Publication Information:
US-China Education Review A (Earlier title: Journal of US-China Education Review, ISSN 1548-6613) is published monthly in hard copy (ISSN 2161-623X) by David Publishing Company located at 9460 Telstar Ave Suite 5, EL Monte, CA 91731, USA.

Aims and Scope:

Editorial Board Members:
Professor Cameron Scott White          Professor Diane Schwartz                Professor Ghazi M. Ghaith
Professor Gil-Garcia, Ana               Professor Gordana Jovanovic Dolecek     Professor Güner Tural Dinçer
Professor Lihshing Leigh Wang          Professor Mercedes Ruiz Lozano         Professor Peter Hills

Manuscripts and correspondence are invited for publication. You can submit your papers via Web Submission, or E-mail to teacher@davidpublishing.com or teacher@davidpublishing.org. Submission guidelines and Web submission system are available at http://www.davidpublishing.com.

Editorial Office:
9460 Telstar Ave Suite 5, EL Monte, CA 91731, USA
Tel: 1-323-984-7526
Fax: 1-323-984-7374
E-mail: teacher@davidpublishing.com, teacher@davidpublishing.org, edu1658@yahoo.com

Copyright©2012 by David Publishing Company and individual contributors. All rights reserved. David Publishing Company holds the exclusive copyright of all the contents of this journal. In accordance with the international convention, no part of this journal may be reproduced or transmitted by any media or publishing organs (including various Websites) without the written permission of the copyright holder. Otherwise, any conduct would be considered as the violation of the copyright. The contents of this journal are available for any citation. However, all the citations should be clearly indicated with the title of this journal, serial number and the name of the author.

Abstracted/Indexed in:
Database of EBSCO, Massachusetts, USA
Chinese Database of CEPS, Airiti Inc. & OCLC
Chinese Scientific Journals Database, VIP Corporation, Chongqing, P.R.C.
Ulrich’s Periodicals Directory
ASSIA Database and LLBA Database of ProQuest
Excellent papers in ERIC
Summon Serials Solutions

Subscription Information:
Price (per year):
Print $600 Online $480
Print and Online $800

David Publishing Company
9460 Telstar Ave Suite 5, EL Monte, CA 91731, USA
Tel: 1-323-984-7526. Fax: 1-323-984-7374
E-mail: order@davidpublishing.org

David Publishing Company
www.davidpublishing.com
Contents

Education Technology

Using Technology in Pre-school Education
Münevver Can-Yaşar, Gözde İnal, Özgün Uyanık, Adalet Kandır 375

Teaching the Lecturers: Academic Staff Learning About Online Teaching
Maria Northcote, Daniel Reynaud, Peter Beamish 384

Special Education

Preparing Teachers for Special Education in the United States: A Reflection
Eskay M., Onu V. C., Ugwuanyi L., Obiyo N. O., Udaya J. 394

Comparative Education

The Comparative Research on Sex Education for Adolescents of China and the US
Zhou Yu-feng 408

Moral Education

Teaching Scientific Ethics Using the Example of Hendrik Schön
Bernard J. Feldman 418

Curriculum and Teaching

The Relative Merits of PBL (Problem-Based Learning) in University Education
Steve Benson 424
Examining the Impact of the Author’s Pedagogy on Developing Relationality and Care in Pre-service Early Childhood Teachers

Susie Garvis

431

How to Motivate US Students to Pursue STEM (Science, Technology, Engineering and Mathematics) Careers

Md. Mokter Hossain, Michael G. Robinson

442

Higher Educational Management

Voices of Conflict: Students’ and Lecturers’ Perceptions of the Utility of the Bridging Program at University

Chauraya Efirittha, Matope Nogget, Maruzani Nyevero

452

Educational Psychology

The Heroine of The Rainbow’s Research

Tian Bing

462

The Study on the Psychological Problems and Countermeasures of the Full-Time Professional Masters

Tang Hui, Ma Liang

467

Psycho-social Issues in Females Study of Science and Technology

Omoniyi Mary Banke Iyabo, Oloruntegbe Kunle Oke

473
Using Technology in Pre-school Education

Münevver Can-Yaşar
Afyon Kocatepe University,
Afyonkarahisar, Turkey

Gözde İnal
Adnan Menderes University,
Aydın, Turkey

Özgün Uyanık
Afyon Kocatepe University,
Afyonkarahisar, Turkey

Adalet Kandır
Gazi University,
Ankara, Turkey

Technology is the collection of machines, processes, methods, transactions, systems, administration and supervision mechanism, which serves as a bridge between science and practice and helps meet human needs using available information, materials, sources and energy. The developments in technology and educational aims follow a parallelism, which requires the use of technological products at different education levels to improve thinking and learning forms. It is imperative that children are introduced to technology starting from pre-school ages. An education setting surrounded by suitable technological products both promote, the children’s development and increases motivation to learn. With this respect, this study was carried out to investigate the contribution of technology to children’s developmental areas, technology use in pre-school ages, the role of educators in technology use in pre-school ages, and to increase consciousness drawing attention to the topic since limited number of research with limited scope was found in literature.

Keywords: pre-school education, technological products, technology use in pre-school programs

Introduction

Due to the rapid developments in science and technology, children today grow up in technology. Technological developments influence the structure of education, teaching-learning environments and learning process. In order to adapt to developing technology, benefit from opportunities technology provided for people, and catch up with technological changes, there need to use technology in every stage and area of education. The use of technology is very important to improve the quality of education and support the children’s developmental areas in pre-school education as well as in every stage of education.

Technology covers the efforts to determine human needs and fulfill these needs using available knowledge, materials, sources and energy. Computer and other electronic products are handled in the term “technology” (Arı & Bayhan, 2000). Technology, which enables systematic knowledge to be applied in

Münevver Can-Yasar, Ph.D., assistant professor, Department of Elementary Education and Early Childhood Education, Faculty of Education, Afyon Kocatepe University.
Gözde İnal, Ph.D., assistant professor, Department of Elementary Education and Early Childhood Education, Faculty of Education, Adnan Menderes University.
Özgün Uyanık, Department of Elementary Education and Early Childhood Education, Faculty of Education, Afyon Kocatepe University.
Adalet Kandır, Ph.D., associate professor, Faculty of Vocational Education, Department of Child Development and Early Childhood Education, Gazi University.
practical areas systematically, has been defined as all machines, processes, methods, transactions, systems, administration and supervision mechanism, which serves as a bridge between science and practice and is utilized in the process of science being applied systematically in problems related to production, service, transportation, etc. (Alkan, 2005; Saban, 2006). Technology could also be defined as the ability of humans to overcome biological restrictions ( Aktaş-Arnav, Günay-Bilalolu, & Aslan, 2007). Technological developments and educational aims go parallel to each other, which provide a lot of possibilities to improve thinking and learning.

Edwards (2005) stated that technology cannot be thought to separate from education (Stephen & Plowman, 2008). The NAEYC (National Association for Education of Young Children) (1996) pointed out that technology needs to be effectively integrated in educational programs. According to Fischer and Gillespie (2003), the educator’s role in children’s effective use of technology is important. Lesisko (2005) stressed that a good planning is required for effective use of technology in educational settings and stated that this process is going to be difficult for both educators and children, if planning is not carried out effectively (Lesisko, Wright, & O’Hern, 2010).

NAEYC (1996) reported seven standards for pre-school educators to be able to use technology effectively in educational settings. While making use of technology, educators need to pay attention to:

1. Age, developmental traits, interest and needs, cultural characteristics and individual differences of children;
2. Supporting children’s developmental areas (cognition, language, psychomotor, and social-affective development);
3. Its ability to be integrated in learning environment;
4. Accessibility for all children and their families;
5. Providing suitable role models, supporting problem-solving skills and not involving violence;
6. Working collaboratively with families;
7. Having required knowledge and competency about technology use.

It is vital that children are introduced to technology at early ages. Educational environment surrounded by suitable technological materials will both support the children’s development and increase their motivation to learn (Çelebi-Öncü, 2010). Researches show that the impact of technology use to support education has on children’s developmental areas (Clements & Swaminathan, 1995; Fletcher-Flinn & Suddendorf, 1996; NAYEC, 1996).

The use of technological products in pre-school education helps develop various learning strategies supporting technology developments of both children and educators (Kandır & Orçan, 2010). Technological products which are used according to children’s developmental traits and needs provide them with the opportunity to live the information age. Children whose developmental areas are supported gain suitable knowledge in making best use of and developing their potential. Therefore, children should be encouraged to develop different perspectives in pre-school education using technological products and helping them to have rich experiences. It has been observed that there are limited comprehensive studies on effective use of technological products in pre-school education. With this respect, this study was carried out to investigate the contribution of technology to children’s developmental areas, technology use in pre-school ages, the role of educators in technology use in pre-school ages, and to increase consciousness drawing attention to the topic since limited number of research with limited scope was found in literature.
The Impact of Technology on Children’s Developmental Areas

Since development in pre-school ages is very fast, it is necessary to keep up with this development educationally and increase children’s development to the highest degree possible. Technology use has important contributions to support children’s developmental areas (NAYEC, 1996; Ari & Bayhan, 2000; Clements & Sarama, 2003; Inan, 2003). Forcier and Descy (2008) stated that children who have different skills and pre-knowledge get the chance to work collaboratively and can learn from each other. According to Jonassen, Howland, Marra, and Crismond (2008), technological products increase children’s motivations to learn and contribute to intellectual development encouraging inductive thinking and problem-solving skills.

The impact of technological products on developmental areas is a gospel truth.

When studied the terms of cognitive development, technological products enable children to learn various concepts, realize different characteristics of entities, understand piece-whole relationship, develop problem-solving skills, develop cause-effect relationships, develop mental processes, such as reason, judgment, memory, perception and attention, develop feelings of curiosity and discovery, for the information learned to be more permanent, motivate them to learn and develop skills like making decisions and critical thinking (NAYEC, 1996; Clements & Sarama, 2003; Cooper, 2005; Mitchell & Dunbar, 2006; McCarick & Xiaoming, 2007).

With regard to language development, technological products giving the chance for children to speak, think, listen, tell and communicate with each other positively affect the children to improve word treasure, receptive and productive skills (effective listening, explaining, questioning, giving orders, making requests, guessing, dramatizing, re-telling, etc.), communication skills, reading writing skills, audio-visual perception skills, and the skills to express emotion, feeling and dreams (Clements & Sarama, 2003; Cooper, 2005; Mitchell & Dunbar, 2006; Brewer, 2007; McCarick & Xiaoming, 2007).

One of the developmental areas that technological products contribute is psychomotor development. Small and big muscle developments, hand-eye coordination, the ability to use the body in a coordinated way and body flexibility skills in children interacting with technological products in pre-school ages are supported (Ari & Bayhan, 2000; Mitchell & Dunbar, 2006; Çelebi-Öncü, 2010).

In terms of social-affective development, technological products support the children’s abilities to enrich emotion, behavior and thinking skills, improve self-respect and self-confidence, develop a sense of belonging, making decisions and taking initiatives, overcome social problems with trial and error, develop sense of success, take risks knowing that mistakes are natural, learn with feelings of pleasure and happiness, cope with emotions, improve pro-social skills (helping, cooperation, sharing, empathy, waiting for their turn, etc.), improve the skills to overcome fear and anxiety, respect differences, develop skills to behave in a way that will not endanger self and others (Ari & Bayhan, 2000; Cooper, 2005; Mitchell & Dunbar, 2006; McCarick & Xiaoming, 2007; Stephen & Plowman, 2008).

The most effective learning for children at pre-school ages takes place with games. It is important to use different materials along with technological products in order to enrich children’s learning environments (İşkoğlu, 2003; Cooper, 2005; Siu & Lam, 2005; McCarick & Xiaoming, 2007). It is needed to structure a learning environment with a good quality to support children’s effective learning and development (Kandir, Öz bey, & İnal, 2010). The selection of technological products to be used in educational settings is determined by children’s level of development, objectives, gains and concepts in pre-school education programs, and finally general characteristics of the school (İnan, 2003). Mitchell (2007) stated that culture, content, fostering
creativity, acknowledging the freedom to discover and children’s developmental stages are important in choosing technological products to be used in early childhood programs. Technological products used in pre-school education settings need to be suited to modern technology and be equally accessible for all children (Tuğluk, 2010).

Computer, computer-supported educational software, the Internet, projector, overhead projector, TV (television), camera, video-camera and CDs (compact disk) could be viewed as technological products that can easily be integrated into pre-school education programs and support children’s developmental areas (Mitchell, 2007).

Technological Products and Their Use in Pre-school Education

An educator’s role in preparing, organizing and using appropriately technological products is very important. Today, children meet computer at very early ages. Before even starting school, children who see adults using computers take an interest in computers and want to use computers (Cooper, 2005). While it is still discussed at what age children should meet computers, Haugland (1999) stated that children can meet computers from the age of three.

When used properly as a development tool, computers are sources and tools that make learning easy. Computer is faster than any other tools, devices and methods in providing feedback. Computers positively affect children’s cognitive, language, psychomotor and social-affective development, and contribute to learning when integrated into the educational setting in a way that does not hinder social communication and cooperation. Computers make it possible to arrange the education process according to the children’s abilities, knowledge and pace of learning and meet individual needs. Children who have control over their own learning when using computers develop self-respect and, thus, develop skills of problem-solving and overcoming difficulties (Arı & Bayhan, 2000; Clements & Sarama, 2003; Mitchell & Dunbar, 2006; Schirrmacher, 2006; McCarick & Xiaoming, 2007; Brewer, 2007; Kandır & Orçan, 2010).

Besides, educators can use computers effectively in educational settings to record and archive observations about children, anecdotes, stories, songs and poems invented by children and activity photos and images (Mitchell, 2007).

Educators are required to have knowledge and experience as to use of computers when using them in educational settings. Children’s use of computer in pre-school education needs to start in the educator’s supervision. Educator should firstly teach children switch on/off functions and later how many parts a computer has and how these parts are used. The educator should be present for children to focus their attentions and get answers for questions. For the daily plan to flow smoothly, computers need to be integrated in the natural classroom environment (Arı & Bayhan, 2000; Şıgırlmaç, Yılmaz, & Solak, 2007). For children to make effective use of the computer, it should be placed where children can see and reach it easily. The computer should be placed so that the natural light in the room does not reflect on the screen and tire the eye, necessary precautions about the cables need to be taken and tables and chairs need to be fixed and adjustable according to children’s height. Besides, the screen should align with the children’s eye and a screen shield of good quality need to be used (Schirrmacher, 2006; Brewer, 2007; Jackman, 2009; Tuğluk, 2010).

While using the computer, the educator can work with children individually or in groups of two or three. As children proceed to gain experience, the educator should reduce guidance and have a more observer role.
Because children’s concentration span is short, the time for study on computers need to be kept short. Working with children aged three to four, five to seven minutes, and with children aged five to six, 10 to 15 minutes should be allocated for each child at most. The ideal computer/child ratio in pre-school classes is 1/10 (Şığrtmaç et al., 2007; Dereobalı, 2009).

Another factor in using computers properly and effectively in educational settings is software and education programs. The content of software and education programs should be planned very well. While choosing software and education programs, the educator should pay attention whether they are easy for children to use, they teach knowledge stage by stage, they vary exercises, they are interactive, suitable feedback is provided timely and they have error check according to children’s age, developmental stage, needs and interests. In addition, educational software and programs should be organized as concrete to abstract, simple to complex, close environment to far environment, support pre-school education objectives and gains, the visuals and audio used should be authentic should have fun elements and sustainable educational characteristics. Supplementary software and programs suitable for children’s development, age and interests providing the opportunity to discover freely should be practiced in a timely fashion (Clements & Sarama, 2003; İştkhoğlu, 2003; Schirrmacher, 2006; Brewer, 2007; Kandır & Orçan, 2010).

The use of the Internet is also important in providing children with various educational opportunities. Internet use in education provides important chances of developing new knowledge and skills, varying and enriching experiences in children. Children and educators can make use of Websites on the Internet as information sources. There are many Websites from which pre-school children can benefit, but most of them are not suitable for children’s developmental stages and have complicated contents. For this reason, Websites to be used in class should be examined beforehand by the educator (Bayram, 2006; Schirrmacher, 2006; Brewer, 2007; Dereobalı, 2009).

Computer, software, and educational programs along with the Internet can be used to promote children’s problem-solving, communication, judgment, building connections between concepts and processes, numbers and operations skills in free time, music, science, creative drama and literacy preparation activities in pre-school education programs (Kandır & Orçan, 2010). For example, computer-supported education programs related to various concepts suitable for pre-school education objective and gains could provide discovery and research opportunities and support concept development in children for literacy preparation activities.

A projector is used to project all activities prepared on computer and computer-supported activities. Projector helps to project three dimensional visuals effectively, with the help of visual presentation, a projector can draw children’s attentions and make them take active roles in activities and support learning to be permanent because of integrating audio and visuals. Projector is a technological product that projects slides prepared by the educator, story books downloadable from various websites, visuals and photographs taken or downloaded by the educator, namely, every audio-visuals in motion or motionless on a curtain or wall in a darker room and makes it possible to convey them to children (Bayram, 2006; Çelebi-Öncü, 2010). Moreover, educators can take advantage of projectors in meetings and conferences within the framework parent involvement activities.

In addition to being used in language activities as techniques of storytelling, story completion and formation in pre-school programs, projectors can be used in free time, game, music, science and creative drama and literacy preparation activities.

