration among students who have different levels of understanding of the phenomenon under consideration, and different roles in the design group. The point here is not the source of the images, but the fact that images (in this case that students create) enable collaborative consideration of the attributes of the phenomenon, and without there necessarily being a need for everyone to share a level of understanding of what is being considered. Further, scientific visualizations often put phenomena into motion and/or allow some level of manipulation (e.g., rotating a geologic strata block on an axis to view it at different angles, or turning specific layers on or off so as to highlight other

layers). Similarly, children can put phenomena into motion using the animation technique, and they must collaboratively decide on the visual perspectives that will best depict the attributes they are meaning to communicate.

Communicating and collaborating with others about information provide the foundation for a type of learning known as collaborative conceptual change (Furberg & Arnseth, 2009). Collaborative conceptual change occurs when individuals share and process ideas together, coming to a more or less explicit agreement regarding the validity of knowledge claims. In these contexts, conceptual change comes about through the negotiation of meaning that can be prompted in several ways, such as by the use of visuals (Marinopoulos & Stavridou, 2002). As students negotiate how to construct and assemble visuals into media products, they also have opportunities to negotiate their understanding of the concepts, and to change their conceptual understanding when necessary.

Trend 2: Multiple Representations

Related to the use of scientific visualizations for collaboration is the important role that visualization plays as one mode of representing science phenomena. It has long been a theme in science that phenomena can be represented using multiple formats, and that scientists often use multiple representations to understand different aspects of a phenomena or problem (Kozma & Russell, 2005). Different representational formats tend to focus attention on different aspects of phenomena. Iconic depictions of cells, for example, idealize certain features (e.g., phases of mitosis) to deliberately emphasize critical and/or definitive features. Diagrams may be developed that give an impression of process interactions that can only be detected by their effects in the real world. Mathematical formulas provide insights into how quantities increase or diminish in reference to other quantities. The simultaneous use of several representational formats can provide opportunities for both understanding and communication.

Having students work with developing representations can be an effective way for them to learn science concepts (Blake & Scanlon, 2007; Johnson, Moher, Ohlsson, & Leigh, 2001). For example, students using inductive reasoning in

computer modeling gain considerable conceptual understanding of phenomena that the models are designed to represent (Sins, Savelsbergh, & van Joolingen, 2005), and using physical models in conjunction with visualization has been found to promote conceptual change (Clark & Jorde, 2004). Much has been made, too, of the relationship between how novices represent phenomena compared to representations made by experts, with the fundamental conclusion being that those with more expert knowledge tend to use more representations in shorter periods, and tend to move among them more frequently (Kohl & Finkelstein, 2008).

Generating animations calls on students to make multiple representations of the phenomena under study in the process of developing their media products. In evaluating the steps that students had to undertake to create animated videos, one of the teachers reported that the students consistently researched their topic and wrote up what they found across several days that they used to prepare their ideas and create their animations. For these teachers, the process often included “mini-labs” to test their understanding, brainstorming together regarding ways to depict the concepts, storyboarding the animation sequence, and gathering and building the models and other visual elements that they needed. At this point, prior to beginning the production of still visuals, the students had to present their story boards informally to the teacher to demonstrate that they understood the ideas and had made conscientious decisions about how to depict their ideas. Another teacher was particularly pleased with the motivation student-made media provided for writing, stating that the process encouraged students to engage with “...an invaluable and dying skill...editing and proofing. The students will want to edit and perfect their projects to death” because the products would be shared with peers in a media product that resonates with media that the learners value outside of school. It can be seen that the process of generating media involves students in representing ideas in several forms, and making many decisions as to which representations to use. At each point in this process, learners can be encouraged to metacognitively consider the different representations; what features of the real thing or

process a representation highlights; and which features are diminished.

Trend 3: System Thinking

Over the past generation, scientists have increasingly invoked a perspective that can be referred to as *systems thinking* in their work. Systems thinking rely on analyses of interactions among factors in a phenomenon (most generally energy, matter and information) and how those interactions affect the complexity of a system. It is largely a response to the reductionism that typified the development of modern science, in which entities were analyzed in terms of parts with the idea that by understanding the parts one can understand the operation of the whole (Carvunis et al., 2009). Systems thinking has shown that reductionist methods incorporate an inherent bias against recognizing the role of emergent properties in a system, and thereby underestimate the complexity of interactions and relationships (Gebicke-Haerter, 2008). By focusing on interactions at several levels of complexity within a system, systems thinking provides a more comprehensive understanding of how matter, energy and information move, affect each other and bring about changes in a system’s operation and effects (Newson, 1992).

Science education has only recently begun to develop tools that promote systems thinking as part of instruction, especially with young children (Evagorou, Korfiatis, Nicolaou, & Constantinou, 2009). The successful emphasis of systems thinking in science instruction has been accomplished in some areas (largely those areas where it has progressed in the professional science discipline) and is often achieved through the use of visualization and multiple representations (Verhoeff, Waarlo, & Boersma, 2008).

Student-generated media projects provide an opportunity for science educators to focus students’ attention on attributes of phenomena that contribute to systems thinking. As students make decisions about how to depict the concepts in their animations, they can be encouraged to think in terms of system factors such as energy, matter, flow, counter-flow, feedback, boundaries, dissipative structures, and emergent properties. The opportunity for this as students create animations is especially rich in that learners are developing a sequence of images.

Students can consider not just what has changed between frames in visual terms, but also what system factors (i.e. changes in matter, energy and information) are represented, and which factors bring about those changes. Questions can be raised, too, about how altering elements of the visual scene might have led to a different version of the next scene. As well, as the children build the scenes, they have to decide how much to show within the frame. Systems thinking can be promoted by asking them about those decisions—whether there are things taking place outside of the frame’s boundaries that affect what is taking place inside the frame’s boundaries, for example. Is what is taking place outside the frame boundary tending to increase the changes seen in the frame, or decrease them? If we were to expand the frame further, what would we see more of, what might be made less significant in what we see? These are questions that mimic those that scientists ask when they study systems, and strategically set tentative boundaries around a study subject, while knowing that those boundaries are inherently artificial.

Conclusion

Techniques in instruction can be powerful tools. They can propel instruction in positive directions, but they can also lead in a direction that does not support the intended learning outcomes. Often the same technique can have either effect, depending on how it is implemented. Science educators have, for example, long debated the value of what are called cookbook labs—that is, labs that are given to the students with steps already defined—versus investigations that are structured as open ended discovery and inquiry (Besvinich, 1988; Peters, 2005). These debates are important and worthwhile as they help to define critical elements of pedagogy that support different modes of learning. Cookbook labs, depending on the particular meaning given that term, are not in and of themselves inherently didactic, although they are often presented as such. Providing students the steps to follow is not only necessary at times but a requirement of safe, responsible and (especially when living organisms are involved) ethical scientific and instructional practice. Providing a set of steps does not necessarily undermine the inquiry-based nature of the activity, nor does it necessarily take away from the prominence given to the learner’s own ideas—if those priorities are considered in the manner in

which the activities are presented. Similarly, providing students the opportunity to openly explore materials does not necessarily facilitate conceptual change. For example, if there are no poignant instances of cognitive disequilibrium to motivate accommodation and/or assimilation of conceptual understanding, then hands-on manipulatives may have limited impact on students’ naïve ideas.

Having students generate animations (and, potentially other media forms) is a powerful technique for science instruction not simply because students find it a motivational way to engage with science concepts (although that is also a benefit), but also because it helps them to explore both science content and the character of scientific discovery through parallels such as those described above. The manner in which the making of those animations is approached provides the potential for significantly altering the dynamic of science instruction. Were students simply given materials and told how they should use them to create an animated video, it may be that they would learn little about the concepts being depicted. Instead, engaging the students in discussions of the trends described above as they design, create, and share those animations offers an opportunity for a more meaningful form of science learning—one that includes both scientific ideas and understanding of important dimensions of the scientific enterprise.

The trends discussed in this article are suggestive of ways to approach student-generated media so as to allow students to benefit from the technique in some of the same ways science currently benefits from those trends. Students can benefit from the collaboration that media production engenders, thereby negotiating meaning and jointly challenging and refining their understanding of the concepts. The collaboration provides a benefit, too, by facilitating heterogeneous sharing of understanding and skills within the student group. The necessity to generate multiple representations during the process of planning and carrying out the animation of the concepts can lead students to carefully consider the attributes of the concepts and how well or poorly those attributes are demonstrated by the various representations they make. As well, systems thinking can be deliberately made part of the pedagogical probing a teacher does as media production is undertaken by students. Importantly,

therefore, as students work to generate media that illustrate and explain scientific ideas, they can also learn about important trends in the scientific

enterprise and, by that, add to their emerging science literacy and meaningful science learning.

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Acknowledgements

The authors wish to thank Mara Chen, Daniel Harris and Jim Quan who were part of the ESPRIT (Eastern Shore Partnership for Real-world Information Technology) team and acknowledge the support of the Maryland Higher Education Commission through which this project was funded.