Transparencies are used through overhead projectors to project visuals on a curtain or wall. Transparencies
have the characteristics to be used repeatedly, draw attention and concretize concepts. Furthermore, it enables educators to present visuals fast. Visuals or figures can be drawn on transparencies with special pens or computer prints of images from the Internet can be copied on transparencies. Projecting colorful and pictured transparencies on a curtain or wall help the children get engaged and see in details, thus, provide different but satisfying experiences. Overhead projectors can be used along with other technological products, such as music sets or computers in educational settings. When using overhead projectors with small or big groups in educational settings, the size of the visuals could be arranged according to number of children and physical conditions of the classroom (Lucido & Borabo, 1997; Bayram, 2006; Çelebi-Öncü, 2010).

The use of transparencies and overhead projectors in different activities in pre-school education will provide children with different experiences. For example, in art activities that take place in free time activities, the fact that children draw different figures and drawings, making connections between drawings and talk about them, could help children develop problem-solving skills and their creativity and imagination at the same time.

Cameras and video-cameras that can be connected to a computer and TV are technological products through which language, game, music, art, science and literacy preparation activities, activities on special occasions can be recorded audio-visually that children have done both inside and outside the class. In addition to recording children's experiences, cameras and video-cameras can help the educator to build activities and provide visual and audio records which can make the children get concrete experiences. Cameras and video-cameras enable children to have different experiences bringing the events and phenomenon that cannot be brought in the educational setting. Phenomenon, events and creatures that are brought into the class with the help of cameras and video-cameras enable children to get information apart from the educator. Along with the activities children do in the learning environment, they can use cameras and video-cameras themselves to share their observations with their friends.

In addition to the fact that cameras and video-cameras are used in pre-school education in different activities, educators can use visuals and audio taken by children in parent involvement activities. In this way, families can be informed about pre-school education program and activities.

CDs are used to store visuals and audio recorded with cameras and video-cameras. CDs make it easier to store and archive visuals and audio for a long time. Besides, visual or audio CDs available in the market for pre-school education also make the learning environment rich (Arı & Bayhan, 2000).

CDs can be used to make learning easier by making activities fun in free time, language, game, music, science, creative drama and literacy preparation activities in pre-school education. For example, according to objectives and gains of music activities education program, by making children watch or listen to visuals or audio on CDs from different cultures, children can learn about different cultures, how to live in harmony with different cultures and, thus, an environment where children respect differences could be created.

TV, which can appeal to various senses with its audio-visual features, is the most suitable technological product for education. The fact that can reach many individuals simultaneously and can cater for wide ranges of people’s needs makes TV the most common educational tool. If used correctly, TV can affect children’s cognitive, language, psychomotor and social-affective development positively. TV provides children with information about events, phenomena and creatures that children may never experience in their whole lives. It creates chances for children to learn having fun and good time in an environment where they take part whenever they want. Children meet events in motion hearing and seeing objects on TV. TV provides imaginary behaviors for them to imitate so promotes creativity (Christakis, Ebel, Rivara, & Zimmerman, 2004; Önder &
Balaban-Dağal, 2007; Öztürk & Karayazı, 2007; Dereobalı, 2009).

On condition that it is not used by the adults around a child for educational purposes, watching TV is a one-way passive activity. Children watching TV with adults share what they see and what they feel, which reinforces learning. Watching TV with adults gives the chance to correct wrong information or language, control advertisements, question and talk on the values shared. Using TV as an educational tool with children viewing time is important. It is suitable for children up to age two to watch TV for 15 minutes; for children between two to five ages, 30 minutes; and for children aged five to six, one hour. Handling TV watching habits at early ages will prevent addiction (Önder & Balaban-Dağal, 2007; Dereobalı, 2009; Christakis & Garrison, 2009). Educator in pre-school education needs to work with families collaboratively to prevent TV addiction in children and develop critical TV viewing skills.

TV programmes to be integrated into pre-school education settings should be suitable for children’s age, interests, needs and developmental stages. Educators need to view the programmes beforehand to choose good quality programmes to use in learning environment. Because children in pre-school ages cannot differentiate between real and imaginary, they are influenced by what they see on TV. For this reason, it may cause unwanted situations, if children watch TV alone without adult supervision (Aktaş-Arnas, 2005). Educator needs to watch the programme with children, so that children can grasp what is conveyed better and clarify any misunderstandings and talk to children about the programme. After a programme watched on TV, educators are required to organize what children viewed in a way that they can comment on and associate the activities with real life. In pre-school education setting, TV should not be kept on for long, purposeful activities should be used during viewing. Studies pointed out relationships between watching TV for a long time and eating habits, physical activity scarcity and increase in obesity and cholesterol levels (Vessey, Yim-Chiplis, & MacKenzie, 1998; Lowry, Wechsler, Galuska, Fulton, & Kann, 2002; Dennison, Russo, Burdick, & Jenkins, 2004). Therefore, educators should not let children watch TV during meal times. Educators need to put a strong stance for programmes that they believe are not suitable for children and should be guiding by parents in developing appropriate viewing skills in their children (Christakis, Ebel, Rivara, & Zimmerman, 2004; Önder & Balaban-Dağal, 2007; Dereobalı, 2009).

TV could be used to enrich free time, language, game, music, science, creative drama and literacy preparation activities in pre-school education programs. For example, a documentary about ant life chosen according to objectives and gains in language activities can help children get information about physical characteristics, accommodation, eating and working habits of ants and provide concrete experiences comparing similarities and differences between ants and other creatures.

Findings and Suggestions

As a must of being an information society in information age, it has become imperative to use technological products that play an important role in improving education process and quality in every stage of education institutions. Technological products integrated into educational settings suitably, according to children’s developmental stages and needs, are important in raising educational quality. With this respect, the following suggestions could be made to educators in pre-school education:

(1) The fact is that guiding educators in increasing their knowledge and experience about technological products could enable technological products to be better integrated into educational settings, and it could be effective in promoting efficient learning;
The fact that educators introduce technological products and guide them how to use these products might encourage children to use them more;

3. Technological literacy could be improved by organizing seminars, conferences or in-service training activities for educators on effective use of technological products in pre-school education;

4. Families could be guided about the influence of technological products on children’s developmental stages and on their proper use in home settings under adult supervision;

5. Education programs on the role and importance of technological products and their use in supporting developmental stages could be prepared and practices could be evaluated;

6. Projects about technology use in pre-school education could be developed collaboratively with Ministry of National Education, universities, local governments and non-governmental organizations.

References


Teaching the Lecturers: Academic Staff Learning About Online Teaching

Maria Northcote, Daniel Reynaud, Peter Beamish
Avondale College of Higher Education, Cooranbong, Australia

Developing online teaching skills can occur through involvement in learn-by-doing strategies, which incorporates informal, organic or need-driven strategies. Such processes are sometimes labeled as “bottom-up” staff development processes. In other contexts, teaching staff are formally directed to develop online teaching skills through a series of compulsory staff development workshops or courses. These approaches typically include “top-down” staff development processes. This paper describes how a group of tertiary teaching staff extended their on-campus and distance teaching repertoire of skills to include online teaching skills. In this case, the process of staff development began with collecting data about the concerns and practices of the teaching staff involved. An analysis of the data informed the development of a “middle-out” staff development strategy which comprised a mixture of informal and formal strategies, and acknowledged the ethos of the institution and the specific needs of the staff involved. This professional development program incorporated a group of 11 informal and formal strategies. This paper presents an analysis of the data that were gathered during this project alongside the professional development strategies that were developed as a result of this analysis.

Keywords: staff development, online teaching, online learning, online curricula

Introduction

Founded in 1897 as a tertiary training college for the Seventh-day Adventist Church in Australia, Avondale College of Higher Education has evolved into an institution offering government-accredited undergraduate and postgraduate degrees in art, theology, education, nursing, business and science. Distance education began with the development of coursework masters’ degrees which were largely taken by working professionals in education, ministry, nursing and management. For years, distance education at the college has operated in the traditional mode of mail-outs and on-campus intensive sessions. Some sectors of the college, in particular education, began to develop undergraduate units in a similar manner. However, it became increasingly clear that developments of e-learning were making the old system redundant and that a whole new market could be opened up by transferring to an online LMS (learning management system). Current and prospective students also began requesting the online study options. The college adopted the Moodle LMS and a concerted push was made towards moving all distance education units to the online environment. Along with the transferring of existing distance units, staff began to expand the range of course offerings, with the ambition of offering a part or all of selected degrees online. In addition, all staffs were required to develop various...
blended formats, including on-campus units that are enhanced by use of the online LMS and other units that are partly online and partly face-to-face. Every unit now has a minimum online presence which includes the unit outline and some student information, but it is commonly expanded to include assignment schedules and rubrics, lectures, resources, forums and the electronic submission and grading of assessment tasks.

This move to teaching in the online environment has required a significant paradigm shift for many staff, even those already involved in distance education. The process has been one of re-education to operate in cyberspace learning, overcoming both technical and ideological barriers to its effectiveness, with the latter being at least as important as the first. In the initial stages, some staff adapted to the new format by simply posting copies of lecture notes online, while others struggled to see how they could reproduce the richness of the interactions of face-to-face teaching—a recognized strength of Avondale’s education—in an online environment. Other lecturers with experience in distance education felt that when teaching the same unit to a face-to-face group and a distance education group simultaneously, they needed to create radically different units in order to achieve the same learning outcomes. Hence, the lecturer education program had to deal with various elements: transforming old teaching habits in both face-to-face and distance education contexts to suit the new environment, redefining a philosophy of education to acknowledge the merits and weaknesses of an online learning situation, developing a rationale that accommodated online learning and allowed it to blend successfully with traditional teaching methods and building a skill set that made lecturers confident in a cyberspace classroom.

The Nature of Professional Learning About Online Teaching

When staff engage in professional learning about online teaching, a range of consequences occur. They extend or develop their current beliefs and practices about online learning and online teaching, they reflect on their own teaching and they may even make instrumental change to their teaching in general as a result of what they learn about online learning (Matzen & Edmunds, 2007). However, these outcomes of professional learning are not without fallout. The processes associated with change and reflection can be both confronting and enlightening.

Professional learning programs about online teaching are frequently built upon the theories associated with capacity building (Fullan, 2000; Mitchell & Sackney, 2000; Youngs & King, 2002), adult learning (Knowles, 1990) and social learning (Bandura, 1986; 1993). In order to accommodate the recommendations from such learning theories, most professional learning programs for lecturers incorporate a range of strategies. Such variety also caters for the needs of lecturing staff with varied experience, motivations and skill levels.

In the modern higher education sector, lecturers often have the choice of engaging in a variety of professional learning activities that focus on extending their knowledge about online learning and their skills in online teaching. They may attend on-campus workshops, participate in online tutorials, listen to guest lecturers, and explore exemplar courses and converse with colleagues and mentors in informal discussions. As well as providing collegial settings for staff to achieve positive learning outcomes, some of these professional learning methods understandably cause staff to encounter periods of cognitive dissonance and cognitive conflict. Such experiences have been described as both “bumpy moments and joyful breakthroughs” (Northcote, Beamish, Reynaud, Martin, & Gosselin, 2010) and are often associated with lecturers reflecting on their identity as teachers. In her provocatively named article, Shift Happens: Online Education as a New Paradigm in Learning, Harasim (2000) suggested that the process of change associated with lecturers understanding the new online
learning environment was not always a smooth transition. So, when designing a professional learning program for lecturers to learn about online learning and teaching, the institution involved would be well advised to accommodate and support the lows and highs of the processes that lecturers experience on their journeys of learning about online teaching.

Professional learning can be a catalyst for change, “Technology can provide a context or reason for trying out a new instructional practice” (Matzen & Edmunds, 2007, p. 427). The very act of engaging in professional learning processes which involve an element of reflection can increase lecturers’ intentions to change their teaching practices for the better or explore improved ways to prepare for teaching, create learning resources and use appropriate technologies. The process of participating in professional learning activities may trigger lecturing staff to modify their practices not just to suit the new medium, but also improve the overall quality of student learning. Since many online learning tools provide opportunities for interaction between students and lecturers, feedback from students about their online experiences is often more forthcoming than that in earlier times when lecturers tended to take on the role of information provider, but not information receiver (Herrington & Standen, 2000).

Academic teaching staff often learn about online teaching through informal and incidental conversations with their colleagues (Coughlin & Kajder, 2009; Koch & Fusco, 2008). When the social aspect of professional learning is set alongside a focus on authentic teaching dilemmas, this practice-based approach can be useful to engage lecturers in the process of reflecting about their own practices as well as the practices of their colleagues (Bell & Gayle, 2009).

Effective professional learning programs about online learning would ideally include a component of ongoing reflection, in which lecturers are continually encouraged to evaluate specific aspects of their online teaching and course design practices. Bright (2007) suggested that lecturers should reflect on how their online teacher presence facilitated productive online learning for their students. Schön (1983) also espoused the value of combining reflection with practical working situations through the “reflection-in-action” process, suggesting that this process was more integral than learning in isolation from practice. Consequently, a professional learning program would be best to include opportunities for lecturers to converse and reflect informally about their own teaching practices, ongoing dilemmas, breakthroughs and challenges.

Lastly, in conjunction with the on-campus or online professional learning opportunities offered to staff and the subsequent reflective processes that lecturers engage in about online teaching, professional learning programs must also be well supported by institutional leaders (Olson, 2002; Youngs & King, 2002). Without this key ingredient, well-meaning and well-designed professional learning programs run the risk of failure. From the previous research (Northcote, Reynaud, Beamish, & Martin, 2010), the leadership and support of faculty and institutional leaders were recognized as a key success factor when guiding lecturers through the process of learning about online learning and teaching.

The Start: Threshold Concepts

Avondale has an established reputation for quality teaching which is reflected in various objective measures, such as student evaluation questionnaires and the Australian good universities guide. Quality teaching is a product of small classes and a culture of high-level pastoral care stemming from the college’s philosophy of holistic education (Avondale College of Higher Education, 2008). But, these teaching skills did not necessarily transfer well to an online environment. In particular, technical expertise varied widely from
sophisticated to rudimentary. In a questionnaire administered to staff in two faculties (Northcote et al., 2010), academic teaching staff showed higher levels of confidence about pedagogical issues than technical issues related to online teaching. At the same time, staff also expressed doubt over the ability of online learning to match the quality of the face-to-face experience. Findings from this study were used to inform the design of the professional learning program for staff in two faculties.

The professional development program for lecturers was essentially constructivist in nature, enabling staff to build upon the skills that they had already developed in both traditional and distance education, and in limited cases, with online learning (Matzen & Edmunds, 2007). Many of these existing skills could be classified as relating to course design, construction of assessment tasks and resource creation.

A preliminary study (Northcote et al., 2010) established the threshold concepts that most concerned the teaching staff. In order of importance, they were:

1. Pedagogical: teaching style and role; learning quality; understanding of online learning; student engagement; atmosphere; interaction; and expectations;
2. Technical: enrolment; assessment; course building; resource; student skills; software; and servers space and capacity;
3. Resources: creation and use; student access; legality; use of practical equipment and tools; and accountability;
4. Time: workload; and allocating time and managing time;
5. Strategic issues: accountability; versioning of online units; and strategic plan of online units to be developed;
6. Fear: developing new skills and acquiring new knowledge; new ideas; safety; and security.

The process of identification of the key threshold issues, which isolated the areas in which teachers had concerns and areas where they felt confident, informed the professional learning strategies.

The Journey: Implementation of Multiple and Transformative Professional Learning Strategies

The academic teaching staff at Avondale already held well developed on-campus teaching skills and many also possessed skills in teaching off-campus students through distance education programs. However, a move to teaching in the online environment posed a new challenge for these lecturers. In the research, we conducted last year to identify lecturers’ concerns about this shift in teaching mode (Avondale College of Higher Education, 2008), then we found that the idea of teaching in an online environment resulted in some of the lecturers questioning the very essence of being a teacher. They had some questions, such as “How do I get over the ‘masked persona’ of the lecturer online?” “How do I transfer the richness of face-to-face?” and “How do I project my own personality effectively?”. It became clear to the researchers involved in this work that the move to online teaching was not just associated with a change of intellectual understanding about online learning; and this move also presented lecturers with a personal and, at times, an emotional challenge that was often related to their identity as a teacher.

To help Avondale staff come to terms with the demands placed upon them, as they negotiated the teaching and learning challenges that they would encounter in the online environment, a professional learning program was implemented. Experience from other professional learning programs, in which academic teaching staff had developed knowledge and skills about online learning, suggested that multiple strategies were required.
ACADEMIC STAFF LEARNING ABOUT ONLINE TEACHING

(Northcote & Huon, 2009a; 2009b). The strategies also needed to be varied to provide more flexible entry points for both new lecturers and lecturers who already had some online teaching experiences. Opportunities for a mix of informal and formal strategies were also required to meet the needs of lecturers at varied times throughout the semester.

The professional learning program the authors developed for the academic teaching staff was also informed by the research that conducted last year (Northcote et al., 2010) which clearly indicated that staff wanted to view examples of good practice and wanted to be able to practice their newly developing skills in immediately relevant contexts. As a result, we integrated many opportunities for staff to participate in practical workshops, using their own units as the basis for activities.

All in all, 11 separate professional learning strategies were developed and implemented across the college in 2010 (Northcote et al., 2010). Due to the iterative nature of the program, two additional strategies have been incorporated into the program in 2011 (see Table 1).

Based on the experiences of other similarly focused professional learning programs about online teaching, it was known that professional learning strategies should offer opportunities for staff to meet face-to-face as well as give them the resources and tools to enable them to work independently (Ellis & Phelps, 1999). Other researchers had also identified the value in situating professional learning programs within authentic contexts that encourage lecturers to use their own work-in-progress examples (Bell & Gayle, 2009).

Table 1

<table>
<thead>
<tr>
<th>Type</th>
<th>Strategy</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face activities</td>
<td>1 Practical workshops</td>
<td>A series of practical workshops focus on both pedagogical knowledge and technical skills (see Figure 1).</td>
</tr>
<tr>
<td></td>
<td>2 Informal conversations</td>
<td>These informal corridor chats provide academics with “just-in-time” advice and guidance from Moodle mentors.</td>
</tr>
<tr>
<td></td>
<td>3 Consultations</td>
<td>One-to-one consultations encourage staff to develop skills and acknowledge the difficulties involved in online teaching. Consultations usually occur in the lecturer’s office.</td>
</tr>
<tr>
<td></td>
<td>4 Online resources</td>
<td>Instructional resources are provided via the online LMS (moodle). Paper-based versions (booklets and handouts) are also available.</td>
</tr>
<tr>
<td></td>
<td>5 Examples</td>
<td>Demonstration of both exemplars (to demonstrate best practice) and non-examples (to demonstrate mistakes or “what not to do” examples) of previously constructed online courses, resources and activities.</td>
</tr>
<tr>
<td></td>
<td>6 Two-Minute Moodle</td>
<td>These emails provide staff with instructions and examples of how to implement pedagogically sound online teaching practices.</td>
</tr>
<tr>
<td></td>
<td>7 Pedagogical guidelines</td>
<td>A set of pedagogical guidelines were developed to guide the design and development of online courses at Avondale, based on experts’ advice from various higher education educators (Anderson &amp; Krathwohl, 2001; Biggs, 2003; J. Herrington, Oliver, &amp; T. Herrington, 2007; J. Herrington, Oliver, T. Herrington, &amp; Sparrow, 2000; Herrington, Oliver, &amp; Reeves, 2003; Kerns et al., 2005; Salmon, 2004; Van Duzer, 2002). These pedagogical guidelines informed the development and structure of the self-evaluation rubric mentioned below.</td>
</tr>
<tr>
<td></td>
<td>8 Self-evaluation rubric</td>
<td>A rubric of online teaching skills and knowledge (known as a MOOBRIC (rubric used in conjunction with Moodle, an online teaching platform)) which staff use to identify their current and projected skill levels (see Figure 4).</td>
</tr>
<tr>
<td>Strong leadership</td>
<td>9 Institutional support</td>
<td>Support from faculty deans and institution’s leaders for lecturers’ development of online teaching skills is ongoing (e.g., policies and funding).</td>
</tr>
<tr>
<td></td>
<td>10 Unit targets</td>
<td>Within faculties, units are identified each year within a long term plan, for future development and delivery.</td>
</tr>
<tr>
<td></td>
<td>11 Research focus</td>
<td>Faculty deans encourage staff to conduct and share research into online learning and teaching.</td>
</tr>
</tbody>
</table>
### Themes and Topics

<table>
<thead>
<tr>
<th>Getting started</th>
<th>Moodle basics @ Avondale: What is it, what are its main functions and what can it do for my students and me? How do I navigate through the College system?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Method in the madness: Planning distance units</td>
</tr>
</tbody>
</table>
| Active and interactive learning | Adding title to your distance unit: Designing activities that facilitate active learning  
Adding you to your distance unit: Increasing your "teacher presence"  
Get talking: Designing and creating forums for distance units  
Put the student first: Making the student experience a priority in distance units  
A reason for being and doing: The practicalities of pedagogy in distance units  
Digging deeper: Using online learning tools to facilitate higher order learning in distance units |
| Assessment and evaluation | Not just essays: Designing and creating assessment tasks for distance units  
Top notch quizzes: Designing and creating quizzes that promote learning  
Save time with online marking: Ways to use online tools to manage and streamline marking processes  
Giving and receiving: The secrets of feedback to improve teaching and learning in distance units  
Getting better and better: Improving distance units through evaluation cycles |
| Rich media | Get the picture: Using graphics to facilitate learning in distance units  
You heard it here: Using audio to facilitate learning in distance units  
Moving pictures: Using video to facilitate learning in distance units  
Making it move: Creating animated resources for distance units |
| Resources | Create and activate: Creating resources to facilitate active learning in distance units  
Don’t reinvent the wheel: Using existing resources in distance units  
Copyright and copyright: Using resources legally in distance units |
| Management | The "W" Word: Using online tools to prevent workload blowout  
Keeping on track: Monitoring student activity in distance units |

**Figure 1.** Workshop program.

![Workshop program](image1)

**Figure 2.** Examples of workshop booklets.

![Workshop booklet](image2)
**Figure 3.** Example of a “Two-Minute Moodle” weekly email message.

```plaintext
Hi all staff in the Faculty of Education and Science
Here is a 2-minute Moodle this week with an idea about how to prepare for your distance learning and on-campus units starting next week.

Think about what you’d like to include in an introduction message to all students in your unit. Remember that you can send this message to ALL students enrolled in your unit through the ‘News Forum’ (see attachment with brief instructions). Even for on-campus students, this message is helpful.

Here are a few ideas for the content of your introduction message (not necessarily in this order):
- A welcome comment
- Your name and role. Also mention any other staff involved in the unit.
- Your office location and availability:
- A one-sentence overview of the unit, including how relevant it will be for students
- Any special dates that you want the students to note in their diaries
- Consider including a challenging, controversial or curious question that will be addressed throughout the unit
- Before sending the message to students, reread your message and ensure the tone is welcoming
- After you send the message through the News Forum, Moodle gives you 30 minutes grace to modify the message

Regards,
-Maria
```

**Figure 4.** Rubric used by lecturers to self-evaluate online teaching skills in Moodle (MOOBRIC).

<table>
<thead>
<tr>
<th>Muddler</th>
<th>Meddler</th>
<th>Moodler</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Pedagogical knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Learning activities</td>
<td>Purpose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alignment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Student-centeredness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engagement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Variety</td>
<td></td>
</tr>
<tr>
<td>1.2 Assessment and evaluation</td>
<td>Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Submission</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Variety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feedback</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
<td></td>
</tr>
<tr>
<td>1.3 Communication and interaction</td>
<td>Strategies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilitation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expectations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monitoring</td>
<td></td>
</tr>
<tr>
<td>1.4 Support, guidance and mentoring</td>
<td>Orientation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Guidance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reflection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional help</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trouble-shooting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentoring staff</td>
<td></td>
</tr>
</tbody>
</table>
Informed by this research of others and that of the authors’ own online teaching professional learning program for staff includes 11 different strategies incorporating face-to-face activities, resources and tools, and strong leadership, as outlined in Table 1.

The content, design and timing of the workshops are under continual change, based on current staff needs and available resources.

Each of the strategies included above is linked with research processes and outcomes. For example, workshops include both “how-to” technological advice about how to manage various functions within the institution’s LMS, i.e., Moodle, and research-informed recommendations for good practice. Research into the authors own practice and about the practice of other online teachers is integrated throughout the entire professional learning program.

The Future

Once the 11 professional development strategies outlined above continue to be fully implemented and evaluated over the next six months, it is anticipated that some modifications will be required to this program. The authors also plan to extend this program by designing and developing a blended professional development unit for staff about online learning and teaching using the current LMS (Moodle). Also, the authors are continuing to develop and trial the rubric (see Figure 4) based on the TPACK (technological, pedagogical and content knowledge) framework (Mishra & Koehler, 2006) that describes the types of knowledge required by teachers to work in a pedagogically sound way within a technology-rich environment. It is intended that the rubric will be used as a tool to assist teachers to reflect on their online teaching and course development skills, as online educators. There will be a continued exploration of the balance between “top-down” and “bottom-up” strategies to ensure that the institution’s strategic aims are met and staff are included and consulted during the process.

Of particular interest is the development of more pedagogical approaches and resources that utilize rich media. There are a number of exciting directions that Avondale wishes to pursue in this area. Some staff can be quickly overwhelmed by some of the technical logistics that accompany this direction, so the authors are looking to increase the amount of technical support available to staff to facilitate the development of pedagogical approaches that utilize rich media for both communication and instruction.

Conclusions

As an institution of higher education, Avondale recognizes the importance and potential of online learning experiences for students. With Internet access being ubiquitous for the majority of the Australian population, online experiences tend to be the norm rather than the exception for most people. People now use the Internet to access information, perform commercial transactions, and increasingly for educational purposes. Younger generations of students seem to be particularly receptive to e-learning environments. As distance education has matured and e-learning approaches have become more sophisticated and better understood, there is a need for educators to develop a set of skills that are robust and sustainable.

To implement rich online environments, the professional learning opportunities of staff are particularly important. Staff can develop online teaching skills through involvement in learn-by-doing strategies that combine structured, informal and need-driven strategies. Avondale continues to monitor and balance the mix of available “top-down” and “bottom-up” strategies and has found the “middle-out” development strategy that incorporates informal and formal strategies to be optimum. This is important as this balance of strategies, while
reflecting the strategic intent of the institution, helps to establish a positive learning culture and impacts staff productivity and morale.

Avondale has always had a focus on meeting the needs of students and staff. The strategies reported in this paper have been successful in enhancing the online learning and teaching environment, continue to reinforce the ethos of the institution, and supports the specific needs of the staff involved. As we look back over the program, the authors are in a position to recommend them to you.

References


Preparing Teachers for Special Education in the United States: A Reflection

Eskay M., Onu V. C., Ugwuanyi L., Obiyo N. O., Udaya J.
UNN (University of Nigeria, Nsukka), Nsukka, Nigeria

Preparing teachers for special education in the United States is a reflection that is not merely another attempt to reinvent the wheel. Rather, it is an investigation to learn from the past, use applications today in order to secure concrete and measurable goals in the diversified future of special education in America. Several historical figures became the voice of individuals with disabilities when persons with disabilities were sequestered from society in America. They are modern day heroes and will be remembered for their courageous deeds to define the individual beyond their disability. While tremendous progress has been made, active preparation is essential for the future educators that will carry the torch of freedom, which is free and appropriate education and full inclusion for all students with disabilities in America.

Keywords: special education law, psychology, administration, education, sociology

Brief History of Special Education

One of the most fascinating aspects of special education is that it literally rode into America on the coattails of the Civil Rights Movement. One of the most powerful and memorable occasions of this era was Dr. Martin Luther King’s speech, I Have a Dream. August 28, 1963 was a fantastic day at the Lincoln Memorial in Washington D.C., because a historical man had the courage to stand up and speak up for a dire need in the nation. Dr. Martin Luther King (August 28, 1963) stated,

In a sense, we’ve come to our nation’s capital to cash a check. When the architects of our republic wrote the magnificent words of the Constitution and the Declaration of Independence, they were signing a promissory note to which every American was to fall heir. This note was a promise that all men, yes, black men as well as white men, would be guaranteed the “unalienable Rights” of “Life, Liberty and the pursuit of Happiness”… But, we refuse to believe that the bank of justice is bankrupt. We refuse to believe that there are insufficient funds in the great vaults of opportunity of this nation. And so, we’ve come to cash this check, a check that will give us upon demand the riches of freedom and the security of justice. We have also come to this hallowed spot to remind America of the fierce urgency of Now. This is no time to engage in the luxury of cooling off or to take the tranquilizing drug of gradualism. Now is the time to make real the promises of democracy… Now is the time to make justice a reality for all of God’s children.

Several advocacy groups were inspired by the Civil Rights Movement and parent organizations began to develop which included the United Cerebral Palsy Association, the Muscular Dystrophy Association.
and John F. Kennedy’s Panel on Mental Retardation (History of Special Education—The Grassroots Advocacy, 2009). Springing from the advocacy of these groups, the Congress passed PL (Public Law) 94-142 in November of 1975 which mandated federal funding for special education (History of Special Education—The Grassroots Advocacy, 2009). It took until 1977 for this legislation to become effective and became the foundation for federal special education legislation (History of Special Education—The Grassroots Advocacy, 2009). PL 94-142 was significant, because it required public schools to provide a free and appropriate public education to children with disabilities, and required schools to educate students with disabilities in the least restrictive environment. This law was expanded in 1983 to include parental supports at the state level, and in 1986, legislation provided for the needs of infants and preschoolers. The IDEA (Individuals with Disabilities Education Act) was identified as the new title of this legislation in 1990. Prior to this special education legislation, the future was uncertain for students with disabilities, because many children grew up in institutions that were thought to be the best alternative for the children and their families. Like the Civil Rights Movement, special education has made tremendous progress. However, there is still much research to be completed and many different discoveries to be made in order to truly serve children with disabilities in the United States.

Eunice Kennedy Shriver

There are those in the society who have the courage to stand and speak for those who do not have a voice. They are the people that use their opportunities to serve others and think of themselves later. These are the heroes of America. Eunice Kennedy Shriver is an American hero. Mrs. Shriver gave Naola Rubens the courage to decline to sign the paperwork that her pediatrician gave her after her daughter, Lori was born. Ms. Rubens had no conversation or discussion with this doctor, who asked her to legally sign her baby girl over to an institution that cared for children with Down’s syndrome (Anton, 2009). Eunice Kennedy Shriver supported other parents in the trenches in the 1960s who were choosing to face public opposition by raising their children with disabilities at home, rather than follow the cultural norm of institutionalizing “imbeciles or idiots” that occurred in society for the last 150 years (Anton, 2009). Since resources for parents of children with disabilities did not exist, Mrs. Shriver used her brother, John F. Kennedy, and his presidency to bring about much needed awareness to the humanity and educational needs of this group of people (Anton, 2009). John F. Kennedy had a sister, who had intellectual disabilities, and with that awareness, he responded to the claims of abuse and unfair treatment of people that were institutionalized (Anton, 2009). The phenomenal aspect of this darkness that the Kennedy’s brought to the limelight was that people with disabilities could become productive members of society with education and training, rather than being discarded as by-products of reproduction gone awry (Anton, 2009). Eunice Kennedy Shriver organized the first Special Olympics in Chicago at Soldier Field Stadium (Anton, 2009). She delivered the famous oration at the opening ceremonies, “Let me win. But if I cannot win, let me be brave in the attempt” (Anton, 2009). Her success in this endeavor gave the world an important message.

Eunice Kennedy Shriver gave a voice to the unspoken population in America through the very powerful system—athletics (Anton, 2009). Because of courage and a voice that could not be silenced, Lori Rubens became a special Olympian who participated in bowling, tennis, and track and field (Anton, 2009). Today, Lori, 48 years old, lives in a house with support and is enjoying retirement from her job at PARC (Pennsylvania Association for Retarded Children) (Anton, 2009). Dr. Brian Skotko, a board member of the
National Down Syndrome Society and a fellow in genetics at Children’s Hospital Boston, said, “We owe it all to Eunice Kennedy Shriver to continue to fight for the justice and acceptance that all people deserve whether or not you have a disability” (Anton, 2009). Like Dr. King, Eunice Kennedy Shriver provided a strong and courageous voice to people who could not speak for themselves. No longer accepting unacceptable behavior from social norms, Dr. King and Mrs. Shriver rowed through the torrential current of the 1960s, and successfully navigated that political and social period to secure equality for African American people and those with disabilities. As special educators, it is our job today to ensure that we have the same determination to serve our students and their families, as these American heroes certainly paved that highway of change and opportunity.

**Foundation for No Child Left Behind Legislation**

In 1965, President Lyndon Johnson signed the first legislation into law that attempted to bring equality to students that were from low-income families (Zipkin, 2009). The ESEA (Elementary and Secondary Education Act) was a predecessor to NCLB (No Child Left Behind) (Zipkin, 2009). President Johnson said (Robelen, 2005; as cited in Zipkin, 2009),

> By passing this bill, we bridge the gap between helplessness and hope for more than five million educationally deprived children. I believe deeply no law I have signed or will ever sign means more to the future of America.

NCLB had the same vision for education that all children would be served regardless of social status or geographic location. In an attempt to level the playing field, NCLB sought to aid underachieving students by the means of title one funding (Zipkin, 2009). Although ESEA or NCLB was not specifically designed to serve children with disabilities, this legislation has a tremendous impact on special education services and delivery models. In reality, this legislation brought much needed awareness to the field of special education, and the desperate needs that waited to be funded in order to serve the at population of students with disabilities. NCLB benefits students with disabilities by focusing on three areas that are assessments, accommodations and highly qualified teachers (Zipkin, 2009). Why is this significant to the preparation of future special educators? It is important to realize that education policy and methods are erected much like a building of wooden blocks. A construction crew does not simply build a model and begin implementation in the classroom. Education begins with a foundation, which is usually legislation, and then is researched one step at a time until the final model is implemented with a live student population. Special educators are professionals that must be able to acquire the knowledge of the past, in order to apply it to the present, while documenting ideas in order to research the future. Special education is a complex and professional career that is not for the weak at heart!

**Philosophical Perspectives**

In order to prepare special education teachers for the future, it is necessary to investigate philosophies that founded our current perspectives on learning. Our present fields of educational thought require sufficient questioning, because the focus is on today’s children with disabilities. However, education is based on philosophical approaches that help to shape ideals in the classroom and society. The first philosophy is idealism and was founded by Plato in about 400 B.C. (Cohen, 1999a). Simply put, idealism focuses on the fact that ideas are the “only true reality, the only thing worth knowing” and that our souls
are perfect at birth (Cohen, 1999a). Therefore, the role of education is merely to bring ideas to higher levels of an individual’s consciousness (Cohen, 1999b). Knowing that there is an eternal battle of the nature versus nurture debate in childhood development, Plato appears to be on the far end of the nature argument, and that will be a difficult theory to uphold on its own. With the many environmental factors which have been identified in the role of disabilities that can be prevented in children, this theory looks more like a nicely aged block of Swiss cheese than a sound educational philosophy. However, the teaching methods aligned with this way of thinking are valid and measurable in the classroom. Through lecture, discussion and questions that lead students to extended knowledge, idealism does have valid strengths in the classroom using these methods.