AUTHENTIC LEARNING IN INITIAL TEACHER EDUCATION: A CASE OF BRIDGING THEORY AND PRACTICE

Jacky Pow and Wanze Li

This article reports a case of successful integration of theory and practice in ICT by employing an authentic approach to learning in an education course for pre-service teachers. The annual "Teaching Resources Award Scheme", a territory-wide competition in Hong Kong, is used as an authentic assessment of pre-service teachers' course assignments, the ICT-driven learning packages. The exercise proved invaluable in equipping the teachers with practical experience in integrating technology with educational theories while at the same time contributing immediately useful resources to the educational community.

Keywords: authentic learning, ICT in education, pre-service teacher training, theory and practice

Appropriate integration of information and communication technology (ICT) in education is challenging because it requires teachers to incorporate theory and practice in designing ICT-driven activities that enable or enhance learning. However, integrating theory into practice is never a simple task. It has been a perpetual educational challenge to both pre-service and experienced teachers as well as educational developers (Smith, 2007). This article reports a case that demonstrates a successful integration of ICT in learning by emphasizing the application of theories to the design of Web-based learning packages in an authentic learning environment in a course for pre-service teachers. Three well known teaching/learning theories are described, and then details are given as to how these theories were applied by initial teacher education students in a core course in ICT and in an authentic learning context.

Theory and Practice of ICT

Educators generally believe that education theories inform practice and, as long as we teach according to the theories, expected results can be somewhat guaranteed (Joyce, Calhoun, & Hopkins, 2008). Unfortunately, reality is often not so simple and things tend to run on their own course instead of according to one's expectations. It is extremely difficult to close the gap between theory and practice for the unexpected always happens in real life. So why do we need educational theories? Perhaps a more practical view on the use of theory is to guide one's steps. Even though theories may not guarantee expected outcomes, they can at least point us in a direction that we believe is beneficial to learners. Educators have devoted many efforts in exploring theories and models in teaching and

learning (Joyce, et al., 2008; Olson & Hergenhahn, 2009), in the belief that "there is nothing more practical than a good theory." This is an adage that teachers are well advised to heed.

In designing ICT-based learning activities, learning design theories are needed to guide the design and development process (Jonassen & Reeves, 1995) on the assumption that doing so facilitates the design of activities that enhance learning. Over time, a spectrum of educational theories has emerged from scholars of different perspectives, viz. behaviourism, cognitive and constructivism (Olson & Hergenhahn, 2009). A brief review of these theories can help to understand the theoretical bases of the use of ICT in learning and teaching.

Behaviourism

Behaviourists (or connectionists) believe that learning can be acquired through a series of stimulus-response interactions (S-R connections) when a correct S-R pattern appears (Atkinson, Atkinson & Hilgard, 1983). While such learning theory was derived from experiments on animals, behaviourists such as J.B. Watson and E.L. Thorndike believed that it is equally applicable to human beings. Illuminated by Pavlov's work (Child, 1997), Skinner (1968, 1974) originated his *operant conditioning theory* (also known as the Skinnerian conditioning) that stresses the effects of the use of reinforcement. He hypothesised that operant behaviours could be altered by careful planning of rewards or reinforcement, and this schedule of reinforcement could be applied to learning. Hence behaviourists hold that it is the environment that influences human behaviours, and that differentiates behaviourism from other approaches.

The behaviourist theory was widely used in most of the developments in programmed learning, especially in computerized drills. Drill and practice has been a popular approach for learning with computer-assisted instruction packages because of the ability of computers to provide fast and accurate responses to individual learners (Merrill & Salisbury, 1984). Using animations and graphics, computerized drills can create learning environments that are much more effective than other learning methods such as workbooks, flashcards or teacher-administered drills (Alessi & Trollip, 1991). However, Alessi and Trollip also point out that the behaviourist pair-associated approach of computerized drills can only be used in practicing basic skills that demand recall. Thus this behaviourist approach is generally regarded as less applicable in more complex learning situations, for example, in a problem solving situation (Sutton, 2003).

Cognitivism

It is not easy to give a precise definition of cognition since “cognition has meant different things to different people at different times” (Benjafield, 1997, p.2), and the scope of cognitivist theories (e.g., Piaget, 1952; Piaget & Inhelder, 1969; Vygotsky, 1986) is very broad (Lefrancois, 1988). Simply put, cognitivism is concerned with “the scientific study of mental events” (Gagné, 1985, p.4), which involves the analysis of mental processes in acquiring, processing, storing and retrieving information (Lefrancois, 1988). This analysis of mental processes was developed into cognitive theories of learning (Bruner, 1966; Ausubel, Novak & Hanesian, 1978; Ausubel, 2000) to explain how human beings learn. In comparison to behaviourism, cognitivism makes it explicit that learners are different because of the existence of individual priori knowledge and cognitive styles in experiencing the present situation (Lefrancois, 1988).

However, cognitivism is not only concerned with the study of mental events, but also with external influences that might affect the mental processes. In an attempt to broaden the application of cognitive science, Ellis (1992) developed four distinct categories of applicable cognitive theories for multimedia instructional design, namely, organismic developmental, information processing,

behaviouristic, and contextualistic. Organismic developmental perspective concerns the emergence of certain relationships between the human organism and the known (the environment) (Leiser & Gilleron, 1990). Information processing perspective regards the computer functions as the metaphor of the human thinking processes by providing a frame with which to explain the process of human problem solving (Newell & Simon, 1972).

Behaviourism provides a basis for cognitive scientists to develop behaviourist cognitive theories (Ellis, 1992). However according to Ellis (1992), it is the fourth category “contextualism” which incorporates not only the individual and the environment, but also the system acting one upon the other, that appears to hold the greatest promise for future research (Ellis, 1992). These perspectives help us understand, from a cognitive theoretical stance, that the design and use of technology (or media) is closely related to cognitive efficiency (Cobb, 1997), and careful application of ICT can have an impact on human cognition and learning outcomes (Clifford & Miles, 1998).

Constructivism

Constructivism differs vastly from the behaviourist and cognitivist theories of knowledge acquisition (Von Glaserfeld, 1995). It stresses that knowledge is built by the learners themselves and cannot be imparted by teachers (Dewey, 1938). Larochelle and Bednarz (1998) pointed out that “epistemological constructivism is neither a method nor a teaching model, although it may contribute to problematizing educational practices” (p.5). From constructivists’ perspective, learners approach learning tasks with prior knowledge, concepts, understanding, and expectations based on their experience of the world around them (Petraglia, 1998). In such a way, new knowledge is constructed by learners via the formation of their own representation of knowledge (Von Glaserfeld, 1995), sometimes through uncovering inconsistencies between current knowledge representation and current experience (Slavin, 1994) and interacting with peers within a social context (Vygotsky, 1978).

Research in the use of multimedia technology in instruction reflects a pedagogical shift from behaviourism through cognitivism to constructivism (Griffiths & Degner, 1994). This theoretical shift towards constructivism has brought forth changing

views towards the use of ICT in teaching and learning (Dalgarno, 2001). Advanced ICT, such as the World Wide Web, has made possible learning environments that support and facilitate the constructivist approach to learning by providing a rich and easily accessible (though not semantically well structured) information source for learners to construct their own knowledge (Ewing, Dowling & Coutts, 1998). Recent interest in the constructivist approach to learning have also brought about attempts to create 'authentic' environments for learning (Wilson, 1996; Petraglia, 1998) in which learners can explore meaningful concepts and solve problems relevant to the real world. Although there is considerable debate on the positive and negative impact of ICT-supported learning environments (Bennet & Green, 2001), constructivism is considered to be a well accepted approach in educational systems that incorporate ICT (Petraglia, 1998).

The three theoretical perspectives – behaviourism, cognitivism, and constructivism – on how we learn all add to an understanding of learning in that they relate to different foci in the learning process. For example, Skinnerian conditioning (behaviourism) can be useful for modifying behaviour and supporting memorisation, but may not be effective in relation to learning abstract concepts. A constructivist approach is ideally suited for the co-construction of knowledge in collaborative learning environment that encourages interaction among students and teacher (Weinberger & Fischer, 2006). The three perspectives are developed from different underlying educational philosophies, and therefore the appropriateness and effectiveness of their application to ICT should be judged in relation to the learning context instead of simply from the basis of any educational theory. For example, a constructivist view is not appropriate for evaluating a computer-drill program that is specially designed for building pair-association of concepts and objects based on behaviouristic principles. Considering such differentiation, it follows that all the models of teaching and learning (Joyce, et al., 2008) are basically developed according to one or more of these educational perspectives. Hence, for ICT to be seamlessly infused into the teaching and learning models, these educational perspectives will have an effect upon the way ICT is used.

In this era of technology, ICT has been widely experimented and adopted by the teaching community. The designed ICT-driven activities should appropriately align with learning and teaching theories, which is one of the most important concepts to be introduced in education for preservice teachers.

Authentic Learning in Initial Teacher Education

Education programmes for initial (preservice) teachers usually embed practical school experience to help novice teachers to prepare for their teaching career. But several weeks of practicum may not fully serve the purpose; so it is necessary to incorporate contextualized learning activities in the training so that so that pre-service teachers can gain as much real life experience as possible to help them adapt to their work life in the shortest time. Authentic learning, together with the growing influence of constructivism as a philosophical approach to learning, has become increasingly popular as it promotes "realistic problem-solving processes" (Smith, 1987) which are important to new teachers entering the classroom with its many challenges of classroom management, school culture, workload, and others. An authentic learning environment or real world learning (Ford, 2008) is more desirable than learning theoretical knowledge devoid of context (Herrington & Herrington, 2006) in addressing these challenges. By designing ICT learning activities, preservice teachers can practice the same skills that they will need in the real world of the classroom.