Realism is another educational philosophy. In realism, truth is what can be measured or observed. Aristotle founded this view and developed it as a result of sitting under Plato’s teachings. Obviously, Aristotle was not concerned about deviating from what he had been taught, and therefore, became the father of the scientific method. Significant factors of this educational style include: systematic instruction, mastery of facts, critical thinking skills and using of scientific skills, such as observation and experimentation (Cohen, 1999a). It is quite apparent that the field of special education should adhere to the realist philosophy, due to the very nature of using systematic instruction and scientific measures in order to measure progress and achieve knowledge.

In pragmatism (or experientialism), reality is not fixed and is constantly changing because, “The focus is on the reality of experience” (Cohen, 1999b). Therefore, our educational applications must always be re-focusing on issues as they arise in our presence. Without absolute truth or a moral center, it is difficult to determine “reality”, as it can easily differ from one individual to the next. Dewey (1859-1952) used pragmatist approaches in his learning strategies. His identification of different ethnic groups and their inherent value in a democratic society support special education values of today. Segments of multicultural groups are being falsely identified as needing special education, due to faulty screening processes, and gifted and talented students that are not being identified because of standard IQ (intelligent quotient) tests that are not accurately measuring ethnic groups. Since IQ testing is likely to remain as one popular source of identification in the future due to the accountability requirements of NCLB, special educators must eliminate biases that such testing may exacerbate (Role of Intelligence Testing in Society: Intelligence Testing in the Future, 2009). Furthermore, a slice of pragmatism could be the solution to the future of special education with respect to different cultural groups.

Existentialism was founded by Soren Kierkegaard (1813-1855) who was not only a philosopher, but also a minister. This method is inviting, because its focus is on the individual and the freedom that they inherently have to define themselves. The attractive part of this philosophy is that as individuals, we must take advantage of the responsibility that we must define who we are in relation to existence. Existence is a constant and remains before our creation (Cohen, 1999b). Another inviting factor about existentialism is that we do not have to accept other philosophies and are really expected to develop our own ways of thinking. There is an abundance of ways that this could apply to special education, but the main factor would be the creative license that can be used to develop an IEP (individualized educational plan) that truly serves an individual and their specific needs, in order to define the educational strategies that will help them transit into a successful adulthood. This respects the existential idea that we are creating “the development of authentic individuals, as we make meaning of our lives. Beginning with a student’s needs,
versus adhering to strict core content is the major problem with this idea, as it relates to NCLB. However, there must be a balance within these factors, as special education truly is an individual process.

The following educational philosophies focus more on what should be taught rather than the basis for which educational philosophies are founded upon. First is the Perennialism. This concept focuses on education through the history of the western civilization. According to Cohen (1999), “The focus is to teach ideas that are everlasting to seek enduring truths which are constant, not changing, as the natural and human worlds at their most essential level do not change”. Therefore, shaping the intellect is of the utmost importance when examining the value of an education. Essentialism basically is preparing students to “become valuable members of society” through methods that use a systematic approach. This philosophy can be directly applied to the recent IDEA (Individuals with Disabilities Education Act) focusing on transiting students with IEP’s into post-secondary careers and successful independent adult lives. Progressivism is a field of thought that focuses on the whole child without regard to any other factors in the classroom. A popular method that was used after World War II in Italy is called the Reggio Emilio philosophy. Reggio Emilio is basically allowing students to guide their learning with a complete focus on the students and their classroom interests. It also includes the idea that students will move onto the next subject of interest when they are ready. Lastly is the reconstructionism/critical theory philosophy. In a nutshell, this educational design had a world-wide focus that uses the educational model to use “teaching as banking”, in order to increase awareness of oppression by developing communication and critical thinking skills. Strategies of the social reconstructionists include: inquiry, dialogue, multiple perspectives and community/worldwide awareness which are a primary focus of learning within subject areas.

**Why Teach Special Education?**

Because of the stipulation of highly qualified teachers in NCLB, a significant shortage of special education teachers surfaced. Along with the fact that in all of the teachers across subject areas, only 10% teach special education (Information Avenue Archives, The Special Education Teacher, 1997-2000). Of these special education teachers, most are young females that have achieved a master’s degree in their field. Special education may see such a shortage in the field for many reasons. It is a teaching profession that has a large turnover, in that many teachers transfer into the regular classroom or leave teaching altogether in the first five years due to the demands of the profession (Information Avenue Archives, The Special Education Teacher, 1997-2000). Among the many challenges that special education teachers face, these are a few of the most intensive obstacles to overcome, and perhaps, which may explain the large turnover in the profession. And it is the isolation that special education teachers experience by working with a specific group of children with overwhelming individual needs in resource rooms. Oftentimes, these educators do not have the support of the school administration, which makes it tremendously difficult to gain the professional and financial support in order to provide the best services for their students. Meanwhile, IDEA mandates require students with disabilities to be served and educated in the least restrictive environment with legal repercussions. Therefore, special educators are stuck between a proverbial rock and a hard place trying to be the public relations director between administrations, parents and students, because special education has yet to be fully funded by the Congress, although current legislation clearly requires service delivery on many different levels. Another factor that is a strong deterrent to the field is the overwhelming amount of paperwork (Information Avenue Archives, The
Special Education Teacher, 1997-2000). Because of specific laws and IEP requirements, special educators must document progress for each individual student, which equals many hours outside of the classroom. Another challenge is the additional responsibility of overseeing paraprofessionals working with students with disabilities in their school.

However, special education professionals teach students with disabilities, because they love what they do every day. Inside each child is a gift that requires a creative and unique service delivery method to unlock in order to give them the extensive possibilities of their future. Like the exceptional students they teach, special education teachers are exceptional people. Aside from being creative, goal-oriented and flexible, special educators must also have tremendous interpersonal communication skills in order to balance all members of an IEP team to focus on the best interest of the student. The ultimate goal is the child. The greatest concept that we can teach is “hope, love and most important, belief in themselves” (Information Avenue Archives, The Special Education Teacher, 1997-2000). Choosing this field for any other reason is a grave error and may explain the high turnover in the field of special education.

Alternative Education Programs

One of the answers to the shortage of special education teachers is alternative special education degree programs that primarily pull candidates from the military, or from mid-life career changes (Ackerman, Jaeger, & Smith, 2002). Concern has been expressed over the quality of teachers that have been produced through these programs. The quality of graduates of alternative programs when compared to those of traditional programs is directly linked to the duration and quality of graduates’ education in the alternative programs. Therefore, it is very simple to assess that quick training programs are not going to produce quality special education teachers that will effectively prepare students with disabilities for the future. Finally, there is a great concern for scientifically proven methods in teaching and what is actually happening in classrooms across America. The knowledge is available, in fact, that is what has brought this issue to the forefront. However, until state legislatures enforce professional development effectively, this unfortunate issue may not change (Ackerman et al., 2002). With the high amount of special education teachers coming from alternative certification programs, professional development may be the key that keeps these educators on the brink of new knowledge. Combined with “limited research in general education and no research in special education delineating the characteristics of preparation programs that enable novice teachers to master and apply research-based practices in the classroom”, special education is behind the eight ball (Ackerman et al., 2002). It is frustrating that Congress has set these high-standards of achievement without funding or mandating necessary training for its special education teachers. It really seems to perpetuate the problem of special education by expecting individuals to do too much with too little. Something has got to give or this cycle will not change!

Present Day Concerns

Without identifying the concerns of today, we cannot create the solutions of the future! A survey in California found that thousands of teachers quit the profession out of despair because as one educator described himself being “set up to fail” (Asimov & Erman, 2007). Mr. Lammers, former Marion County, in California and also a teacher of the year stated, “Too many kids, and not enough time to feel, I was accomplishing strong academics. To me, the system is almost set up to fail” (Asimov & Erman, 2007). Lammers also pointed out that
he worked in an affluent school district and that children’s needs were not always addressed at home (Asimov & Erman, 2007). He pointed out that the rising incidence of children coming to school without any parental support and the expectations of teachers to provide for all of their needs just became overwhelming (Asimov & Erman, 2007). Exhausted from working evenings, weekends and holidays, Lammers left the field of education to become a writer (Asimov & Erman, 2007). In another instance, Sherry Jacobs, a special education teacher for children with emotional and cognitive disabilities, worked in a school where the principal refused to bring in necessary supportive services to help an emotionally disturbed boy (Asimov & Erman, 2007). Even though Ms. Jacobs “went over the principal’s head”, she and the student suffered burns after the student became enraged in the classroom one day, because the principal did not want any outside intervention in the building (Asimov & Erman, 2007). This is a prime example of too little too late when teachers have to fight for the rights of their exceptional students. Ms. Jacobs was clear that it was not the student’s fault, but the lack of cooperation and collaboration to meet his needs (Asimov & Erman, 2007). Fortunately, she did not leave the profession, although she did gain employment with another school district (Asimov & Erman, 2007). The following six recommendations were found in the study, “A possible dream: Retaining California teachers so all students can learn”:

1. School administrators should continuously assess teaching conditions;
2. California should increase education funding to at least adequate levels;
3. Introducing administrative policies that support teachers’ instructional needs;
4. Principals should focus on “high-quality teaching and learning conditions”;
5. The state should establish standards for teaching and learning conditions;
6. Administrators should address specific challenges in retaining special education teachers (Asimov & Erman, 2007).

As we look to the future preparing special education teachers in America, everyone faces the critical issue of how to train and keep good teachers in classrooms! The next generation is depending on us!

Another concern in a successful future for special education teachers is where students should learn? There is disagreement between groups of special educators as to where children with disabilities should be educated. At the core of this least restrictive environment issue is the idea of collaboration or co-teaching. Aside from the time factors, personality differences and philosophical differences that would need to be navigated in a true co-teaching setting, training teachers to effectively utilize this core concept is necessary for success (Successful Teaching, 2008). One of the greatest challenges to foster this co-teaching relationship may be in the fact that general education teachers will have to learn to accommodate students with disabilities in their classrooms, when many of them may not prefer not to learn that task with everything else on their classroom “plate” (Successful Teaching, 2008).

A real factor in special education is that many parents, especially in New York City, are unaware of the rights of their children that need special education (Greene, 2009). Unfortunately, this result in inner-city schools is coming up short on their responsibilities to provide a FAPE (Free and Appropriate Public Education) to disabled students, due to the teacher shortage being the most pronounced in rural and impoverished school systems (Greene, 2009). The most tragic result is that in New York in school years of 2006-2007, two-thirds of students with disabilities had to wait at least 60 days to enter a school that would serve them appropriately (Greene, 2009). New York schools got away with this failure to deliver services, because punitive damages are not awarded in special education cases and the worst possible result to a
district would be providing services that are legally required in the first place (Greene, 2009). The solution to this is parental involvement. However, disabilities beget disabilities and not all parents are equipped to navigate the red tape of the legal system, if they are even aware of their children’s rights. Furthermore, since students have a federal right to a FAPE and if adequate services are not being met in a public school, New Yorkers can go to court and demand a publicly funded spot in a private institution (Greene, 2009). Unfortunately, only children from affluent families are aware of this option (Greene, 2009). Future special education teachers must be prepared to “teach” parents as well as their children, so these students will receive the education that they deserve. Not only are we educators, we are also advocates of the students. Therefore, it is our job to ensure that their IEP goals serve students with diverse disabilities to the best of our ability. Another important part of teaching advocacy is demonstrating and assuring our students that they can be self-advocates. Empowering them to recruit teacher attention in the classroom is a great way to begin this beneficial and essential life-long skill. Self-advocacy is an essential part of transition into adulthood, whether we have disabilities or not. We must learn how to find our voice and use it appropriately in order to take care of ourselves.

Diversity

Along the same lines of poverty and rural areas, we encounter the need to encompass diversity in special education. “In 1983, the shortage of special educators was highlighted in A Nation at Risk. It is still with us 25 years later and shows no signs of disappearing, and in the coming decades, it could well worsen” (A Nation at risk: The teacher shortage in special education, 2008). Although this research reiterated the need for special educators, the grave absence of teacher diversity in the field must be addressed, because African American and Hispanic male students are overrepresented in the special education population (A Nation at risk: The teacher shortage in special education, 2008). Since America is a true “melting pot” of cultural ideals and social mores, it is essential that we expand diversity in classroom teachers, because individuals of varying cultures are role models to students and can reflect the accomplishments that they can achieve! Because of this cyclical issue, finding qualified special education teachers that reflect diverse backgrounds is very challenging. Therefore, the educators of today must afford our students with every possible opportunity to reach for post-secondary education in order to break a cycle and create these educators in the future!

Another essential factor in diversity is how districts will serve Latino students. Since Latino families represent the fastest growing part of the American population and are the largest minority group at present, the future is unclear as to how well they will reap the rewards of the “American Dream” of immigrants of the past (Noguera, 2006). Due to the fact that Latino youth often miss extended periods of time trying to maintain familial relationships between Mexico and the United States, some schools have modified their schedules in order to accommodate this population, so that students do not fall behind in their class work (Noguera, 2006). Since these families view family and school as separate entities, employing special education teachers with knowledge of the culture and values certainly will assist in bridging that gap, so that the ultimate benefit falls upon the child (Noguera, 2006). Latino youth are highly represented in special education placements, although they are polite and respectful to adults, and not many Latino children are described as studious (Noguera, 2006). Perhaps, that is due to the fact that their culture remains intact, while other groups that have migrated to the U.S. eagerly adopted traditional American culture in order to blend in with the norm (Noguera, 2009). Nougera
Theoretically at least, education should serve as a means out of poverty. As it has for other groups in the past, education should be the source of opportunity and a pathway to a better life. Unfortunately, more often than not, schools that serve Latino immigrant youth fail to become vehicles through which their dreams and aspirations can be fulfilled. Too many are trapped in the worst schools and are treated as though their inability to speak fluent English was a sign of cognitive and cultural deficit.

What will it take for education to serve Latin youth and become a genuine resource for Latino immigrants? How can educators help students to make the transition to a new society less painful, particularly for those who lack family support? How can we make sure that the needs of Latino immigrant students are not ignored, because their parents lack the power and voice to make their needs heard?

The challenge lies before us to create bridges of opportunities that reach from the islands of different cultures to the mainstream of America, that do not require families to give up their own heritage in order to climb out of poverty and pursue the American dream that each of us deserve.

Hope for the Future of Special Education

Margaret Mead said, “We are now at a point where we must educate our children in what no one knew yesterday and prepare our schools for what no one knows yet” (Villa, 2000, p. 2). Education has forged the river of inventions, technology and diversity, yet still remains with the same challenge that we found in the one room schoolhouses of yesteryear (Villa, 2000). This present factor is to serve the students with all of their needs today with the pressures of legislation, the challenges of society and the ever-present hope of their success for the future! Is this a one size which fits all approach? Absolutely not! Due to technology, children are more aware than ever about world culture. Why cannot we connect that same cultural awareness with content so as to develop students’ relevance that teaches them to be independent, caring citizens of the United States? The educational philosophies that were discussed earlier in this review lend themselves to the thinkers that created their awareness. These education frontrunners, such as Maria Montessori, Paolo Freire, and John Dewey, have left us powerful examples of teaching models that still are effective today in classrooms (Villa, 2000). Like a successful democracy, schools should be known for their desire to foster collaboration and co-teaching strategies rather than being satisfied with meeting standards (Villa, 2000). Villa (2000, p. 28) made a great point in his speech when he asked, “Where is the disability. Is it in the student or is it in the system that we have created and maintained?” This is where visionaries reflect on the past in order to secure the future. Isn’t that the main reason that we study American and world history? So must it be with the field of special education. Klopf stated, “Whatever is, is possible” (Villa, 2000, p. 34). It is time for action, and it begins with today’s special educators.

Effective Teacher Programs

Since there is little research on special education and increasingly higher demands from the Congress in the field, the time has come for action. Since we are unable to use data from special education, Brownell, Ross, Colon, and McCallum (2005) suggested using findings from previous studies in general education areas. This is fine in theory, however, due to the teacher shortage and NCLB mandates; the alternative teaching certificate degrees have no basis in which to measure the quality of the degree candidates that are being presented to the special education profession (Brownell et al., 2005). Two studies were implemented at two different institutions...
that modeled an excellence in teaching and seven similar models were found in both studies (Brownell et al., 2005). The seven features of the conclusive ideas of the AACTE (American Association of Colleges for Teacher Education) and IRA (individual retirement account) studies are:

1. Coherent program vision;
2. Conscious blending of theory, disciplinary knowledge and subject-specific pedagogical knowledge and practice;
3. Carefully crafted field experiences;
4. Standards for quality teaching;
5. Active pedagogy;
6. Focus on meeting the needs of a diverse student population;
7. Collaboration as a vehicle for building professional community (Brownell et al., 2005, p. 10).

Conversely, this research team went to great lengths to investigate a model that could be applied to special education. The conclusions that they observed within this model are as follows (Please keep in mind that their research was obtained using keywords in searches in professional journals, and that a variety of research objectives were written for other studies’. Therefore, some important details could have been omitted (Brownell et al., 2005)). The five findings were as follows:

1. Crafting extensive field experience;
2. Working together/collaboration;
3. Evaluating the impact of the teacher education program;
4. Focusing on inclusion and cultural diversity;
5. Maintaining a positivist or constructivist orientation towards teacher knowledge (Brownell et al., 2005, pp. 19-23).

The findings were interesting when compared and found the following:

In both fields, teacher education is labor intensive, carefully crafted, focused on connecting theory and practice, collaborative, and invested in creating teachers who can respond to the needs of children and youth, particularly those with diverse needs. (Brownell et al., 2005, p. 24)

Another sound factor in this study was that philosophies differed greatly in the field of special education versus the general education studies (Brownell et al., 2005). Perhaps, it may be useful to embrace the segments of educational philosophies that serve our students on an individual basis to create the successful individual. In short, take what you like and leave the rest in order to form your own model to serve the individual child. With so many alternative education routes to certification, much more research is necessary in the field of special education in order to ensure that students with disabilities receive the fully-inclusive education that they deserve.

A System of Checks and Balances: The American Way

America was founded on a system of checks and balances in order to control the balance of power within our central government. This system of checks and balances is as American as it can get! In our society, there is another system of checks and balances that are law, medicine and education (Kauffman, 2007). In this article, two questions were addressed in assessing the core issues and the problems in special education, as it pertains to the future. One is conferred by evidence-based instruction and the other relies on
the protection afforded by the legal system (Kauffman, 2007). What this boils down to is the question of whether the legal system or the medical system will solve the problems that are the here and now of special education. Interestingly enough, in our society, the law generally plays the role of the enforcer that hands out the negative consequences for a harmful action. Another common factor is that the wheels of justice spin slowly in our culture. In special education, there are no penalties other than services that should have been provided to a student in the first place (Kauffman, 2007). So in reality, there are no real penalties. There are only parents and advocacy groups that are watchdogs for the rights of people with disabilities. Therefore, the law merely chases the infractions and attempts to enforce the laws that are written. The medical field is a profession of healing, prevention and health. When a “patient” is ill, doctors run tests to determine the cause of the ailment, so that it can be treated and cured. Not only does the medical field respond, but it does so immediately, because often, these are matters of life and death. It is not being suggested that special education completely align with the medical field, because students with disabilities are not always sick, and therefore, do not always need medical care. What these people all need is the right to a free and appropriate education and full inclusion. But, the system of checks and balances between these three fields: education, law and medicine, has become out of balance. Special education has aligned more closely with the field of law and relativist thinking and we are in trouble (Kauffman, 2007). Education, like medicine, would do well to be guided in practice by scientific evidence (Mostert et al., 2008; as cited in Kauffman, 2007). With the balance of the legal system that can provide some “teeth” to this model, special education would fare much better in training and retaining teachers for the future.

What Now?

“Awareness is half the level of change” (Zaring, 2009). If we are really going to prepare and retain quality special education teachers, then diversity, accommodation, collaboration and parental involvement will be the highway that will bring us to our destination. As long as teachers want special education students out of their classrooms, education will make no progress, because it is so difficult to teach in such compartmentalized conditions. Nurturing general education teachers is a key factor and using differentiated instruction methods in order to expand knowledge and awareness. A child is not going to be successful in a classroom until a teacher buys into them. Therefore, it is their job as special educators to mentor that relationship so that full inclusion can become a reality (Zaring, 2009). Building bridges with general education teachers does not require an engineering degree. With four simple steps, a special educator can bridge that gap. These are as follows:

(1) Acknowledging the general education teacher’s feelings of frustration;
(2) Acceptance;
(3) Looking down the road for them;
(4) Reminding them it is just this year.

With the slogan of progress not perfection and serving the children we have today, special educators can collaborate with general education teachers. Using schedules that encourage educators to work together, co-planning time and clearly defined roles in the classroom, collaboration can become a successful reality (Tollefson, 2009).

Responsible Inclusion

There has been great debate over the years about the inclusion model and special educators and parents
that sway back and forth with opinions like willow trees in thunderstorms. Rather than having a straight line model of inclusion, why not view education as a unified process where a team approach is used? In this unified condition, general and special educators work together towards the same goal which is serving the child with disabilities (Tollefson, 2009). Can you imagine the ultimate outcome? Transition issues flow from one classroom to another and give students new opportunities to become successful members of their respective communities!

**Responsiveness to Intervention**

The old “wait to fail model” is perhaps one of the greatest crises in modern special education (SCOPE—Newsletter of the Washington State Association of School Psychologists, 2004). Responsiveness to intervention is a model that assesses all students on a three-tiered model to ensure that all students can learn and are provided the necessary services. One of the few concerns about this design is that, if less students are referred to special education and resources and staffing decrease, how would this impact the population currently being served? (SCOPE—Newsletter of the Washington State Association of School Psychologists, 2004). However, some of the results found in this study were that staff had more time to discover prevention, and all grades were making progress in achieving their goals in reading/oral reading fluency (SCOPE—Newsletter of the Washington State Association of School Psychologists, 2004). Zaring (2009) believed that responsiveness to intervention was the key, because students were evaluated and placed more accurately. In the Eminence Independent School District in Kentucky where Margie Zaring is the district-wide early intervention specialist, she has seen a trend of identifying less LD (learning disabled) students. Where early intervention is essential, responsiveness to intervention is the cure!

**Transition Services in Special Education**

One of the most frustrating parts of special education is the low percentages of young adults that transit from special education into their communities as a participating member. A solution to this concern is using an 11-step strategy that is aligned with a student’s IEP that focus on the student’s participation (Kohler & Field, 2003). Eleanor Roosevelt said, “The future belongs to those who have a dream” (find quote). The “take charge for the future intervention model resulted in significant increases in the level of student involvement in transition planning activities and meetings, empowerment and transition awareness” (Kohler & Field, 2003, p. 17). Furthermore, another study has been identified as being successful in helping to define a student’s sense of self-determination.

The use of the steps to self-determination, an experimental curriculum consisting of five major components (know yourself, value yourself, plan, act, experience outcomes, and learn) resulted in significant increases in behaviors considered correlated to self-determination (Kohler & Field, 2003, p. 21). Two other models were also found to significantly increase student success and autonomy was the self-determined learning model of instruction (Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000), and the next step curriculum (Kohler & Field, 2003). It is clearly evident that student involvement is directly related to their personal success!

**Conclusions**

Special education teachers are exceptional people that teach exceptional students. While we wear many
hats and perform a wide variety of job roles within our profession, it is essential to realize that the most important factor in our jobs is the individuals that we serve. It is essential that these students are seen as people first and then identified educationally by their specific learning needs. There are various philosophies and program models for us to choose and models and the type of teacher that we will be, when the classroom door closes. Let us research them and know not only who we are, but how we will implement them in our own classrooms. Just as each individual is unique, so each IEP should be designed as such. Tony Coechlo, chair of the President’s Committee on Employment of People with Disabilities, opened a national conference with the following:

"We want everything were entitled to as citizens, nothing more, but nothing less. We want the privileges of full citizenship, but we also welcome its responsibilities. We want the respect we deserve and we demand the rights we have been denied. We now recognize that empowerment is not a gift to be given, but a right to be demanded. (Cone, 1994, p. 145; as cited in Heward, 2009, p. 596)"

The most important part of preparing teachers for special education in America is that a reflection is to be inspiring! Make your enthusiasm for learning contagious! Be sure that what you are offering to your students would be enough, if it was the way your own children were being taught and treated.

References

A nation at risk: The teacher shortage in special education: A shortage of special education teachers existed in 1983, and the problem persists today. The authors emphasize that there is a pressing need not only to recruit and retain qualified special education teachers but also to diversify the special education teaching force. (2008). Retrieved from http://goliath.ecnext.com/coms2/gi_0199-7766876/A-field-at-risk-the.html


Zaring, M. (2009, August ). *Personal communication with the Mayor of Eminence.* Ky

The Comparative Research on Sex Education for Adolescents of China and the US

Zhou Yu-feng
Chongqing Medical University, Chongqing, China

Sex education refers to people’s comprehension about sex, which involves not only sexual structure (anatomy, physiology, birth control, pregnancy, etc.), but also sexual relationships concerning human and moral problems. It includes at least sexual physiology, sexual psychology, sexual ethic, sexual law, etc., which aims to help people form the attitude and behavior that both society and morality can accept. So, it is a kind of long-term education for a person. For limited length, this paper only studies adolescents’ (mainly students in primary and middle schools) sex education in China and the US (the United States). Due to the restriction of traditional thoughts, sex education on adolescents has been developing so slowly that it turns into the weak point of basic education and results in the growth of adolescents’ sexual ignorance, sexual faults and sexual crimes. America is one of the earliest countries that launch sex education in the world and it has plenty of academic as well as practical experience we can study and learn from.

Keywords: China and the US (the United States), adolescents, sex education, comparison

Research Background

Human society is constituted by male and female, so sex has great significance for human beings. However, for a relatively period, China has a deep misunderstanding of sex and sex education duo to the shackles of feudal ideology, which has resulted in shaping the psychology of sex obscenity and sex taboo. All sorts of social problems are resulted from the deficiency of sex education, such as adolescent sexual confusion, sexual ignorance, sexual errors, sex crime, teenage pregnancy, abortion, premarital sex and the spread of sexual diseases and AIDS (Acquired Immune Deficiency Syndrome). This phenomenon has a serious influence on physical and mental health of adolescents, family happiness, social stability as well as economic development.

More seriously, the deficiency of sex education also makes a number of young people commit crimes. According to the survey of a reformatory school in Xicheng District of Beijing, among 411 junior school students, there are 110 students who commit sexual crimes, accounting for 1/4 of the total percentage. And among the 110 juvenile delinquents, the proportion of girls is up to 90%. In addition, according to a juvenile justice survey in Beijing, among 1,200 juvenile delinquents, sex crimes actually accounted for 57%. From the above data, it can be seen that sex education has great significance for young people and cannot be neglected any more.

Through the research of American sex education for adolescents, it can be found that the idea of “sex
freedom” and “sex liberation” which was very popular in America in the 1960s and 1970s has been abandoned now. Instead, they favor “sexual purity education”, abstinence and moral self-discipline. Nevertheless, the abandoned concept of “sex freedom” and “sex liberation” has been prevailing among young people in our country, which leads to great worry and anxiety.

Adolescence is a very critical period of a person. Sex education will greatly affect the physical and mental development as well as social adaptability of young people. So, we cannot evade the problems any longer and it is time to face them with courage and wisdom. It is fairly urgent to explore the pattern of Chinese sex education by learning both successful and unsuccessful lessons from US for the social stability and teenage health.

**Definition: Sex and Sex Education**

Sex is a kind of system of whole existence. Human sexual instinct is restricted by social existence and human emotions. From this sense of understanding, sex and sexual behavior is a kind of special social behavior and mentality, so it is unthinkable, if there are no special preparation and learning. Therefore, sex education has become an indispensable part of socialization of human individuals.

From the point of educational objects, sex education aims to educating young adolescents. From the point of educational contents, sex education is not just physical health education and it also includes more aspects which have to involve the adaptation between social development and students’ reality. From the point of educational methods, sex education need to be carried out by families, schools and communities.

**Research Significance, Purpose and Methods**

**Research significance.** It is known that sex education is a blind spot in China’s basic education. Many social problems are caused due to the lack of sex education, which has gradually aroused people’s attention. Since the reform and opening up, a group of educational theory and practice scholars have launched a series of researches and activities. Those researches have filled the gap both on theory and practice in this field in our country and laid the foundation for the further development. However, there are still some shortcomings, especially compared with American sex education.

America is one of the earliest countries in the world that start sex education, who has plenty of practical experience as well as some painful lessons. But, its current system of sex education is relatively complete and its theory and practice on sex education play a leading role in the world. Therefore, it has both theoretical and practical significance to study American sex education. Chinese scholars have done a lot on both theory and practice of sex education, which has greatly promoted the development of adolescents’ sex education in China. Nevertheless, there are few researches on sex education in Sino-American schools, especially sex education outside schools. Thus, the author thinks that it is fairly significant to study adolescents’ sex education in America and make a comparison with adolescents’ sex education in China.

**Research purpose.** Through the way of generalizing and analyzing, this paper aims to have a good command of development of theory and practice on contemporary American teenage sex education. Besides, it makes comparisons with teenage sex education in our country. In this way, the deficiency of Chinese sex education can be covered.

By summarizing the experience and lessons of American teenage sex education, we will have a good understanding and reflection on the problems and situations Chinese sex education faced, which can provide some references and enlightenments for our country to improve adolescents’ sex education system.

It is very helpful to study the theory and practice of the American teenage sex education. Such study will
help us to enrich the theory of juvenile sex education and establish the adolescent education viewpoints with national character and sense of the times. Furthermore, this kind of concept will guide us to improve the practice of teenage sex education in our country.

**Research methods.** This paper adopts the usual methods used in comparative education, such as comparison method, factor analysis method, literature research method and historical method. Through literature study and historical method, we can get a preliminary understanding on the existing research results. At the same time, we will have a more thorough analysis by the way of comparison and factor analysis methods. Besides, definition, statistics and other research methods will be applied during the process of analysis, summary and induction.

**The Development Process of Adolescents’ Sex Education in China and the US**

**The Development Process of Adolescents’ Sex Education in China**

To the sex education in China’s feudal society, the famous physician Professor Wu Jie-ping (1988, p. 35.) said:

There is no shortage of sex education in Chinese history, but that is a kind of feudal and harmful sex education, which makes constraints on people’s desires by sex blockade and sexual repression. It has denied that the instinct of human beings has been modified in the process of in the social and cultural development in the history.

As for sex education, as a subject in modern field of education, its development process can be divided into the following three steps.

**The stage of “Enlightenment of Modern Sex Education” (early 20th century).** In the early 20th century, especially during the May Fourth period, domestic intellectuals called for “urgent plans for sex education and development”. Very remarkably, it is the first time to have a trend of “sex education” in ideological and cultural history fields. At that time, intellectuals thought that sex education included sexual desires and sex instincts, the relationship between sexual desires and emotions. In addition, it also covered the hazards caused by excessive sexual desires and non-moral sex. The way of sex education is implemented through schools.

**The stage of the “Confinement Phase of Modern Sex Education” (the founding of new China in 1949 to the end of the “Cultural Revolution” in 1976).** At the beginning of the liberation, class struggle is still our primary task, and we are still actively preparing for the War to Resist US Aggression and Aid Korea, so school education did not give enough emphasis on sex education. Owing to the interference of the “cultural revolution”, “sex education” still did not have a breakthrough, which has become a blind spot in Chinese culture. For the sex education in this period, some scholars have proposed some suggestions. However, sex education for youngsters has been criticized and resisted by people. So such extreme conservative ideas of sex education have caused schools, families and society of this period lack of basic concept about sex education.

**The stage of “Rise and Development of Modern Education” (since 1977).** After the “cultural revolution”, especially after the reform and opening up, China’s sex education research and practice was gradually concerned and became flourished. In the end of 1979, the Ministry of Education and Ministry of Health jointly issued “The Interim Provisions of health work in primary and secondary schools”, proposing to strengthen adolescent health education. After the mid-1980s, sex education has begun to attract the attention of
the administrative departments of some cities. Besides, some organized and planned experiments on sex education have been gradually made. In 1988, China’s sex education got a qualitative leap that the state education administrative departments began to attach importance to this field. The State Board of Education and the State Family Planning Commission jointly issued “A Notice for Adolescent Education in Secondary Schools”. In 1991, the State Board of Education decided to carry out a comprehensive puberty education in junior high schools. So far, China’s sex education has entered a new stage.

**The Development Process of Adolescents’ Sex Education in the US**

The US is one of the first countries that start sex education. Since 1892, Alan Watt published the first American sex works *The True Teachings*, American sex education has experienced a gradual expansion on both scope and content, especially in 20th century. The development process of US teenage sex education can be divided into the following three stages.

**The stage of abstinence education (from the founding of the US to the 1950s).** During this period, sex education mainly focuses on the problems of sexually transmitted diseases and illegitimate children, in other words, it aims to solve the problems caused by the confusion of sexual behavior. It has many characteristics. First, the theme of sex education is to against sex. Secondly, the purpose of education is not to encourage sexual behavior and sexual thoughts, but stress ethical sex education. Thirdly, the task of sex education is to persuade students to study hard and restrain the sexual desire. Finally, sex education is carried out mainly at home and communities, schools and churches play a weak role. Due to the research of sex is at the starting point, so people are lack of a scientific and proper understanding of sexual education. Thus, there are some limitations on the scopes, contents and objects of sex education, which results in a relatively low popularity rate of sex education.

**The stage without guidance (from 1960s to early 1980s).** During this period, the US teenage sex education has developed rapidly from a passive role to initiative. It has formed a relatively complete sex education system by the end of 1970s. It primarily shows in these aspects: They established implementation and research institutions for sex education, such as The USA Sex Knowledge and Sex Education Council, established in 1964 and the American Sex Educators and Counselors Association, established in 1969; They set up a teaching system for the cultivation of sex education; They systematically and scientifically compiled textbooks and reference books on sex education; and They formed a relatively complete way and method for sex education.

**The stage of pure sex education (since late 1980s).** “Pure sex education” emphasizes giving students correct knowledge on sex, aiming to make students keep physical and mental purity, as well as maintain social and moral order. Besides, it helps students know the value of pure sex lying on the free intercourse and advocate teenagers learn to respect each other sexually and learn to self-control and self-protect. The essence of this sex education is sexual morality, whose purpose is to teach people respect each other in sexual activities and use rational constraints instead of sex instinct. And both men and women need to keep chastity, and more for the chastity of the soul.