Teaching Resource Awards Scheme (TRAS)

In Hong Kong new initiatives have been developed in collaboration among the government, academia, and the commercial sector to provide digital resources to enhance teachers' confidence and reduce their load in integrating IT into the learning and teaching process. In order to encourage teachers to share and exchange ready-to-use digital teaching resources, Hong Kong Education City (HKEdCity), a wholly owned subsidiary of the Government of Hong Kong Special Administrative Region (HKSAR), initiated a territory-wide competition for preservice teachers of teacher training institutes and in-service teachers of primary, secondary and special education levels in the territory.

The Teaching Resources Award Scheme (TRAS) aims to recognize contributions from teachers and schools in the education arena and to promote professional sharing. The Scheme, launched in September 2008, was jointly organized with two other professional associations, the Chief Executive's Award for Teaching Excellence Teachers Association and the Hong Kong Association for Computer Education. The competition was divided into the In-service Division (for frontline teachers) and Preservice Division (for novice teachers). In-service and preservice teachers could register either as individuals or as teams. Each division had a maximum of ten honourable awards and ten merit awards depending on the quality of the resources. The submitted resources would be shared in the teaching community online through the Resources Depository, a centralized online resources platform for the teaching community at HKEdCity. The depository archives thousands of ready-to-use and authentic teaching and learning resources contributed from local schools and education groups. Winners are publicly recognized and awarded for their professionalism in education.

The Case – The Use of Authentic Learning in a Teacher Education Course

“Foundations of Information Technology in Education” is a core course in the Postgraduate Diploma in Education Programme for preservice teachers at the Hong Kong Baptist University. The course aims to equip preservice teachers with knowledge, skills and attitude to appropriately employ information technology in learning and teaching. In this course, the instructor (the first author) tried to strike a balance between theory and practice by introducing authentic learning activities and authentic assessment.

Herrington and Herrington (2006) propose guidelines to help design authentic learning environments in Higher Education. Their guidelines are based on nine critical characteristics of authentic learning identified by Herrington and Oliver in their comprehensive review of literature and technology-based environments. They are: (1) authentic context, (2) authentic activities, (3) access to expert performances and the modeling of processes, (4) multiple roles and perspectives, (5) collaborative construction of knowledge, (6) articulation,

(7) coaching and scaffolding, (8) authentic assessment, and (9) reflection.

The design of the course attempted to follow the above guidelines. As an authentic learning activity preservice teachers were asked to design online teaching resources as the core course assignment; this would be submitted to TRAS. The following paragraphs describe the major components of the course that illustrate the nine characteristics above. The first component is design and implementation that mainly relates to the first seven characteristics of the guidelines. The second component concerns authentic assessment of student learning (the eighth characteristic), and the third component focuses on the opportunities for students to reflect on their learning (the ninth characteristic).

Design and Implementation

Herrington and Herrington (2006) point out that the activity context needs to be all-embracing so that it can provide the purpose and motivation for learning, and a sustained and complex learning environment that can be explored at length. The preservice teachers were asked to design authentic digital teaching resources as a course assignment which would be submitted to the TRAS and assessed by a group of professionals, and finally uploaded to the online Resources Depository at HKEdCity for sharing and use by in-service teachers. Preservice teachers in the course were asked to work in groups to integrate their pedagogical ideas into web-based learning packages. The learning packages should aim to either facilitate student learning or enhance teaching. Practicality was one of the assessment criteria of the course assignment, so the learning packages were evaluated for readiness for use in a particular learning and teaching context. Perceiving the assignment as an authentic task, the preservice teachers were highly motivated and devoted much effort to designing their web-based learning packages. In order to enable the teachers to have access to expert performances and the modeling of processes HKEdCity provided membership accounts to them so they could access the Resources Depository while developing their packages.

In authentic learning, it is important that students are trained to explore multiple roles and different perspectives. Therefore the teachers were told that there would be no single “correct” way to solve any real world educational problem. So when they were

designing the learning activities of their learning package, they would cross-check the activities with the learning objectives not only from their own perspective as package designers but also from teachers' and learners' perspectives. The teachers were organised to play different roles in evaluating peers' learning packages as if they were the course instructor (formative evaluation) or judge of TRAS (summative evaluation). Such experience provided them chances to collect comments and improve the work before submission.

To address the characteristic of collaborative construction of knowledge the assignment was designed as a group project so that the teachers would have opportunities to solve problems or generate a product together. Collaboration is a generic skill for pre-service teachers to have for coping with real world challenges. Pertaining to the articulation characteristic of Herrington and Herrington's (2006) guidelines, the teachers were required to verbally present their package to their peers. During their presentation, they would explain how they incorporate educational theory into the design of the package.

Regarding the coaching and scaffolding characteristic the teachers were required to incorporate educational theories that they had learned, choosing whatever theories they perceived to be suitable to their task. Skills, strategies and links would be provided by the course instructor at appropriate junctures to help them accomplish the learning tasks in the group assignment.

Authentic Assessment

In order to judge whether a learning package would be recognized as practical and pedagogically sound, the preservice teachers' projects were submitted to the TRAS for assessment by serving and experienced teachers. Submissions were required to align with the curriculum framework developed by the Curriculum Development Institute of the Education Bureau. The submission should append teaching ideas, classroom application, and lesson records, if any. Submissions would be short listed by a committee of teachers and the top 40 submitted for the final round assessment to a Judging Panel of professionals from the education community that included heads from teacher education institutes, experienced teachers, principals, and government

officials. Assessment was conducted based on four overarching criteria: design of teaching, presentation, creativity, and application of IT.

Over 200 submissions from in-service and pre-service teachers covering diverse subjects were received from local schools and teacher training institutes in the first year of the Scheme and over 400 submissions in the second year. Of 25 packages submitted by the Hong Kong Baptist University in the first year, the preservice teachers in the PGDE programme won five (of eight) honourable awards as well as five (of ten) merit awards. In the second year of the Scheme, another class of preservice teachers won two (of five) honourable awards and one (of three) merit award. These recognitions are evidences of preservice teachers' competence in the design of meaningful and practical learning activities, an essential of teaching.

Reflection of the Pre-service Teachers

Initial teacher education programmes should be designed on the premise that preservice teachers are given the opportunity to learn to be reflective learners (Pow & Kwan, 2009). Reflection (Herrington & Herrington, 2006), as one of the important components in teacher education, is a vital process for putting theory into practice. Through reflection, preservice teachers could record the overall enterprise of teaching, learning and assessment as a holistic process. In the process of completing the assignment, the preservice teachers were required to document and share their thoughts about and experiences of the learning process from a teachers' perspective. They were required to explain the learning theory (or theories) that grounded their work and the practical use of their deliverables. The following excerpt was from the leader of one of the award winning groups:

When I learned that our group work would enter the contest (TRAS), we treated this [the learning package] seriously. It's no longer an ordinary assignment as our work might have the chance to be put onto a lived database [Resources Depository at Hong Kong Education City] for use by front-line teachers. As such we tried hard to design appropriate learning activities for students and we started to read articles related to

teaching and learning with ICT. We are much motivated.

From the beginning of the course the teachers realized that their participation in the TRAS was an authentic learning opportunity. The following reflection excerpt is from another award winning group which had devoted much effort to designing a WebQuest (Dodge, 1995) with *performance learning* and *creativity* in mind.

Examples of traditional music projects require students to write music concert reports or music history paper, which is rather boring. We want something new and interesting for music learning. As creativity is one of the important components in the new key learning area, this project focuses on how to increase students' creativity. We choose hand-made musical instruments which enable students to explore sound and materials of instruments. To test if students succeed in "inventing" musical instruments, we ask students to choose a song and perform it by their instruments. This project is different from those traditional paper projects and may raise students' interest in sound and music.

These two pieces of reflection illustrate that the preservice teachers in the course were highly

motivated to apply theory to practice when they were engaged in an authentic learning environment, especially in a way that they could control, such as designing ICT-driven learning activities, in which they could plan, act and reflect throughout the design processes. In this case, integrating technologies and authentic learning in the course has facilitated preservice teachers to connect theory and practice, to learn and reflect, and hopefully to strengthen their confidence in teaching.

Conclusion

Bednar, Cunningham, Duffy, & Perry (1992) proposed that "Instructional design and development must be based upon some theory of learning and/or cognition; effective design is possible only if the developer has developed reflexive awareness of the theoretical basis underlying the design" (p.19). Effective instructional design requires the deliberate application of learning theories. Practitioners have different preferences among learning theories. Since ICT-driven activities are more visual and accessible compared with some other teaching activities in the classroom, they are critical opportunities for teachers to demonstrate their ability to bridge theory and practice. Hence fostering the use of ICT in learning and teaching in an authentic context is perceived as one of the effective means for fostering preservice teachers' comprehension of the relationships between theory and practice.

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THE DEVELOPMENT AND VALIDATION PROCESS OF A RESEARCH COMPETENCY

Nu'man M. Al-Musawi

The Research Competency Scale (RCS) is a 30-item instrument that was developed to assess Education students' ability to conduct a small-scale research project. The instrument samples six essential research skill domains: defining the research problem; reviewing the related literature; implementing procedures; presenting results; documenting references; and writing the research report. Each item assesses level of research competency and frequency of research use on two 5-point rating scales. As part of the development process data was collected for testing the instrument's validity and reliability. Results of the study showed that the RCS is a valid and reliable measure of teachers' ability to effectively use acquired research knowledge and skills when conducting a small-scale research project in a classroom setting.

Keywords: instrument development, instrument reliability and validity, research competency

Debates on the value of educational research to teachers over the past five years (Broekamp & Hout-Wolters, 2007; Demircioglu, 2008; Ekiz, 2006), have discussed, among other concerns, three main topics: the place of educational research in curriculum development, teachers' attitudes towards educational research, and teachers' application of research findings to their own classroom situations. Earlier Everton, Galton & Pell (2000) argued that researchers gave "little attention to establishing the specific questions teachers themselves would like to see answered by research, or, for that matter, what they already know about research and researchers" (p. 167). However, if educational practice is to be improved, research has to impact school and classroom practices. One successful strategy for improving educational practice is for teachers to research their own practice (Fullan, 1991). To do so teachers need to have the basic skills necessary to conduct research.

One of the two principles that anchor the education policies in Bahrain is the promotion of quality education to meet the needs of students and the demands of the country in realizing social and economic development (UNDP, 1998, p. 54). To this end, the Ministry of Education strives to supply the country with highly qualified and competent teachers for all stages of education. It is the expectation that the competent teacher can and will do classroom research. In order to support teachers in developing and enhancing their research skills, the Ministry established a Directorate of Educational Research with the purpose of providing research training courses and workshops for educators. In addition, the newly established Bahrain Teachers

College (BTC) of the University of Bahrain, which opened in September 2008, provides postgraduate courses in educational research for in-service teachers.

Research Objectives and Educational Importance

The purpose of this study was to develop a Research Competency Scale (RCS), to evaluate its psychometric properties, and to share its implications for teacher education. The RCS is aimed at assessing postgraduate students' (and eventually researchers') ability to conduct small-scale educational research projects or assignments. The study is important and very relevant because of the emphasis which education policy makers in Bahrain currently place on educational research and, more generally, the need to improve teaching as an evidence-based profession in which research findings are used by teachers in ways that take into account the varying contexts in which different schools operate (Hargreaves, 1996).

Literature Review

To conduct a successful research project, teachers should possess a reasonable degree of research competence. But most of the educational literature consulted on this topic (Demircioglu, 2008), has examined the attitudes of school teachers towards educational research assignments and the overall value of doing research assignments at university, not so much what research skills teachers have. The value of students doing small-scale research projects as part of a teacher education course has been less extensively researched (Ekiz, 2006; Sozbilir, 2007). Two studies attempted to design surveys to identify

the knowledge and skill levels that students in graduate education programs should possess to conduct meaningful research.

The first study used an online survey (Klien, Martin, Su & Tutty, 2004) to determine the research methods, processes, and issues using a sample of graduate students in an Instructional Design and Technology course. The second survey (Porretta, Surburg & Jansma, 2002) investigated research competency by requesting students in a graduate Adapted Physical Education (APD) doctoral program to rank 18 statements regarding research competency on a Likert scale 0 to 5. However, the methodology used to validate these instruments was not discussed in sufficient detail to be helpful to others wanting to develop similar instruments. In addition, the main objective of both these studies was not the development of a research competency indicator for postgraduate education students. Therefore, it seems that there is a need for a valid and reliable instrument to assess in-service teachers' research competency and research skills to conduct small-scale research.

Research Methodology

Development of the RCS Questionnaire

An analysis of the current literature was undertaken to determine how "competence" is perceived and assessed in studies closely related to the current study and in guidelines and standards adapted for evaluating research proposals and reports (Fraenkel & Wallen, 2003). The review revealed that existing instruments regarding research skills are mostly designed to evaluate the attitudes of university students and school teachers toward educational research. There was a gap in the literature about the development of instruments to assess teacher education students' competency in doing research.

To ensure that the assessment instrument to be developed complied with the requirements of a reliable and valid instrument, the development process went through the following nine phases:

1. A Faculty of Education ad hoc committee was commissioned to compile a list of research skills along with skills assessment criteria required by student teachers.
2. A 2008 semi-structured questionnaire was used to compile a list of research competency indicators/ or descriptors (96 descriptors resulted).

3. An Educational Research Methodology expert group verified the logical consistency of the sub sections of the proposed questionnaire.

4. Deductive content analysis initially reduced the list of 96 competency descriptors originating from the semi-structured questionnaire to 75 descriptors, and subsequently to 52 descriptors.

5. A preliminary questionnaire was self-administered by 44 Education students. The analysis of their responses reduced the competency list further to 37 descriptors.

6. A test run of the 37-item RCS questionnaire with 18 different Education students was done to check instructions for questionnaire completion and evaluation.

7. An Academic Accreditation Standards (Bahrain University) group further reduced the questionnaire to 30 items.

8. The 30-item version of the RCS questionnaire was piloted with in-service teachers.

9. The final version of the RCS was administered to determine validity and reliability of the instrument.

Phases of the Development Process

Phase One: The ad hoc committee consisted of seven College of Education faculty members (University of Bahrain). They were from different educational backgrounds and fields of study. The advantage of this diversity is that they brought different philosophies regarding research to the task. This diversity was intentional in order to enrich the list of identified research skills and research competence assessment criteria that the ad hoc committee was commissioned to compile.

Phase Two: In 2008 a commissioned group used the resultant list as a guideline to develop a semi-structured questionnaire. This questionnaire was presented to 20 faculty members who represented all the specialist fields in the College of Education, University of Bahrain. The twenty members were divided into six specialist groups. Their task was to provide descriptors (questionnaire statements) for the final RCS questionnaire, describing skills competencies required by a novice, intermediate and advance level researcher in progressing through the stages or domains of research practice. The semi-structured questionnaire was divided into seven subsections (or categories) according to the domain of research practice (e.g. defining a research

problem, doing a literature review, writing a report). Each subsection furthermore required descriptors indicating three research competency levels: novice (or beginner), intermediate and experienced (or advanced) (Koul, 1997). This activity resulted in a list of 96 descriptors. Inter-rater agreement between the group members was calculated.

Phase Three: An expert group of four professors of Methodology of Educational Research verified the logical consistency of the sub-sections of the proposed questionnaire. They assessed the subsections (or categories) of the proposed questionnaire according to logical consistency criteria.

Phase Four: Through the process of deductive content analysis (Krippendorf, 1986) the list of 96 competency descriptors originating from the semi-structured questionnaire was initially reduced to 75 descriptors, and by further refinement, to 52 competency descriptors.

Phase Five: In 2009, a group of 44 College of Education students completed and critically reviewed the preliminary questionnaire of 52 items. In an accompanying survey they evaluated the descriptors (items) against the criterion, the relevance of the each descriptor in evaluating research competency of novice, intermediate and advanced level researchers. The students were asked to judge the quality and validity of the items individually and in relation to how they matched the subsections of the questionnaire to which they had been allotted. The respondents were also asked to make suggestions for changes and identify areas that had been overlooked, as recommended by DeVellis (1991).

Perceived relevance was indicated on a 4-point relevance rating scale, where 0 indicated no relevance to research competencies; 1 indicated relevance to competencies of novice researchers; 2 indicated relevance to competencies for intermediate researchers and 3 indicated relevance to the competencies of advanced-level researchers. Competency descriptors that indicated a 50% or higher inter-rater agreement score were accepted for inclusion in the RCS questionnaire. At the end of this stage of the process there were 37 competency descriptors.

Phase Six: In 2009 this first version of the RCS was pilot tested with 18 College of Education students. The students were asked to test the scale by using an adapted version of the content validity testing method of Roach, Elliott & Webb (2005). The students evaluated the competency descriptors (items) and the sub sections of the questionnaire according to the following criteria: clarity, accuracy, relevance, duplication of items, and subsection placement of items. The respondents also evaluated their own research competencies on a 5-point Likert rating scale. Cronbach's alpha coefficients for internal consistency reliability calculated in separate scale reliability tests conducted on the subsets of self-assessment responses for each subsection of the questionnaire, varied between 0.75 and 0.94. This was indicative of internal consistency reliability. The alpha coefficients were encouraging and so no changes were made to the scale. While the students had no problems in responding to the items, they did suggest some changes for greater clarity.

Phase Seven: In an attempt to further refine the questionnaire, the descriptors were reviewed by a group of three professors on the University of Bahrain's Academic Accreditation Standards working group. In the process seven items were dropped, resulting in a scale of 30 items. The five-point rating scale used for competence assessment was regarded as appropriate (Nitko, 1996).