**The Comparison of the Development Process of Adolescents’ Sex Education in China and the US**

Throughout the development history of Sino-American sex education, it can be found that there are some similarities, connections and differences between them.
The Similarity

At first, the development stage of adolescents’ sex education between China and America is very similar. From the time division, the two countries’ sex education can be divided into three stages, that is, sex education in the early 20th century, from 1960s to 1970s and late in 1980s. Apart from the two extremes of sex education in 1960s to 1970s, the contents and trends of the other two stages have much in common.

The early sex education in both China and the US is a little closed and conservative. During this period, sex is a taboo subject which is under the control of asceticism. So the purpose of sex education is not to encourage sexual activities and ideas. Under this circumstance, sex and morality are closely linked.

In early 20th century, sex education in junior middle schools in both America and China has developed rapidly. Moreover, the social background of the two countries is fairly similar. By the end of late 19th century and early 20th century, the scientific and technologic changes caused by western industrial revolution have greatly promoted the rapid development of economy, changed the living styles and liberated people’s concepts including sex ideas.

Since the 1980s, sex education in China and the US has a considerable development, especially in China, who has gradually broke through the sexual taboo and come to the track of scientific education. Both of them have realized the importance of sex education. Though there are some differences between specific contents and implementation methods, they make an agreement in the core of sex education centered on morality.

Furthermore, there are some similarities in the development rules and trends of sex education in history. The sex education in China and the US experienced the periods of sexual taboo and sexual freedom. Since then, they paid more attention to cultivate noble sexual morality and set up correct sexual values. So, the two countries aim to develop good character in the future sex education.

Finally, there are also some similar points in contents and methods of sex education. From the point of a historical view, it can be found that the contents of sex education came from the original pure physiological knowledge, and gradually developed into a system including physiological, psychological and sexual ethics and other aspects of sex knowledge. The path of sex education is also from a single implementation by families to the present development of families, schools and society implemented cooperatively.

The Connections

There is an interactive relationship between Sino-American sex educations. During the process of sex education development, the two countries have learned from and influenced each other. For example, at the beginning of the 20th century, the concept of sex education in America was introduced into China, which attracted the attention of Chinese intelligentsia. Since the 1980s, the US had realized the failure of previous sex education and noticed the value of traditional domestic ethics that play an important role in sex education. Besides, China’s traditional culture has been concerned by the US. The “pure sex education” that was launched in 1990s is based on morality.

The Differences

Because of the different political system, cultural background, customs and habits, Sino-America have large differences in sex education. The major difference lies in the concept of sex education. Although the implementation of sex education in China is earlier than America, the developing speed is slower. It is shown that the differences between cultures mainly result in large differences on sex education. The US did not experience the feudal society, so it is not bounded by feudal ideology. At the beginning of the founding of the
US, Americans advocate freedom, democracy, equality, individualism and pragmatism, but oppose authority. They suppose that sex education can solve conflicts and social problems, so they strongly support sex education. However, China has experienced a long period of feudal society and traditional Confucian culture has taken root in people’s hearts. Chinese traditional culture which is represented by Confucianism attached great importance to moral education. Due to the limitation of social and historical conditions, the emphasis on moral standard and goals went to an extreme.

The Comparison of China and the US Sex Education for Adolescents in School

The school is the primary way for the implementation of adolescents’ sex education. Due to different cultural traditions and concepts, Sino-American sex education in schools also reflects the different characteristics.

The Standards of Sex Education in School

Many Sino-American scholars have discussed the standards of sex education in schools. American scholars tend to assume that sex is innate, natural and spontaneous and menstruation, and sexual intercourse is the symbol of mature. Thus, they respect individual sex and indulge students’ sex behaviors.

Chinese scholars argue that sex is social and it is formed by education in social environment. A person’s sex proved to be mature only conforms to social norms and ethical standards. Therefore, Chinese people are used to putting adolescents’ sex problems and their moral characters together.

But now, Sino-American scholars reach a consensus about sex education standards. They hole the view that sex is both biological and social, nature and nurture, and the mature of sex needs to consider biological and social factors comprehensively.

The Goals of Sex Education in School

According to the respective needs of China and the US, there are three fundamental purposes for sex education in schools. Firstly, it aims to promote the health development of students’ physical and psychological mentality. Secondly, it aims to give a promotion of human benign evolution and progress. Thirdly, it aims to promote social stability, maintain national moral codes and keep social order.

The Contents of Sex Education in School

Both the contents of sex education in China and the US include physiological, psychological knowledge, sexual ethics (sexual values), the marriage, family life and other aspects. But there are big differences in specific contents and depth of the same knowledge.

The most basic contents of American sex education are to teach a large number of physiological knowledge. At present, China is focused more on mental health of adolescence, including adolescent emotion regulation, personality and interpersonal relationships. These aspects range from the fifth or sixth grades to high school. But, sexual intercourse and contraceptive knowledge is not taught, so the content is relatively simple.

The US ever emphasizes on the neutrality of sex education values, which caused teenage pregnancy and many other malignant social problems. China has always advocated a kind of value orientation of sexual morality, so sex education problems are much less than the US.

In aspects of marriage and family life education, the US generally has a high frequency of family disintegration, and thus, universal marriage and family life became an important part of sex education. In China,
The problems of divorce and single parents have increased in recent years, but marriage and family life play a small role in sex education in primary and secondary schools, which needs to be aroused people’s attention.

**The Teachers of Sex Education in School**

At present, China’s colleges and universities do not set specialized departments or majors for sex study. In the face of the rapid rise of sex education, many schools make biology, gym, political teachers or the school doctors to teach students sex knowledge. Sex education involves human anatomy, physiology, psychology, ethics and sociology knowledge, so part-time teachers are not competent, because they lack of professional qualities. The US applies two ways to choose and train sex education teachers. First, they must have a healthy motivation and actively involve in this work. Second, they need to be qualified and establish a harmonious and honest relationship between teachers and students. In China, there are no such requirements and some universities only have a study group or optional course about sex education.

**The Comparison of China and the US Sex Education for Adolescents Outside School**

**The Comparison of Family Sex Education**

**The proportion of getting education from parents.** According to Durex’s global sex survey report in 2000, American sex education mainly comes from families (accounting for 30), among them, the sex knowledge of 22% people is from their mothers and 8% people’s are from their fathers. The proportion which China’s primary and secondary school students get sex education from their parents is very low. Girls account for about 5% and boys for 1% -2%. Compared with China, American sex education for adolescents seems to be more open. The study showed that 38% of high school students in the US would like to discuss with their parents about sex, 65% of parents and children talk about sexual issues with natural feelings. Another study found that 94% of parents and children talked about the issues, and more than half of parents and children talked about puberty, sex and reproduction, AIDS and homosexuality. US sex education and research institutions survey also found that 59% of 10 to 12 year-old teenagers said that their parents talked with them about the nature of knowledge, 90% of households thought teenagers in high schools should have a sex education curriculum. While many Chinese parents and children are ashamed to talk about “sex” and they are afraid of “sex”. Even though some parents talk with their children a few words about sex, it is always limited to the physiological health knowledge and contacts with the opposite sex problems. It seems that American parents have a better understanding of the importance of sex education than Chinese parents and they also want to provide young people with comprehensive knowledge.

**The attitude of the parents on family sex education.** Generally, most Chinese parents fear to talk about sex. But in the American family, sex is a relaxed topic. Chinese family education is relatively closed. According to a survey, many parents never give sex education to their children. When the curious children ask them, the parents always change the topic and give a deceptive answer to children. As children ask their parents “Where did I come from?”. Parents answered, “You are picked up from the outside”; or “You grew up to know”. As the growth of age, the child starts to have the rudiments of sex consciousness and sexual interest. Parents are surprised or angry, or even think that children’s personal character has a problem or becomes corrupted.

While American parents think that children should receive sex education in the family. When sexual issues rose by the children, they will answer all the questions, using the language that the children can understand, so that the children can understand the correct sexual knowledge and conception. American parents believe that if
children are given sex education before puberty, they would not be interested in the obscene things occasionally came across and they can resist temptations and choose the correct behavior.

**The content and methods.** American parents will talk about sexual physiology, sexual psychology, AIDS prevention knowledge, reproductive knowledge, contraceptive knowledge and even menopause to adolescents. Opportunity education is advocated in terms of methods. Although the sexual attitudes of Americans are more open, 35% of parents ask their children do not have sexual relations before marriage. Americans no longer believe that premarital pregnancy is morally defective, but it is best not to happen.

In China, even in families that have sex education, its contents, compared with the US, are much more limited and confined to physical aspects, especially girls get more information on menstruation and health knowledge than boys. Most parents have a negative attitude towards premarital sex and they regard it as a “sex mistake” relating to the personality and morality of a person. Similarly, pre-marital sex is not accepted by the majority of Chinese people.

**The Comparison of Social Sex Education**

**The comparison of attitudes on adolescent sexuality.** Chinese concept of sex is very traditional and sex is a kind of taboo not just for young people, even adults would not talk about it openly. Thus, young people are constrained on sex. Even though American teenagers are living in a free and open society, they also have much confusion about the pressure of life and sex. The US adolescents generally have sexual distress, fearing to be laughed by their friends due to without sexual experiences. Moreover, they worry about getting pregnancy and contracting AIDS and other diseases after sexual behaviors, so a number of junior secondary school students have to bear the heavy responsibility of being parents, even they do not graduate.

Teenagers are specially privileged individuals of American society and they enjoy the highest degree of freedom and respect, but society only requires them to take slight responsibility. It is very vague to give what kind of respect and constraint on the behavior of young people.

The academic pressure of Chinese students is great and study is their main task. Love affairs are limited and disapproved by many teachers and parents. However, the US students have not been forbidden to fall in love no matter which grade they are in. On the contrary, they will be laughed, if there is no appointment. Love affairs among students are not the focus of school issue. Because the unmarried pregnancy has become a serious socio-economic and health problem in the US, American educators are mostly worried about that teenager does not know safe sex.

**The comparison of extramural education institution and school education.** The US has a strong tradition of community culture which attaches great importance to the role of the interaction of families, communities and schools for sex education. They prevent harmful off-campus behavior of young people by strengthening the management of community. So, community attaches particular importance to the change and role of families. Their main measures are to strengthen the construction of the community center, such as the parent schools and sex education advisory organizations. Some communities even train children to help parents solve educational behaviors and attitudes. In addition, schools often play a coordinating role in solving the problems of increasingly severe disintegration of families and single parent families by parents meetings.

Domestic scholars have pointed out that China’s sex education faces the problems of “constraints on family education, emptiness on community education and redundancy on school education”. Although this claim is a bit extreme, it does reflect some practical problems. The burden of educating teenagers mostly falls
onto the school, and families and communities cooperate less. This is true of sex education. While schools are busy to deal with senior high school entrance examination and college entrance examination, sex education for primary and middle school students did not attract too much attention.

The comparison of the role of the mass media. Both the mass media in China and the US have a positive, active and negative effect on the growth of young people. This negative effect is more obvious in the US where pornographic video flooded. In order to make money, businessmen not only run the yellow video rental shops, but also show movies with yellow lens. The yellow stuff is all-pervasive and their impact is very bad to the growth and development of young people.

The control of media is stricter in China. The law strictly prohibited the dissemination of pornography, violence and other things that are not conducive to the growth of young people in. China has not established film rating system, so it is easy to make the literary and artistic works which are not suitable for young people. If they enter into the horizons of young people, adverse impacts will be given. According to Freud’s statement, the establishment of adolescents’ sexual knowledge and sexual concept will influence them lifelong. Therefore, it is particularly vital to face the negative impact brought by mass media.

Reflections and Recommendations of the China’s Sex Education for Adolescents

Recommendations for Primary and Secondary School Sex Education

Getting rid of the old educational ideas and clearing the importance of sex education for adolescents. As Belinsky, Vissarion, and Grigoryevich (1843, p. 41) said, for young people, secretly obtained knowledge was more harmful than others, when nature itself began to wake the teenagers’ interest in the issues, then the reasonable and scientific understanding of the secrets was the only way to save them from the harmful pornography.

People are the unity of the natural attributes and social attributes. From the emerging stage of sex need to the justifiable sex (marriage), there are 10 years that teenagers’ sex need cannot be satisfied. This period is known as the “blank” or “starvation period”. Sex is a human instinct, but human sociality put a lot of requirements on human instinct, asking people to self-control, which leads to contradictions. Hence, many issues of young people are happened. Therefore, sex education for adolescents is particularly important in their life and it is an important component of quality education.

Making sex education outline, setting sex education curriculum and compiling textbooks on sex education. The US promulgated “the National Education Outline” in the 1990s, whose contents are more detailed and comprehensive. In this regard, we can learn from them and combine with China’s national conditions and culture. We need to make sex education outline of primary and secondary schools and provide specific implementation of the objectives and tasks. It is necessary to compile textbooks that are suitable for the developmental characteristics of students. Besides, it is obligatory to introduce physical, psychological and physical development, mental health knowledge and adolescent sexual development and heterosexual contacts, sexual physiology, sexual psychology, sexual ethics and moral education. In this way, we can put an end to the situation which is the lack of teaching materials, references and readings for teachers, parents and students.

Setting the scientific content of sex education. It is necessary to learn experiences of the US sex education to set the content. What is more, it could be in accordance with the actual conditions of our country. We should pay attention to the correct direction, adhere to the proper guidance, and it is also necessary to resist the stuff of western corruption, as well as backward sexual culture. And we need to stress on rigorous scientific
Recommendations for Outside School Sex Education

**Recommendations for family sex education.** Parents are children’s first teachers and families are the basic place of sex education. As parents, first they must eliminate the misconceptions about sex education. The results of a study come from the World Health Organization shows that appropriate sex education does not lead young people to early sexual relations. On the contrary, it provides some basic beliefs for young people and promotes the understandings of adolescents’ sexual development, human reproduction and healthy sex behaviors. Thus, it will help young people to adopt responsible sexual behavior.

**Recommendations for society sex education.** It is obvious that a good atmosphere in the whole society can help young people to establish a correct attitude towards sex. In Utah of the US, for religious reasons, the impact of adolescent sexual freedom is smaller, which still maintains a good atmosphere. Adult sexual dysfunction and psychological problems is less than other states. Apparently, a good social atmosphere can prevent young people from pre-marital sex.

**Recommendations for mass media.** It is necessary to establish a film rating system as soon as possible to improve the quality of media workers. The government should establish a classification system of film and television works as soon as possible to minimize the opportunities for young people’s access to inappropriate contents. It is urgent to train media workers and help them have a positive sense of participation and audit films, televisions, newspaper and magazines strictly. In addition, we need to strictly regulate the local entertainment and cultural market, effectively making our efforts to create a good, healthy social atmosphere for the healthy growth of youngsters.

**References**


Belinsky, Vissarion, & Grigoryevich. (1843). *Russian literature in 1842*.


Teaching Scientific Ethics Using the Example of Hendrik Schön

Bernard J. Feldman
University of Missouri-St. Louis, St. Louis, USA

It has been almost 10 years since one of the greatest frauds in the history of physics was uncovered, namely, the case of Hendrik Schön. This case provides a wonderful opportunity to discuss scientific integrity and scientific misconduct with both undergraduate and graduate science students. This article explains the scientific data at the heart of this case of fraud, as well as discusses the numerous ethical issues surrounding this case, including the responsibility of research supervisors as well as the scientific community.

Keywords: Hendrik Schön, scientific fraud, scientific ethics, field effect transistor, Lydia Sohn

Introduction

It has been almost 10 years since one of the greatest frauds in the history of physics was uncovered—the case of Hendrik Schön. This unfortunate episode is, as they say, a teachable moment, an opportunity to educate undergraduate and graduate science students about scientific integrity and that science is very much a human activity that encompasses both the best and sometimes the worst of human behavior. This case also raises important questions about the responsibility of research supervisors as well as the scientific community.

History

This story starts at Bell Labs, when Dr. Bertam Batlogg started a new program to fabricate electronic and opto-electronic devices using the same organic material (Reich, 2009). Up until then, almost all electronic devices like FETs (field effect transistors) were made out of silicon, because a nearly perfect insulating layer of SiO₂ between the gate and the channel is easily fabricated by oxidizing the Si surface. The channel of a FET is the thin layer of silicon just below the oxide layer, as shown in Figure 1. By applying a voltage to the gate, the conductivity of the channel is changed from insulating to conducting. This off-on behavior of the FET channel is used to store and manipulate the binary (zero-one) information that is the basis for all digital electronics. In contrast, almost all opto-electronics devices like light emitting diodes and lasers are made out of III-V materials (compounds consisting of Group III and Group V elements from the periodic table) like gallium arsenide. In order for a semiconducting device to efficiently emit light, the electron must fall from the bottom of the conduction band to the top of the valence band without emitting a sound wave, just a photon of light. This is the case in most III-V materials, but not in silicon.

Bertram Batlogg hired Hendrik Schön in 1997 to be his assistant responsible for device fabrication. A picture of Hendrik Schön is in Figure 2. From 1998-2001, Hendrik Schön reported transistors, lasers,
Josephson junctions and superconductors made out of organic materials like pentacene and perylene. His results were published in the most prestigious scientific journals, including eight papers in *Science* and seven in *Nature*. By 2002, rumor was that he had been offered an endowed professorship at a major American university and had been nominated for a Nobel Prize, all before the age of 33. It was only through the courage of Lydia Sohn, an untenured assistant professor at Princeton University, that this fraud was uncovered, a full investigation initiated by Bell Labs with the appointment of the Beasley committee, a report issued to Bell Labs by the Beasley committee documenting numerous examples of fraudulent behavior, all of Schön’s papers withdrawn and Schön was fired from Bell Labs. A picture of Lydia Sohn is in Figure 3.