Phase Eight: A refined version of the RCS questionnaire was pilot tested with three in-service teachers, who found it easy to use.

Phase Nine: The RCS was administered to post graduate teachers in order to determine validity and reliability. This process is described in detail in the section below.

The final version of the RCS (see Appendix) consists of 30 items organized in six subsections and assesses respondents' research skills at three levels of competence: novice, intermediate and advanced. The six subsections represent stages of the research process: formulation of the research problem; execution of related literature review; implementation of research procedures; presentation of results; compilation of a reference list; and writing the research report. Each sub section

contains five items. All items are rated on competency and ask the respondent to indicate his or her perceived level of competence using a 5-point Likert rating scale where a rating of 0 indicates a poor level to a rating of 4 that indicates excellent competence. A second 5-point rating requires the respondent to indicate the frequency with which he or she actually performs each research activity, from 0 (not applicable in my work) to 4 (used always in my work).

Application of the Scale

First Use of the 30-item RCS. During the second semester of 2009-2010, the newly developed Research Competence Scale (RCS) was used to collect data from 186 randomly selected in-service teachers enrolled in the four-year Postgraduate Diploma programme of the Bahrain Teachers' College, University of Bahrain. The purpose of this administration was to determine the scale's validity and reliability. The postgraduate programme qualifies the diploma holder for teaching in elementary, intermediate and secondary schools, and requires the completion of a small-scale research project in some of the courses. The research project is intended to provide in-service teachers with the knowledge and skills to design and conduct research and report on the findings. The project is especially aimed at providing a link between theoretical knowledge and classroom practice and increasing teachers' awareness and appreciation for the contributions which educational research makes to improving classroom practice and student learning. The project is usually undertaken over a 14-week period.

Data analysis

An individual's overall score of competence was calculated as the mean value of the average competencies assessed for the six categories of competence. The analysis was performed without mean substitution of missing values, that is, any missing item response eliminated a case.

(i) *Exploratory factor analysis.* The construct validity of the RCS was analyzed using exploratory factor analysis. The method of principal component analysis with Varimax and Oblimin ($\delta=0$) rotations was used to examine which factors of the scale emerged and whether these factors agreed with the six subsections of the questionnaire. The scree

test, the eigenvalues greater-than one rule and the Gorsuch's (1997) criterion were used to make a determination about the appropriate number of factors to retain.

(ii) *Confirmatory factor analysis.* Confirmatory factor analysis (CFA) using LISREL 8.54 (Jöreskog & Sörbom 2001) was conducted to test whether student responses to the items could be clearly differentiated into the expected underlying dimensions of the RCS.

(iii) *Scale reliability testing.* The measurement properties of each scale were assessed with reliability analysis, using Cronbach's (1951) estimate of reliability coefficient, including 95% interval for each estimate of coefficient alpha (Fan & Thompson, 2001).

(iv) *Scale validity testing.* To assess the criterion-related validity of RCS, the student's overall score on the scale was used as the predictor, and the real GPA, which is the ratio of the individual student's cumulative GPA to the average GPA of the class, was used as the criterion. The reason for using the real GPA is that this index, which represents the student's academic achievement at the university, accounts for the relative degree of inflation in the student's transcript and thus creates positive pressures on academic standards (Felton & Koper, 2005).

Results

For descriptive purposes, given that the total score on the RCS is 240, the 5-point scale was divided into five parts to represent both the level of research competence and the frequency of research use, respectively, as poor (0-48), fair (49-96), satisfactory (97-144), good (145-192), and excellent (193-240). In-service teachers' self-assessed overall mean scores indicated a high level of competence across categories (168-220). The data matrix showed that 75% of the competence items were used frequently (often or always). Self-assessed level of competence increased in direct proportion to the self-assessed frequency of using competencies. Age and length of teaching experience had a positive but not very strong correlation with overall level of competence ($r=.35-.42$, $p<.05$).

Principal component analysis provided some

support for the structure of the RCS, although some items loaded on more than one factor. This could account for relatively low correlation between the items. The value of average inter-item correlation was .37. This was expected because of a large number of expert groups that had been used in the item validation phase (Phase 3) to reduce overlap between items and categories. However, the items of the RCS fitted into the expected factors and the total variance accounted for was 55.30%.

The pattern matrix was examined for factor/item loadings, and the factor correlation matrix was reviewed to understand correlations between the factors. Nine rotated factors with eigenvalues greater than 1.00 were initially present in the RCS data. The subsequent application of Gorsuch's (1997) criterion resulted in six significant factors, the same factors measured by the original RCS. The strong six-factor solution explained 55.30% of the total variance, with respective 36.62%, 6.38%, 4.56%, 3.71%, 2.74, and 1.29% of the total variance for the six factors. Examination of these factors with absolute values exceeding .40 showed that the items associated with the factors, respectively, seem to measure the same dimensions tapped by the original RCS.

To evaluate the fit of the six-factor model to scale scores, values of the four above mentioned indices were examined. The hypothesized six-factor model had good fit to the data, based on the following values: CFI = 0.95, RFI=0.92, RMSEA=0.049 and SRMR=0.046. Reliability of the RCS factors was estimated by determination of inter-item and inter-total correlations, as well as alpha-if-deleted values. Average inter-item correlation coefficients of the six factors ranged from .38 to .46; item-total correlation coefficients ranged from .36 to .68. The alpha-if-deleted values indicated that the scale would not be improved by the removal of any items and, therefore, the 30-item scale was accepted. Alpha for the RCS was .84 while Alpha values for the six subscales ranged from .78 to .93.

These figures clearly demonstrate high internal consistency of the measure. The high predictive validity of the RCS was demonstrated by the strong correlation between the overall mean of the scale and the mean value of the real GPA of the participants. Pearson correlation value was 0.82, $p=.000$.

Discussion

As a whole, the obtained results of this study suggest a high level of reliability and validity of the Research Competency Scale. Furthermore, the findings of this study are in line with the findings of previous studies that point to the need for teachers' concerns to be given greater weight when research agendas are set, and suggest that if research is to influence classroom practice, then it is vital that teachers have the expertise and opportunity to engage productively both with and in research and to write good research reports (Brinkman & Rens, 1999; Chen & Tsai, 2009; Everton, et al., 2002).

Assignments to complete a research project or to write a research paper during the postgraduate teacher education diploma program are necessary requirements, if teachers are to meet the Ministry of Education's expectations of competent teachers throughout the school system. During the last decade, Bahraini teachers, particularly those at the primary level, have been under considerable pressure to change the way they teach and to adapt new methods of teaching within the constructivist paradigm in education. They have had to overcome several obstacles in order to convince their supervisors and head teachers to allow them time for study and research.

The literature (Boostrom, Philip & Hansen, 1993; Shkedi, 1998) suggests that there is a communication gap between researchers and teachers and between educational theory and classroom practice. This gap can be narrowed by teachers acquiring research skills before they enter the teaching service and/or during in-service professional development courses. Having such skills and a positive attitude towards research can contribute to fostering collaborative partnerships between educational researchers and practitioners and so help to reduce the existing gap between educational theory and practice. Teachers who have research skills as part of their professional repertoire are needed to help build communities of enquiry that involve pupils, teachers, and university researchers (Brown & Sharp, 2003; Christie, et al., 2007).

Conclusion

This study has demonstrated that the RCS is a valid and reliable measure of research competency of Education college students. University teachers can

use the RCS to assess the performance of their students in educational research, and to pinpoint the basic problems that they encounter in doing small-scale research projects (Mortimore, 2000). The RCS can also be used by students and teachers for self-assessment of their research skills and to identify academic difficulties that their students may be having with research assignments (Ginns, et al.,

2007). By conducting a small-scale education research projects and writing the reports of the findings teachers can learn how to detect problems in teaching and in their pupils' learning and can proceed to construct hypotheses and select suitable methodologies to address the problems (Demircioglu, 2008).

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Appendix
The Research Competency Scale (RCS)

		Level of Competence of the Research Skill				
		<i>Poor</i>	<i>Satisfactory</i>	<i>Fair</i>	<i>Good</i>	<i>Excellent</i>
		Frequency of Use of the Research Skill				
<i>NA</i>	<i>Very Seldom</i>	<i>Sometimes</i>	<i>Often</i>	<i>Always</i>		
<i>N</i>	<i>o.</i>	0	1	2	3	4
Defining the Research Problem						
1	Selecting a potential research problem based on its novelty, worth, feasibility, and practical significance to the relevant educational field					
2	Defining the selected research problem in a specific, measurable, and precise manner					
3	Formulating the research questions and/or hypotheses in a feasible, clear, and ethical way					
4	Stating the purpose(s), importance, research design, limitations, and procedures of the study					
5	Defining the key research terms and variables in a helpful way to clarify their meaning to readers					
Reviewing the Related Literature						
6	Searching appropriate references to the research problem using online educational databases					
7	Summarizing key points in the primary and secondary sources that are related to the problem					
8	Analyzing the previous works related to the topic (focus) of study in a logical and consistent way					
9	Locating the research problem of study in other previous studies based on the literature review					
10	Preparing the literature review report correctly (including introduction, the review, a summary, researcher's conclusions, and bibliography)					
Implementing the Procedures						
11	Selecting an adequately representative and valid sample from the target population of the study					
12	Designing adequate instrument(s) to collect research data based on the nature of the study					
13	Determining the validity and reliability of the developed instrument(s) prior to data collection					
14	Administering the designed instrument(s) to the study sample under standardized conditions					
15	Organizing and analyzing the research data using appropriate statistical procedures and techniques					
Presenting the Results						

16	Organizing the results of the study in consistence with the sequence of the research questions					
17	Analyzing the results logically by relating them to the main findings of relevant previous works					
18	Determining the extent to which the results can be generalized to appropriate populations					
19	Presenting the conclusions in light of the major findings of the study briefly and precisely					
20	Stating the recommendations and suggestions of the study in an operational and specific manner					
<i>Documenting the References</i>						
21	Using a sufficient number of references to cover all aspects of the research problem under study					
22	Using a sufficient number of recent references to the research problem in the body of manuscript					
23	Referring to original primary sources that were first to tackle the research problem consistently					
24	Documenting all used sources in the references list using the APA method of documentation					
25	Documenting all used sources in the manuscript's body using the APA method of documentation					
<i>Writing the Research Report</i>						
26	Organizing all sections of the research report correctly and clearly in the body of manuscript					
27	Achieving balance and integration between the different sections of the research report					
28	Presenting one's personal views with respect to the problem under study in a systematic way					
29	Avoiding grammatical and dictation mistakes, and misprints in the body of the manuscript					
30	Preparing the research report using a direct, clear, and scientifically precise style of writing					

Note. NA= Not applicable.

ESCOLA ESTADUAL NEUSA MARI PACHECO: A SCHOOL WHERE
PARTICIPATION MAKES A DIFFERENCE

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and

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On April 14, 2010 the group of international participants from the 30th ISfTE Seminar traveled several hours by bus from PUCRS in Porto Alegre, Brazil to visit the school described in this article. The details about this very special school located in a small, low income community provided by the team of authors eloquently explain why that trip was a part of the seminar agenda and was a memorable one for teacher educators from over 22 countries.

Keywords: agriculture education, community participation, school identity, self-sustaining school

The 30th International Seminar on Teacher Education (ISfTE) held at the Pontificia Universidade Católica do Rio Grande do Sul (PUCRS) in Porto Alegre, Brazil April 11-17, 2010, created an opportunity to become acquainted with the Escola Neusa Mari Pacheco (Neusa Mari Pacheco School). The visit with the participants of the ISfTE seminar was an unforgettable experience for all involved. The students were waiting in the schoolyard welcoming the ISfTE participants with music played by the school's band. The students were curious to know the countries of the visiting professors. The student monitors guided the participants on a tour of the school, and despite language differences, the tour flowed very naturally.

The principal, Vera Rosane Silveira Morais, escorted the ISfTE participants on a tour of the school's farm. Throughout the experience, they learned how participation and personal effort can overcome the most adverse conditions and build a school with a rich educational purpose which meets the educational needs and social competencies of a low income population, thus preparing them to live life with joy and satisfaction.

The school is located on a large piece of land in the community of Canela which is several kilometers from the cosmopolitan area of Gramado in southern Brazil. The school has better resources than many other state public schools including a swimming pool and a large farm. The school offers a full academic program to all students that extends beyond traditional subjects to include music

education, physical education, and agriculture education. All students learn to swim; all students learn to plant, harvest, and participate in the school's agricultural projects. The school considers itself one of the first self-sustainable schools in Brazil. Recently it acquired another piece of land with a view to expanding its economic and teaching activities. It has also received several national awards¹ and the local community is very proud of it.

The school is outstanding for its administrative, pedagogical and financial organization, and for its integration into the community. By any measure, it is a successful educational experience in the Rio Grande do Sul state public school system. The wealth and originality of the experience of Escola Estadual Neusa Mari Pacheco deserves to be shared, so this article provides three narratives about the school: a short history of the school based on interviews and documentation; a description of the school's identity through an analysis of its

¹In 1998 the school was selected by UNESCO as one of the 12 best educational projects of Brazil. In 2004 the school received the prize of Educational Management at the National level granted by several organizations: UNDIME (Union of Municipal Leaders of Education), FAMURS (Federation of MUNICIPALITIES of the State of Rio Grande do Sul), CONSEDE (Council of State Secretaries of Education), Fundação Roberto Marinho, and American consulate. In 2010, it received the "Prêmio SESI of Quality in Education (Best Public School of Brazil). At the local level it was considered the best school in terms of quality and participation of the community in the school project.

newspaper; and the current Principal's testimony of her experience of the school.

The History of Escola Neusa Mari Pacheco

Neusa Mari Pacheco School was founded in the beginning of the 20th century. It began in an area of the current municipality of Canela in 1913. In order to follow the process of changes undergone by the school it is necessary to take a brief look at the history of the municipality.

The municipality of Canela was first explored by drovers during the 18th century. On their trails towards the north, they camped under a leafy canela tree (caneleira). During the 19th century, some families of Portuguese extraction, coming from the region of Campos de Cima da Serra (an area at the Top of the Mountain Range) settled there and established large cattle farms. During the last decade of the 1800s, more families, many of them descended from the first German immigrants who had established themselves in the Caí Valley region, settled in Canela. These immigrants began to exploit the lumber in the region, and several sawmills were installed to cut native forests.

Among the new occupants was the Carlos Wortmann family. Carlos was a German immigrant who was born in 1873 and studied at the Escola Normal de Porto Alegre (the Teacher Training School of Porto Alegre) where he graduated in 1892 (Oliveira, 2003). He was the first teacher in the mountain region and also worked as a notary, a school inspector throughout the northeast region of the state of Rio Grande do Sul, and a sawmill owner in Saiqui. He founded his first school in 1907 for the children of the lumber industry workers. Within a few years, he purchased lands in Canela and moved there with the family, settling in the area where the school is still located. School was in his own home.

On March 6, 1913, he received formal permission from educational authorities to establish the Isolated School. He was the first and only teacher for many years. During the following decades, several of his seventeen children continued his initiative acting as teachers and principals. Outstanding among them were Alice Wortman, Geny Wortmann, Hemínia Wortmann, and Aura Wortmann (personal communication).

Throughout the 20th century, the Isolated School continued to serve the children of the neighborhood. It also changed names. In 1951, the old Isolated State School was changed by municipal decree to *Escola Municipal Tiradentes* (Tiradentes Municipal School), and its principal was Martha Wortmann, a teacher and one of the daughters of the founder of the first school. In 1962, the school became part of the town's "Grupo Escolar," a type of elementary school district. Another name change in 1968 honored a granddaughter of the founder (personal communication). The new name was Grupo Escolar Neusa Mari Pacheco.

Economic changes in the 1970s and 1980s caused the neighborhood around the school to fall into disrepair. Many who lived in the area did not have legal documentation, were unemployed, often illiterate, and had little schooling. The school name remained the same, but there were many changes in the organizational and administrative structure. The first structural change came in 1979 transforming the school into *Escola Estadual de 1º Grau Incompleto Neusa Mari Pacheco* (Incomplete State Elementary School). In 1985 it became a Complete State Elementary School, and in 1988, it was called *Escola de 1º e 2º Grau Neusa Mari Pacheco* (elementary school and high school).

It should be emphasized that during the 1980s intensive community work was performed in the school's neighborhood by a group of community volunteers connected to the Catholic Church, led by Constantino Orsolin, who later became the principal of the school for many years. His work was important for the community and participatory mission of Escola Neusa Mari Pacheco. Among the several community organizations participating in the development of the school was "*Associação de Moradores do Bairro Canelinha*" (Association of the Residents of Canelinha Neighborhood). Also, the *Centro de Pais e Mestres da Escola* (School Parent-Teacher Association) was founded. These associations played a major role in changes in the neighborhood and the school itself (Orsolin, n. d.).

The school has become a community center during the out of class hours and especially on weekends. It is a space to gather and develop activities and classes including sports, art, music, theater, and dance for the children; and knitting, crocheting,

typewriting, sewing, and weaving for the adults and senior citizens of the community.

In 1992 the process began of changing Escola Estadual de 1º e 2º Graus Neusa Mari Pacheco into a CIEP- Centro Integrado de Educação which would provide a schedule of classes including the regular curriculum, cultural activities, guided studies, and physical education from 8 a.m. to 5 p.m, daily as well as medical and dental care and all meals for the students. To accomplish this, the teachers at the school developed a pedagogical proposal which began to guide the institution. This pedagogical project highlights the establishment of the relationship between school faculty, students, and the community as a whole, emphasizing that the main goal of the school is “... *to favor the educational process of the student, the teacher as the coordinator of this proposal, and the parent as the major partner*” (Orsolin, n. d. p. 60).

The agricultural and ecological projects deserve special mention as innovative enterprises of the school. The agricultural project began in 1994 when the school was given the property of a rural elementary school located about 6 km away. With the help of a professional agriculturist, it was possible to create the Centro Agrícola do São João (São João Center of Agriculture). Throughout their schooling, students study and perform tasks involving planting and cultivating the land. The Center is a model where about 4,000 fruit trees such as orange, tangerine, lemon, fig, persimmon, and peach are planted. Vegetables, greens, and herbs are cultivated. Poultry with a large production of eggs is raised. Recently, production of molasses, honey, bread, cakes, cookies, preserves and jellies was added; also, a garbage recycling project is ongoing.