![Figure 1. Schematic diagram of a FET (Courtesy of Wikipedia).](image)

![Figure 2. Hendrik Schön. Courtesy of Robert Service (Service, 2002a).](image)
The Beasley report found nine examples of data substitution, nine examples of unrealistic precision and six examples of results that contradict known laws of physics in the papers of Hendrik Schön (Beasley, Datta, Kogelnik, Kroemer, & Monroe, 2002). It was three cases of data substitution that brought about the end of this fraud (Levi, 2002a). On the left side of Figure 4, the source-to-drain voltage is plotted against the gate voltage for three different organic material FETs reported by Hendrik Schön. In all three plots, the gate voltage is sufficient to turn the transistor on, switching it from an insulating “off” state (high source-to-drain voltage) to a conducting “on” state (low source-to-drain voltage). Noticing on the right side of Figure 4, the high voltage portion of the same three characteristic curves is blown up and has identical shapes, including identical fluctuations from thermal noise. Voltage fluctuations from thermal noise will always be different from one experiment to another, because of the random nature of noise.
Lydia Sohn was told of this data substitution by a former colleague at Bell Labs, which convinced her that Schön’s work was fraudulent (Reich, 2009). She then risked her professional career by confronting the management of Bell Labs with this fraudulent data and succeeded in persuading Bell Labs to form the Beasley Committee to investigate the work of Hendrik Schön, which quickly led to the firing of Schön and the withdrawal of all of his papers.

Discussion

These events raise a number of important questions. How could Schön pull off such fraud? Why was Bell Labs so gullible? There were a number of elements at work here. Firstly, Schön claimed to have done most of his work in his Ph.D. thesis laboratory in Germany. Consequently, it was easy for him to avoid demonstrating...
his results and devices to his colleagues at Bell Labs, by giving them the excuse that the devices and materials were in Germany. Secondly, Schön picked up on comments by colleagues who would suggest future experiments. Schön realized that if a scientist suggested a possible experiment and result, he as well as the physics community was much more likely to accept such a result with a minimum of skepticism. Thirdly, Schön took advantage of the Bell Labs’ world class reputation; when other scientists could not reproduce Schön’s results, it was easy for his colleagues at Bell Labs to believe that Bell Labs was a special place that could do things other labs could not do. Fourthly, Bell Labs was in a precarious financial situation at this time and was inclined to embrace such a set of phenomenal results that would help justify the lab’s existence.

This raises a second related question: Why was the physics community so gullible? Part of the answer lies with Schön’s supervisor, Bertram Batlogg, who was an internationally known physicist for his work in superconductivity. His name on Schön’s papers gave the results instant credibility. Also, the Bell Labs byline added to this credibility. Finally, like Bell Labs, the physics community wanted to believe in organic material-based electronics.

What responsibility did Bertram Batlogg, Schön’s supervisor, have in this disaster? The Beasley report was embarrassingly silent on this question. No doubt, Batlogg, whose expertise was in superconductivity, was at a disadvantage in evaluating Schön’s work on electronics devices. However, what about Schön’s claims of superconductivity? Isn’t it reasonable that Batlogg should have insisted on seeing a demonstration of the superconductivity of a new material, before the manuscript went out the door? Isn’t reasonable for him to have seen a laser lase, before the manuscript went out the door? Clearly, there was a terrible failure of supervision, and Batlogg must share in the responsibility for this disaster.

What about the importance of reproducibility in the scientific community? Numerous experimental groups around the world were trying to reproduce Schön’s results with no success. The major reason for this lack of success was that the FET oxide layers shorted out, due to the high voltages needed to switch on the FETs. There were a few physicists who were expressing serious doubts about Schön’s work, but those doubts never reached beyond those few physicists. Meanwhile, tens of graduate students and post docs labored away in futility, including a number who would became so embittered by this experience that they left the field. Isn’t it reasonable for the physics community to reserve judgment on any important result until it is confirmed by another lab? Notice that when physicists recently reported that neutrinos traveled faster than the speed of light, the initial reaction of the physics community was skepticism and an immediate expectation that the experiment be repeated in another laboratory. Shouldn’t the physics community have the same skeptical reaction for a significant result that they are inclined to believe is correct?

What about Lydia Sohn, the heroine of this story? She risked her career to end this fraud. Her story of courage is just as important, if not more important than Schön’s story of fraud. The physics community needs to encourage such heroic behavior in the face of dishonest scientists. And one of the best ways of doing this is by not forgetting but remembering and reminding the physics community of this remarkable display of heroism.

Finally, what about Hendrik Schön, the villain of this story? It is easy to want to forget such an embarrassing tale. However, it is only by remembering this sad tale that we reduce the chances of future frauds being attempted and being successful. This episode reminds us that science is a human endeavor, most times impressive, creative and beneficial, but sometimes, dishonest and harmful.
Conclusions

This case history and the issues it raises provide a wonderful lesson in scientific ethics to beginning undergraduate and graduate science students, and the author has used it as such numerous times. Besides a lesson in science ethics, it is a lesson in human nature. Students should be aware that just because something has been published in a reputable scientific journal does not make it correct. There are numerous examples of the opposite, most times due to honest mistakes but sometimes due to fraudulent behavior. The author’s lecture on Hendrik Schön always elicits numerous questions and a very healthy discussion on scientific fraud and the nature of the scientific enterprise.

For those interested in more information about this topic, the book, Plastic Fantastic: How the Biggest Fraud in Physics Shook the Scientific World, written by Eugenie Samuel Reich (2009), provides a detailed history of this fraud. For reports about the scandal during its exposure, the series of articles in both Physics Today (Levi, 2002a; 2002b) and Science (Service, 2002a; 2002b; 2002c) are very well done.

References


The Relative Merits of PBL (Problem-Based Learning) in University Education

Steve Benson
Edith Cowan University, Joondalup, Australia

In Australia, academic workloads are increasing, and university funding is decreasing. Academics and university managers are engaging in risk adverse behavior and tending to focus on customer satisfaction and student retention, potentially at the expense of academic standards. Conventional approaches to pedagogy minimize adverse student feedback, but may not prepare graduates for the workplace (Savery, 2006). By contrast, PBL (problem-based learning) is generally thought to produce better student outcomes and performance, but can be more demanding in terms of academic workloads. PBL uses realistic scenarios which may not be well defined and the methods students use to solve the problems are often as important as their answers. PBL is grounded in constructivism (Ernest, 1993) and student-centered learning (Ally, 2004). This paper critically evaluates the claims made for PBL and provides arguments for its use in university teaching. Two research approaches were employed to inform this paper: the first is a meta-level review of PBL-oriented papers and the second is hermeneutic phenomenology in which the author gives an account of his experiences using PBL in university education and makes recommendations for its deployment. It is concluded that there are no academic or logistical grounds that support the use of PBL, but that it may still be regarded as a worthwhile exercise.

Keywords: PBL (problem-based learning), constructivism, student outcomes, pedagogy, academic workloads.

Introduction

PBL (problem-based learning) may take many different forms (Woods, Duncan-Hewitt, Hall, Eyles, & Hrymak, 1995), some involving teamwork and others to be undertaken independently. The simplest would be an independent research project intended to improve students’ understanding of a particular subject area, such as the logistical issues associated with telemedicine in remote parts of Australia. Another form is guided design in which a small group of students work through a set of interrelated PBL tasks, progress to subsequent tasks depends upon successful completion of the current task and usually involves feedback or debriefing by an academic or industry supervisor. Many engineering schools make use of full design exercises in which students will design and build a specific product, e.g., a wheelchair capable of climbing stairs. Schools of medicine and dentistry have long made use of PBL to give students experience of diagnosis and planning treatment regimes. Probably, the most widely used form of PBL, most notably in business schools, is the case study (Sawyer, Tomlinson, & Maples, 2000). Obviously, PBL can be eclectic and practitioners “mix and match” according to need and academic discipline. In recent times, another form of PBL has come to the fore, that of simulation. Here use is made of role/game-playing in a realistic context (or mediated via ICT (information and computer...
technology) in order to encourage situational/experiential learning. It must be asked what evidence or arguments exist to support the use of PBL.

The Case for PBL

The proponents of PBL argued that it promotes “authentic learning” (Major & Palmer, 2001) and that it engenders metacognitive awareness (Benson, 2003). Barr and Tagg (1995) noted that PBL helps students to develop critical thinking skills as did Sawyer et al. (2000) who discussed in depth the criteria for good case studies and the benefits to be gained. The links among behaviorist, cognitive and constructivism have been well covered by Ally (2004), while many academics believe that workloads increase if PBL is used (Benson, 2011). Sukotjo, Thanmasitboon, Howell, and Karimbux (2008) demonstrated that they could reduce laboratory, and lecture time could be reduced with no reduction in the quality of student outcomes. Newman (2006) noted a moderate improvement in student outcomes, but suggested that PBL was better suited to social sciences and similar subject areas. Felder (1995), like Sukjoto et al. (2008), stated that academic workloads actually decreased once staff had carried out all the necessary preparatory work. Pawson, Fournier, Haight, Muniz, Trafford, and Vajoczki (2006) identified positive benefits for students, academic and institutions and noted that students developed lifelong skills and found PBL a more enjoyable experience. This in turn leads to improving job satisfaction for academics. Where there is support for using PBL for academic reasons, it appears to be qualified with most authors reporting only a moderate improvement when compared to more traditional methods (Sanson-Fisher & Lynagh, 2005; Colliver, 2000).

The Case Against PBL

PBL has many detractors. From an academic perspective, it has been reported that some academics have used PBL as a substitute for lecture and laboratory teaching with students receiving little or no feedback and supervision (Woods et al., 1995; Felder, 1995), and this is unlikely to enhance the student experience. Finucane, Johnson, and Prideaux (1998) stated that costs increased, because there was a greater demand on staff time and resources if PBL is to be properly integrated into pedagogy. Several medical schools have criticized PBL because of the emphasis that it places on the problem rather than the patient. In addition, the problems used in medical schools can be too well defined, in reality, differential diagnosis may not be clear cut, and patients often present with more than one condition and may have symptoms which are unrelated or may lack symptoms usually associated with a condition. The dilemma then lies in among problems so ill-defined that they are useless for any kind of summative assessment and problems which are too well-defined to be of educational value. In Australia, there has been a change in the student demographic and student expectation. Many Australian students are obliged to work to support themselves whilst studying and a culture of “student as customer” prevalent in some universities encourages higher expectations of the level of support that should be provided to students. Attendance at lectures and seminars is reducing, and universities have enabled this by setting policies that lectures should be recorded and made available via the Internet. Australian academics reported that students are often unwilling to take responsibility for their own learning or become self-directed learners (Richards & Cameron, 2008; Benson, 2010; Schmidt & DeVaries, 1992), and the financial imperatives (the need to retain students) can result in academic standards being compromised, and organizational pressures which focus on customer satisfaction rather than student outcomes can also discourage academics from implementing PBL, because they fear that adverse feedback may affect job security and tenure/promotion.
prospects (Benson, 2010). The need for conformance documentation and quality processes imposes logistical difficulties when re-engineering the curriculum, difficulties which many academics prefer to avoid.

Overwhelmingly, the most vociferous detractors of PBL are students. Green, van Gyn, Moehr, Lau, and Coward (2004) noted that students often went through the stages associated with trauma or grief: shock, denial, strong emotion, resistance, withdrawal, acceptance, return of confidence, and (finally) integration. The resistance on the part of students to PBL can be extreme especially from those who have little experience of PBL and those for whom English is not their first language (Benson, 2011). Linguistic challenges and culturally engendered shyness can limit engagement with PBL and diminish the ability to achieve good grades (Woods, 1996; Felder, 1995). Given the dissonance between student expectation and the reality of PBL implementation, conflict is inevitable (Benson, 2011) and the student group most likely to be hostile towards PBL is that of mature students and most notably female mature students (Brodie, 2007; Benson, 2011). Resentment also runs at high levels in mature students engaged in group work who complain about other team members failing to contribute their “fair share” or at the right level. Complaints about “value for money” are not uncommon (Felder, 1995).

PBL for Online Education

The author’s ongoing association with a Canadian university provided an ideal opportunity to implement PBL in distance mode. The cohort of 15 comprised mature students seeking accreditation or promotion and studying for credit or vocationally. The course is delivered via a Web portal with bulletin boards and chat systems to facilitate communication between themselves and with their tutor/lecturer. Online students are not expecting face-to-face support or traditional teaching; hence this seems conducive to a PBL approach. Care was taken to ensure that the supporting materials and exercises aligned closely with a textbook.

The non-trivial problem given to students was as follows: A motor vehicle sales and services company wishes to develop an additional income stream by using their used vehicle and demonstrator fleet as the basis for a car rental operation. Supporting documents relating to company history, multi-branch operation, organizational structure, etc., were provided. Students had to identify systems’ requirements, develop a data model, develop a process model, specify an interface and develop a project implementation management plan. Minimal information was provided to encourage course participants to research independently, but feedback and model answers were provided at appropriate intervals. Students were told nothing about PBL and were provided with weekly questions and exercises which allowed them to develop and practice their skills. These exercises were not assessed in order to decrease student anxiety. However, model answers for these exercises were not provided and students were encouraged to use the bulletin boards to exchange ideas, insights and comments. Besides having targeted forums, a social forum was created to allow students to comment on non-course related matters. For the first run of the course in its new format, the student cohort comprised 15 mature age students seeking accreditation or promotion, studying for credit or vocationally. In order to ensure a consistent academic direction, all the supporting materials were very closely aligned with a textbook.

At the end of the course, only three students gave positive responses to the course, nine were "unreceptive" to PBL and three were actively and extremely hostile towards PBL and the author, questioning the basis of the assignments and the contribution required of them. These three were sufficiently motivated to write letters of complaint, try to mobilize support for their demands in the rest of the cohort and demand that the author removed from the faculty. Overall, assignments grades were better than that in previous semesters
The next time the course ran, the author took great care to ensure that students were informed about PBL and its potential benefits and students were provided with PBL references and resources, and students were told that they could have telephone support if they needed it. Following this, grades improved by 6% on average with approval ratings in excess of 80% (a significant improvement on earlier instances of the course) and fewer than 10% were dissatisfied with the course. No student requested telephone support. Subsequent runs of the course have been uneventful and have shown similar improvement in grades. It would seem that student who visits to the Web portal were more lengthy and frequent after the introduction of PBL with visits increasing in frequency by roughly 20% and duration of visit increasing by around 15%.

Conversations with previous students in Canada suggested that knowledge retention was improved, though it was not possible verify this directly without an objective test. Enquiries six to 12 months after completion indicated that students came to appreciate PBL in retrospect, highlighting independence, confidence and improved communication and organizational and problem-solving skills: 13 (83%) positive, two (11%) neutral and three (16%) adverse responses. Comparisons were made by interviewing a sample of students who had studied similar courses in distance mode at the author’s university, but in a non-PBL framework: five (25%) positive, four (20%) neutral and 11 (55%) adverse responses. The findings were based on convenience samples and suggested the need for more rigorous and detailed research with larger sample sizes, though a controlled experiment may not be feasible. In short, it is acknowledged that any claim the author makes regarding the superiority of PBL over traditional methods cannot be justified using quantitative methods.

**Real Time PBL**

The author has also experimented with PBL in seminar/laboratory situations and can offer the following personal insight: Students are less stressed and more receptive to PBL if frameworks are used. Having well defined processes and a structured approach reduces the potential for conflict (Benson, 2011). For example, Woods proposed a five-stage process: (1) goal setting—students are given a problem statement, identify and prioritize issues which in turn can be used to define learning objectives and tasks; (2) presentation meeting—each student returns to their group to present findings and progress; (3) feedback meeting—students compile ideas/data and present them to other students whose answers may be peer assessed; (4) consolidation—subject representatives of the student groups meet and exchange insights; and (5) elaboration/reflection—when students have completed the tasks, they are required to identify similar problems that could be solved using the same techniques and reflect on what and how they learned. Many medical schools tend to neglect the feedback and consolidation aspects perhaps in the belief that the high caliber students they attract are capable of working independently (Green et al., 2004).

If PBL is to be used effectively in a classroom setting, then academics need to have interpersonal, communication and conflict resolutions skills at a high level. Many of the problems that arise in PBL are directly related to group dynamics, e.g., students who do not attend meetings, are disruptive, do not deliver the work promised, make minimal contributions/fail to engage with the course materials and yet expect to pass—class management skills are mandatory. There are also cultural issues to be considered; students from a non-English speaking background may lack the confidence to question and contribute. It is the author’s experience that trying to make student groups mirror the class demographic is futile, a single non-English background student in a native English speaking group is likely to be inhibited. A group comprising
non-English speakers is more likely to be productive (Benson, 2003). Embedding PBL principles into course documentation can specify the skills that students must develop, as course/unit objectives is also helpful and may be regarded as obtaining “informed consent”. Additionally, parallel objectives for subject knowledge and process skills should be clearly specified, frequent and honest feedback regarding student performance will assist in the development of these skills.