The Ecological Project began in 1995. The Ecological Center is also located away from the main campus. The main purpose of the project is to make the students understand the ecological world, enriching the formation of their social and environmental sensibilities, and leading them to like, appreciate, and preserve the environment. The Center has more than 105 species of, native tree roots, leaves, stems, and several types of soil, rocks, swamps, allowing the students opportunities for a rich interaction with nature and a diversified,

practical space in which to study mathematics, Portuguese, the sciences, history, and geography.

Today, the school has approximately, 80 teachers and 17 other staff¹. It has established the School Council, the Teachers’ Council, the Students’ Council, the Parents’ Council, and the Technical Administrative and Pedagogical and Financial Council (CTAPF). It is guided by the philosophy that “It is necessary to dream, to plan in the dream, to achieve the plan, and continue to dream” (Mente Aberta, 2003, p. 8). In 2010 the school had 1112 students (Mente Aberta, 2010, N°81, p. 5).

The School’s Identity Through “Mente Aberta”

“Mente Aberta” (Open Mind) is the school’s newspaper. It was first published in May 1994 and has been published annually since that time. It provides, through words and pictures, an account of the school’s activities, achievements, distinctions, initiatives, dreams, celebrations, financial management, and ties to the community. It is a very accessible repository for memories of the school’s formation and development; it is also an important tool for communicating the school’s institutional identity. The content of the newspaper over the years reveals the heart of the school’s identity which is symbolized in the school’s emblem (See Figure 1).

¹ The most recent statistics about the school can be found at its website, <http://www.neusamaripacheco.com.br/institucional>. Acessado em 17/8/2010



Figure 1. Emblem of Neusa Mari Pacheco

At the center of the emblem is the hawk, a fearless bird that flies high, and is notable for its size and vigor. Figuratively applied to people, the hawk symbolizes an individual of great talent and perspicacity. The hawk is a forceful image in the school emblem; it appears in the position of landing, arriving, and turned to the school whose building is at the center of the image with the sunrays in the background. The hawk is landing on a strip with the sentence “Participation makes a difference”, thereby affirming the basic idea of the school as a place for everyone in the community; as an educational project where participatory pedagogy is the practice; and as an educational idea that says, “when all participate, ideas shine like the Sun, and they [ideas] are infinite, because knowledge has no limits.” (Mente Aberta, 2003, p.9).

In the 2003 issue of “Mente Aberta” celebrating the 90th anniversary of the school, many businesses and community groups of Canela recorded messages supporting the school and congratulating it for its contribution to the community. The messages came from public transport companies, hardware stores, building material stores, grocery stores, farming supply stores, markets, furniture stores, machinery and equipment industries, architecture studios,

accountancy offices, the local trade association, and political party offices. Two examples of messages that show how well the community understands and appreciates the unique nature of the school are:

Theater, dance, music, sports, fables are elements that are very distant from Brazilian education. But in this school it is a normal process...

Every institution marks its passage through history by its works. In order to be able to celebrate 90 years of existence, it is a minimum assumption that many positive actions were taken. From Carlos Wortmann to current educators, all are responsible for the greatness constructed by this school.” (Mente Aberta, 2003, p.13).

The school illustrates that institutional identity is understood as something dynamic, constantly being created, permeated by ambiguities (Hall, 1999), and constructed in the tension between the internal historical movement resulting from material, administrative, human and pedagogical activity of the institution and the external networking with government and the local community (Werle, 2001). Escola Neusa Mari Pacheco demonstrates that

schools are places for social action; they are not only located in a community, they also promote the community; they grow with the community (Werle, 2001).

The Principal's Perspective — In Her Own Words

I am experiencing one of the richest phases of my professional life running Escola Neusa Mari Pacheco. Because the essence of the school is based on discussions and collective organizations, it is a highly creative process that sometimes appears unreal. I say it is a process, not just a project, not a thing. We try to rethink our activities every week discussing all the items of the school's pedagogical project, and we plan our tasks collectively, sharing knowledge, and increasing our capacity to share responsibilities.

We have advanced very much in the ability to consciously discuss our deficiencies, and we are learning to find solutions, plan goals, and manage school time so that we will be able to achieve our goals. We have developed management strategies for raising financial resources in the community in order to fill the gap between government funds and the daily needs of a school which offers lunch, snacks, bathing, cleaning materials, books, internet, and other resources. We came to an agreement with the parents, students, and collaborators that everyone must contribute to the success of the school.

We are a full time school where the student arrives in the morning and works throughout the day on course subjects with integrated and practical content. We offer courses in the Common Nucleus and the Diversified Part. The students are on campus 50 hours a week. The physical area of the school has a complete infrastructure: classrooms, a heated indoor swimming pool, an agricultural area, an ecological area, gym, sports fields, laboratories, spaces for research, reading, and interaction; all of it achieved and constructed together with the local community.

We focus attention on the teachers, encouraging them to develop their productive and analytic capacities. We provide a detailed explanation of all activities and characteristics of the school, so that they will feel secure in their task of guiding the students and growing with them.

We join with the parents or caregivers in sharing the tasks of education: taking care of basic needs, imposing limits, establishing goals for the future, and teaching the students that we need to leave positive marks wherever we go, constructing their small world in a responsible manner, so that they will consciously be able to claim their piece of citizenship in the global village.

We organize extra activities as festivals so that our students will acquire an attitude, culture, and knowledge that enable them to solve problems, work as part of a team, and organize their lives productively. Some of these different activities are tourism, swimming, communication, ecology, agriculture, theater, foreign language classes (English and Spanish), dancing, music, and sports.

Lunch that is a balanced meal is served to 700 people daily. Forty percent of the lunch components come from our Agricultural Center (juice, vegetables, beans, fruits). The students have a commitment to eating everything that is on their plate without wasting anything. At the end of the meal, they go to the brushdrome to clean their teeth. Also, they are responsible for washing their plate and glass which shows there are duties inherent to a collectivity and which reinforces the principles of civility.

On weekends the School remains open for the neighborhood community since it would make no sense to have all this structure remain unused. We make it clear that all these spaces are visited by the parents, caregivers, community members, and School alumni so that their ties to and affection for the School will never break down.

The graduation rate of students has improved over the years, and 55% of the graduates are enrolled at the local universities. That is the result of a program developed between the school and the local universities. This result is the mean achieved by the students in the last five years. Another program implemented by the school is the "Menor Aprendiz" and searches to integrate the students into the formal network of jobs in the region. The school is a reference for a formal job offering for youth that are still studying but start to work in a formal and legal way.

The school is starting two groups of technical education, one in industrial mechanic and another in design of furniture, a common industry in the region. That is another innovation the school is offering to the students that will prepare them for the jobs available in the region

We are Neusa Mari Pacheco forever, we fear nothing, we are together, and we love this Fortress!

Final Remarks

Escola Neusa Mari Pacheco is an example of success in the context of Brazilian public education. It was constructed with the participation of all and has managed to achieve academic success with its students; to offer a different and alternative curriculum of all-round education for a lower income population; and, to get the parents and the entire school community involved, generating commitment and creativity

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- Interview with teacher Zilda Wortmann, a descendant of founder Carlos Wortmann, in June, 2010.

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Book Reviews and Recent Publications by ISfTE Members

Donald K. Sharpes, (Ed). (2010). *Handbook on International Studies in Education*. With Foreword by Eva Baker. Charlotte, NC: Information Age Publishing Inc., 2010, 284 pages. ISBN: 978-1-60752-384-0 (hardcover); 978-1-60752-385-7 (e-book)

Among an overwhelming number of books published in 2010 it has, nevertheless, been easy to choose this for reviewing in our journal, *JISTE*. There are several reasons for reviewing *Handbook on International Studies in Education*. One is that the editor and several of the contributors are either current or former members of ISfTE or therefore well known to many members of our international society. Another is that the Handbook embodies the ideas and values of internationalisation, global collaboration in research, and global issues concerning education in general and particularly teacher education that have been promoted by the International Society for Teacher Education (ISfTE) throughout the 30 years of the society's existence.

The Handbook is organized into seven parts. The first part sets the stage for the articles to follow by presenting methodologies for doing cross-national research (J. R. Campbell) and engaging the discussion of trends and dilemmas in such endeavours (K. Tirri and J. R. Campbell). Four of the sections present the work of educational researchers from different geographic regions of the world: The Middle East, Africa, Europe, and Asia.

From the Middle East we are introduced to aspects and problems in schooling of young adolescents in Lebanon (K. L. Hassan); and D. Sharpes gives us some insight into aspects of the cognitive abilities of females in the United Arab's Emirates.

From Africa there is report of an investigation into the education-occupation mismatch and the effect on wages of Egyptian workers (F. El Hamdi); and K. Borberg, a Danish researcher, shares a foreigner's understanding of the challenges of teacher education in Eritrea.

From Asia we are introduced to an interesting gender study on the influences of the Chinese Only One Child policy in an article examining parental expectations of only-child girls and only-child boys in urban China (Y. Ling, Y. Okamoto and M.E. Brenner). J. Nishibata offers a view on schooling

deficiencies in Japan within the wider context of current trends and challenges of schooling in that country.

Several articles present research on educational issues in Europe. Two of the chapters in the Europe section of the *Handbook* address the development of educational systems in former and current Eastern European countries. M. Cenic describes how faculty and schools in Slovenia collaborate on action research to encourage teachers to be researchers in their own practice. Zagoumennow, from Belarus, outlines difficulties and challenges for educational innovation and international cooperation in his country. The Danish researcher, L. R. Schou, discusses how testing – a new educational policy for primary and secondary schooling in Denmark – influences teacher approaches to teaching. She compares the American NCLB (No Child Left Behind) movement with Danish national testing standards and critically examines these approaches to schooling and education. J.M. Sancho and F. Hernández offer their insights into the bureaucratic and organizational structure in Spain and discuss how such structures have impacted teacher education curriculum and research in the country.

These country studies are book-ended by cross-country and cross-region comparative studies. A group of international scholars presents insights from their collaborative comparative study on teacher attitudes toward Muslim student integration into civic society in Europe using data from four European countries: Austria, Belarus, Norway and Denmark. D. Sharpes presents findings of a comparative study on adolescent self-concept among Chinese, Kazahs and Americans. A. Schneider addresses the challenge of internationalizing the training of K-12 teachers using findings from studies of undergraduate teacher education programs world wide.

The *Handbook of International Studies in Education* gives an insight into international research. I agree

with Eva Baker, the author of the Foreword, that this handbook rather than “outlining abstract statements on international research standards provides windows into the research endeavours taking place across the globe.... From these smaller stories, we can infer directions for each of our own research agenda and for policy development as well” (p.x).

Educators world wide should find this handbook very useful for ideas about cross-national research tools, strategies, trends, and specific cases as well as for inspiration for future international collaboration on education and more particularly teacher education.

Reviewed by

Karen Bjerg Petersen, Professor in the School of Education at Aarhus University, Denmark.

Maria Luisa Cestari, Eva Maagerø, and Elise Seip Tønnessen, (Eds.). *Networking Cultures: Brazilian – Norwegian Dialogues on Education and Culture*. Kristiansand, Norway: Portal Books, 2006, 202 pages. ISBN: 82-92712-01-1

With the ISfTE Brazil seminar over (April, 2010) and the ISfTE Norway seminar on the horizon (May 2011), it is exciting that this book bridges those two cultures. However, along the way it brings meaning to all cultures explaining how language, literature and poetry, music, and education define us as humans with distinct cultures and languages. The book is a collection of research articles and essays which were the culmination of communications and experiences between Norwegian and Brazilian scholars in 2002. To bridge the language gap between Portuguese and Norwegian, each of the 12 articles was translated into English thus making it more accessible to a wider readership. Even though the editors make the statement, “Culture shapes language to such an extent that meanings are inevitably lost in translation” (p. 22), the meanings in these articles and essays are clear.

“Every meeting between people is also a meeting between cultures” (p. 7) is an appropriate way to introduce this collection. The editors begin the book with an article entitled, “Modulated Identities in Multicultural Societies” which gives the reader a frame of reference for all the other articles. It describes the cultural exchange that occurred and how those experiences led to a new context. The authors explore the concept of culture and decide, “Cultural differences only become tangible when we view one culture in relation to other cultures” (p. 14). So it is as we as scholars gather each year for the ISfTE seminar.

The essay entitled, “The Book – Memories of Reading and Writing” was written by the Brazilian scholar, Regina Zilberman. She begins with a history of writing and its importance in documenting human memory. She then describes the history of literature and the reading of it as it pre- and post dates the book. She holds the belief that even though our tools for reading are modified (i.e. e-book and other electronic media), literature will remain.

“Once Upon a Time – Storytelling” by Maria Tereza Amodeo discusses how storytelling can increase reading comprehension of children. Researchers

connected with the Reference Center for Language Development and the Pontifical Catholic University of Rio Grande do Sul in Porto Alegre, Brazil, have studied storytelling and its effects in three areas which are described in the article.

Norwegian researcher, Signe Mari Wiland, wrote “The Student Reader: A Theoretical Construct or a Real Classroom Reader?” The study centered on students who were learning English and their abilities to interpret poetry written in English. They were to “document their cognitive and affective experience of the poem,” (p. 55) in a line by line reading and writing process. This reader-response method was successful in boosting confidence in the students. Juxtaposing the last article about learning poetry, “Poetry off the Shelf – Poetry Workshop” by Sissa Jacoby of Brazil describes how poetry as literature was taught to a class of undergraduate students as they prepared for their teaching degrees. Most of these pre-service teachers felt comfortable teaching prose or narrative, but poetry with all its subtleties seemed unapproachable. The workshop helped the participants to understand poetic texts and be less afraid of using them in the classroom.

The expansion of literacy beyond the printed page is explored in “Reading the Screen” by Elise Seip Tønnessen. Using 34 Norwegian children ages 12-13, this research supported the idea that young people are moving away from the printed page to using electronic media for both writing and reading. In a related article, a Brazilian researcher, Vera Wannmacher Pereira, researched “Computer-Based Learning of Reading and Writing in Elementary School.” The impetus for this research came from the concern that literacy problems in children were related to the influx of media from television to computers and everything in between. This research focused on using the computer to enhance the learning of reading and writing in 5th and 6th grade students.

In “Teaching Language and Culture in EFL: An Overview of its Development in the Last Decades,” Jussara M. Zilles from Porto Alegre, Brazil, an

experienced EFL instructor, discusses culture as an inextricable part of language learning and poses the difficulty of teaching someone else's culture when teaching their language. She points out that teaching any language as a foreign language tends to focus on "grammar instead of communication" (p. 132) where culture comes into play. A challenge is that meanings change. This is explored in Eva Maagerø's contribution, "Translation: Moving Across Languages and Cultures." The essence of this article is how meanings can be changed (sometimes inadvertently) through the act of translating from one language to another from a systemic functional linguistics perspective. In a similar vein Elise Seip Tønnessen's second article entitled "Reading Across Cultures—The Reception of Mário Andrade Macunaíma by Norwegian Readers" explores whether or not the full meaning of an author can be translated across cultures or if literature is specific to a culture.

"Culture on the Border and Cultural Frontiers: Shared Experiences between Brazilians and Uruguayans" examines the rich culture of the pampas which these two countries along with Argentina share. It describes the Cultural Frontier project of the researchers. The article was written by Maria Helena Martins with English translation by Vera Müller. This theme is picked up again in the last contribution, "Beyond Boundaries: Exploring New Frontiers in the Music of the Pampas," which explains how music can cross cultural borders in new and different ways. This article is an interview with Olinda Allesandrini, a pianist from Brazil. It was written by Maria Luiza Cestari with English translation by Daphne Gerling.

One of the main tenets of ISfTE is to explore the cultures of the world through the teacher education lens. The contributions in this book can inform our understanding of the pluralistic and complex cultural world in which we live.

Reviewed by

Peggy J. Saunders, PhD, Associate Professor in Teacher Education at Weber State University, Utah, U.S.A. Peggy was one of the conveners for the 29th Annual ISfTE Seminar held at Weber. She was elected to the Executive Board of ISfTE in June, 2010, and will also serve as the associate editor of JISTE beginning in 2011.

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.

Published manuscripts become the property of the *Society*. Permission to reproduce articles must be requested from the editors. The submission and subsequent acceptance of a manuscript for publication serves as the copyright waiver from the author(s).

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 include four or five keywords after the abstract.
- Include four to five keywords; place immediately 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 specialisation 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

2011 (Volume 15, Number 1)

Theme – *Educating Teachers for a Better World*

This is the theme of the seminar in Brazil hosted by the Pontificia Universidade Catolica do Rio Grande do Sul (PUCRS). 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, 2010.

2011 (Volume 15, 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, 2010

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

Book and Other Media Review Submissions

Reviews of books or other media created by ISfTE members are welcome. Either the review or the item reviewed must be by a member. Reviews may be no longer than 1000 words.

Recent Publications Submissions

ISfTE members may submit an annotated reference to any book which they have had published during the past three years. Annotations should be no longer than 150 words.

Submission Requirements

It is preferred that articles be submitted by email directly to the editor (swilson@brocku.ca). To submit an article by email, send it as an attachment; use Windows Word, if at all possible.

You may also send articles by fax to 905-641-5229.

To submit an article by mail, send the manuscript and a computer disk. Due to the high cost of postage, manuscripts and computer disks will not be returned.

Manuscripts and editorial correspondence should be directed to:

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Telephone: 905-227-2652 Fax: 905-641-5229 E-mail: swilson@brocku.ca or iste@isfte.org

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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 Uruguaiana Campus (Uruguaiana 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.

Weber State University is a four-year public institution of higher education located in Ogden, Utah, USA. Its mark of distinction is its undergraduate programs. It offers 200 separate degrees, the largest and most comprehensive undergraduate program in the State of Utah. WSU believes that quality undergraduate education is founded upon close association between faculty, students and community.