Some Recommendations

While no proof is offered for the superiority of PBL, the author can make some recommendations for its successful implementation. The approach here is that of hermeneutic phenomenology (Taylor, 1997) in which experiences are shared. No claim to narrative omnipotence is made, and instead of proof, the author strives for resonance and advocacy. The intention is to present ideas which may be useful to other academics. There are some recommendations as follows:

1. Before using PBL, research the topic and find useful libraries and resources;
2. Engage in reflective practice, keep a professional journal, review this frequently and improve performance (Benson, 2003);
3. Start small, a few successful PBL projects will be much better received than one large unsuccessful one;
4. Full disclosure in advance, students need to be told what will be learned and how. In particular, tell students how they can expect to feel;
5. Be aware of the target demographic, too much exposure to PBL too early in university life can cause problems, the second and third year students are often better placed to engage in PBL;
6. Consider avoiding conflict by using PBL in non-assessed coursework components;
7. Deploy online, while online students are easier to handle than their on campus counterparts, exercise care in the design of websites and minimize the number of links (Niederhauser, Reynolds, Salmen, & Skolmoski, 2000; DeStefano & LeFevre, 2007);
8. Integrate, to be effective PBL needs to be integrated into a course rather than being a “add on”, and this will require some re-thinking and re-engineering of content and pedagogy;
9. Non-exclusivity, PBL may work better when used in conjunction with conventional methods.

Conclusions

Any claim that PBL improves academic performance is speculative, context dependent and almost impossible to prove. Farrow and Norman (2003) stated that educational contexts are so complex and varied that controlled trials are not appropriate, and this has been a factor in “the difficulties in coming to a definitive answer” to the question “Is PBL superior to conventional pedagogy?”. Although the author’s account is subjective and likely to introduce confirmation bias into any research, the author saw no ethical issues in deploying PBL and seeking to make use of the Hawthorne effect, after all, it is hard to argue against improving student outcomes. However, the author concludes that PBL is useful as a complementary method, especially in undergraduate scenarios. Courses which rely on PBL exclusively may disadvantage some student groups and it is important not to lose sight of the bigger picture. The author has not encountered any quantitative papers which can substantiate a claim of the superiority of PBL over conventional pedagogy; indeed, all the useful accounts of PBL the author has found seem to be qualitative/subjective/ethnographic in nature. These accounts serve as sounding boards, sources of ideas and they inform communities of educational practice. It may be that
change, innovation and variety are more important than curriculum and ontology when it comes to enriching the student experience. The improvement PBL gives in academic outcomes as measured by conventional means, i.e., assessment and examination, is moderate/marginal at best and such improvement is open to question. The author recommends the use of PBL as a complementary method. The main reason for adopting PBL from an academic’s perspective is job satisfaction (Benson, 2011). Viewed from a student’s perspective, students’ mood, attendance and attitude are found to improve (Vernon & Blake, 1993; Albanese & Mitchell, 1992). It is the combination of the academic and student viewpoints that reveals the benefits to institutions. PBL is concerned with personal development of students and an enhanced university experience, both of which are important for marketing purposes and “branding” of universities. In the author’s view, these two facts are to justify the continuing use of PBL.

References


Examining the Impact of the Author’s Pedagogy on Developing Relationality and Care in Pre-service Early Childhood Teachers

Susie Garvis
Griffith University, Gold Coast, Australia

Care and relationality are important foundations for dealing with young children and their families in early childhood education and care settings. Little is known, however, about effective ways to teach and assess care and relationality in teacher education. Care and relationality rarely appear in university outcomes, professional standards for teachers or assessment criteria. Teacher educators assume a significant level of responsibility for the personal professional developments of others in early childhood education. In 2011, the teacher educator in this study embedded seven characteristics of relational teacher education to help early years pre-service teachers experience the importance of care and relationality. This self-study explored the impact of pedagogy by examining the actions of the teacher educator and the resultant actions of pre-service teachers in the learning process. Zeichner (2005) conducted this self-study research was intended to make teacher educators and others more conscious about one’s role in educating future teachers. Findings revealed three themes, providing evidence of the effectiveness of the teacher educator in implementing care and relationality.

Keywords: Care, relationality, early childhood teacher education

Introduction

As a beginning teacher educator with a previous career as a classroom teacher, I (the author) have experienced the importance of care and relationality in the classroom. As a teacher, care and relationality are the key foundations for the learning process. When I started in tertiary education early childhood programs, I became aware that while we discuss theories of care and relationships, we do not model care and relationships with pre-service teachers to experience. As a beginning teacher educator, I wanted to “walk the talk” and make known my (the author’s) support for professional learning. I wanted students to experience care and relationality as a learner.

A body of scholarship has emerged, which emphasizes the importance of caring and relationships in student learning. Noddings (1992, pp. 11-12) wrote:

Caring cannot be achieved by formula. It requires address and response; it requires different behaviors from situation to situation and person to person… Schools, I will argue, pay too little attention to the need for continuity of place, people, purpose and curriculum.

Care is important for working, living and being with others. It is a deep moral obligation that is not located...
in individuals, but rather their relations with one another (caring becomes an action) (Nicol, Novakowski, Ghaleb, & Bearissto, 2010). Care can be delivered by embedding relational teacher education. Relational teacher education, with its grounding in the belief that education proceeds from the individual in their social context (Dewey, 1938), offers a framework for teacher educators “to study their experiences in order to better enable pre-service teachers to harness their personal professional knowledge” (Kitchen, 2005, p. 207). But, how does a teacher educator ensure namely the balance between a professional relationship and one that involves more emotional commitment?

This self-study explored the impact of my teaching as I try to implement care and relationality through relational teacher education. I position myself (the author) in partnership with the pre-service teachers. Using information from students and my own reflections to provide a triangulation of data, I am able to analyze and determine my influence on pre-service teachers learning. Findings revealed that by pre-service early childhood teachers understanding care and relationality, they have a deeper understanding of the nature of the teaching-learning process. Implementing care and relationality, however, requires much time and commitment from the teacher educator.

**Literature Review**

**What Is Relational Teacher Education?**

Relational teacher education is a reciprocal approach to enable teacher growth that builds from the realization that we know in relationships with others (Kitchen, 2005a, p. 17). It is sensitive to the role that each teacher plays as a teacher and learner in the relationship. Fundamental to this approach is respect for the pre-service teacher as a curriculum-maker (Clandinin & Connelly, 1992) who draw upon personal practical knowledge (Connelly & Clandinin, 1988) to inform their classroom practice and recognize that “knowing through relationship to self and others is central to teaching” (Hollingsworth, Dybdahl, & Minarik, 1993, p. 8).

Relational teacher education is an approach that emerged from Kitchen’s (2005a) research into classroom practice and professional development of the classroom teacher. In this study, Kitchen (2005a) entered into what Rogers (1961) referred to as a helping relationship. Such relationships involve experiences based on caring. According to Rogers (1961), such experiences are regarded as the highest authority. In the introductory essay on “Becoming a person”, he wrote, “This book is about me, as I sit there with the client, facing him, participating in that struggle as deeply and sensitively as I am able” (p. 4). From this understanding, it comes the realization of the importance of relationships as experiences for teaching.

**What Is Care?**

Noddings (1984; 2002) argued for the importance of developing caring relations in working, living and being with others. As teaching is based on relationships, care is an important aspect. Caring is positioned as not only important, but also an obligation towards something we feel that we must do—a deep moral obligation (Nicol et al., 2010).

According to Noddings (1992; 2002), students need and want teachers to care for them as persons and convey this care through listening and responding to their expressions of concern. Noddings (1992) suggested that sometimes teacher educators acted “being tough” with teachers in order to demand the best from them. In this sense, the act of care is for future school students, not future teachers. Noddings (2002) distinguished between two types of care: natural and ethical. Natural caring occurs when we feel that we must respond. The
caring occurs and in return the cared for respond. In contrast, ethical caring involves some conflicts or internal resistance. Ethical caring involves a belief that we should respond with care. Noddings (2002, p. 14) suggested that, in this case, we turned to an ethical ideal, our memories of being cared for and caring to help us in “establishing, restoring or enhancing the kind of relation in which we respond freely because we want to do so”. For example, if we are unprepared to respond to a pre-service teacher’s questions, we may experience a resistance to responding with care. Ethical caring involves a belief that we should respond with care. In this paper, I have tried to embed ethical care into my teaching.

Both natural and ethical caring involves an interaction among people. The carer moves to a level of receptivity in a way that puts aside the carer’s own motivations to, even if for a moment in a particular situation, place the needs and interests of the cared for first (Noddings, 1984). Noddings (2002) referred to this as motivational displacement where “caring involves stepping out of one’s own personal frame of reference and into the other’s” (p. 24). In this self-study, I have tried to move to this level of receptivity to understand the influence of my actions.

An ethic of care provides a way for framing educational encounters. Hackenberg (2005) drew on Noddings’ (2002) work to develop a model of mathematics learning and caring relations. According to Hackenberg (2005, p. 45), “Caring is conceived of as work towards balancing the ongoing depletion and stimulation involved in student-teacher interactions”. Interaction occurs between stimulation (being excited, awakened and motivated) and depletion (less interested, less energised or having diminished well-being).

**Why Are Relationships and Care Important in the Early Years?**

In Australia, the Early Years Learning Framework (Australian Government Department of Education, Employment & Workplace Relations, 2009) provided principles and learning and development outcomes for all early childhood educators who worked with children from birth to five years. The framework’s vision is for all children to experience play-based learning that is engaging and builds success for life. The framework is used in partnership with families to develop learning programs responsive to children’s ideas, interests, strengths and abilities, and recognize that children learn through their play.

The Early Years Learning Framework for Australia describes childhood as a time of belonging, being and becoming. Belonging is the basis for living a fulfilling life. Children feel that they belong because of the relationships they have with their family, community, culture and place. Being is about living here and now. Childhood is a special time in life and children need time to just “be”—time to play, try new things and have fun. Becoming is about the learning and development that young children experience. Children start to form their sense of identity from an early age, which shapes the type of adult they will become.

In this framework, the importance of relationships and care is considered foundational for early childhood education and care. It is built on the understanding that in early childhood settings, when children feel emotionally secure, they learn through play to develop the skills and understandings they need to interact positively with others and gradually learn to take responsibility.

Little is known, however, about ways that the importance of care and relationships can be effectively taught in early childhood teacher education. While many pre-service teachers are able to engage with theoretical understanding from tertiary education, limited opportunities for pre-service teachers to experience care and relationality are available. Today, pre-service teachers are often asked to bridge theory and practice and make connections between personal experiences and the contemporary classroom (Kitchen, 2005a, p. 20).
While tremendous progress has been made in understanding the theory-practice divide, little has changed in response to the crises identified by Goodlad (1991), Fullan (1993) and others. This self-study helps to reduce the divide between theory and practice for care and relationality in early childhood teacher education.

**Setting the Context**

In my first year of teaching, I inherited a subject about social and emotional well-being in the early years. According to the course outline, the subject enabled pre-service teachers to build an applied knowledge of SEL (social and emotional learning), child diversity and responsive teaching in the early years. Course assessment was casework-based and involved the generation of assessment summaries and initial planning materials for a student requiring additional support in SEL (known as a child case study).

I began to notice many ironies in this subject. Firstly, the subject was delivered online, with only three face-to-face workshops. How could a subject that taught productive home-school relationships be online? Secondly, I noticed that even though the students were learning about the theory of relationships and care, they could not relate this to practical experience. I further realized that care and relationality were not assessed in my teaching evaluations, were not a part of the university outcomes and did not feature in the state’s professional standards for teacher registration. Finally, when I was marking assessment items, I realized that the students could only demonstrate a theoretical competence of relationships with families and care.

I began to think about other ways I could model relationality and care. I returned to the academic literature and immersed myself in reading to find guidance and the concept of relational teacher education. I realized that “thinking like a teacher must be taught explicitly and developed over time” (Russell, McPherson, & Martin, 2001, p. 45). In 2011, I embedded seven characteristics of relational teacher education to help pre-service teachers experience the importance of care and relationality (Kitchen, 2005b):

1. Understanding one’s own personal practical knowledge;
2. Improving one’s practices in teacher education;
3. Understanding the landscape of teacher education;
4. Respecting and empathizing with pre-service teachers;
5. Conveying respect and empathy;
6. Helping pre-service teachers face problems;
7. Receptivity to growing in relationship.

I also encouraged pre-service teachers to model their understanding of care and relationality by articulating complex ideas aloud and engaging in peer teaching (Garbett & Ovens, 2010). For pre-service teachers, I wanted the experiences with care and relationality to precede understanding (Russell, 2007). Examples of how I have tried to embed the seven characteristics are outlined in Appendix.

**Method**

**Self-study**

Researching one’s teacher education practices provides opportunities to uncover understanding about the complex relations between learning and teaching and putting that knowledge into the practice of teaching teachers (Loughran, 2007). It is an important tool for teacher educators. Pinar (1980) suggested that if one always taught by themselves, it was crucial that teacher educators engage in rigorous self-study in order to develop self-understanding and an understanding of education for others. I decided to conduct a self-study to
examine the impact of my pedagogy for developing relationality and care. Self-study researchers recognize that “there is an important relationship between personal growth and understanding and public discourse about that understanding” (Bullough & Pinnegar, 2001, p. 15). Writing about oneself provides opportunities to analyze experiences, which enables one to construct understanding that can enhance the possibility for relocation through personal change (Kamler, 2001).

Through a narrative approach, I explored understanding acquired over time from the data from students and myself. Data sources from students included assessment performance, interactions on discussion boards/emails and teaching evaluations. Data sources from me included personal journal entries and observations I had made of student learning.

Data were analyzed using coding and categorization (Creswell, 2002) with the resultant common units of meaning presented in an autobiographical narrative chronicling the impact of my pedagogy. Three broad categories were identified in the pedagogical process of the semester: (1) relationships encourage support; (2) mirror on mirror; and (3) building philosophies of care and relationality.

**Findings and Discussion**

**Relationships Encourage Support**

The first theme consisted of the pre-service teachers recognizing the importance of providing support for their own learning needs. In my teaching philosophy, I tried to embed productive relationships in which we would share professional and personal experiences about one another. Modeling care and discussing care also entered out conversations.

While pre-service early childhood teachers were not explicitly asked to become more supportive, by modeling relationships and care in front of the pre-service teachers, I inadvertently embedded pedagogy of support that became the heart of the learning process. I begin with a letter, I sent to students to help support them with their child case-study tasks. The letter was designed to praise the students on the level of care I was reading in their assignments and their commitment to relationships with others.

```
Hi Everyone,

Many thanks for posting your blogs. I have enjoyed reading them and they provide insight into your classroom contexts (I actually had tears in my eyes). The level and ethics of care that you are showing to your children in the case study is exemplary. I feel honored to know that you are all passionate about working with the child, family and teacher to help the social-emotional wellbeing of the child. Your philosophy and commitment to the wellbeing of children in the early years is commendable and a trait of wonderful teachers. I have enormous respect for each of you and the unique qualities that you are able to bring to help support your child in the case study.

Your involvement with the child will provide powerful influences over your teaching now and in the future. By telling and re-telling your experiences in the blogs and online, you will better understand yourself and others in the group as a teacher and learner. More importantly, this will help you better appreciate the diverse needs of your students and school community. Combining reflective practice with acquiring a range of teaching and assessment strategies, you can develop a coherent educational philosophy and the tools to negotiate meaning in the educational contexts that you enter.

The development and support within the online community for this subject is also commendable. Your respect and advice to one another provides opportunities for collaborative learning. You are all true role models for early childhood education.

Kind regards,

Susie
```
Unknowingly, I sent the email after the pre-service teachers had felt depleted after engaging in conflict with another teacher educator over a numeracy assignment. The students felt what Hackenberg (2005) called depletion. This email acted as a form of stimulation, helping support the pre-service teachers in building confidence. The email responses recognized this attention to the support they needed as an outstanding quality of a teacher educator. In emails and teaching evaluations, the pre-service teachers wrote highly about how I cared about their wellbeing:

Thank you for your words of encouragement. I have to say that your e-mail brought me to tears! You have been a true teacher this year-inspiring and motivating. People and teachers like you are rare and should be reminded every now and then how wonderful they are. You care about our wellbeing and try and support us. This is what a teacher is. This is what I want to become. Have a beautiful day (Email correspondence, August, 2011)

I just wanted to thank you so much for your encouragement and support. I know that we all really needed it (the letter), and you sent this email at exactly the right time. I am really looking forward to catching up with you and really appreciate the support you have provided us all. See you tomorrow (Email correspondence, August, 2011).

The pre-service teachers noticed, with appreciation, my attention to their depletion and stimulation throughout the course. They commented in their feedbacks on my awareness and attentiveness to their fears and concerns, yet, at the same time, I would design activities that were stimulating and motivating. Students responded to this care through their enthusiasm and engagement, their risk-taking to share ideas and a positive attitude towards helping children in the early years.

A part of feeling supported, the early years pre-service teachers in teaching evaluations and observations appeared to value the level of comfort and tone that I had established in the classroom. They mentioned my approachability and warmth. One student commented (Observation 1a, 2011), “Our lecturer’s door is always open”. Approachability also featured in my reflective journal. I wrote of trying to make myself available to all students (especially over email for the online community), as I realized from my years of early childhood teaching that the majority of learning occurs outside of the classroom. I also acknowledged that the learning that the pre-service teachers made was not during my workshops or online sessions. Hence my availability to help students understand these learning experiences was necessary for developing personal-practical teacher knowledge.

Pre-service teachers reported that participation online and in small groups’ activities during workshop provided opportunities for them to build relations with each other and with the teacher educator. The students made frequent comments (in teaching evaluations and through teacher observations) that in the classroom they felt that they knew the teacher educator cared about their wellbeing, because they felt the learning space was safe to share ideas with the whole class.

While it appeared that the pre-service teachers felt more supported, I began to reflect on the increased workload for addressing care and relationality. In my reflective journal, I began to notice that my time spent on teaching continuously increased until I thought my position was only about teaching. Many of the activities that I had employed required more time from my part in my already busy load. I also noticed that the number of email increased from students who wanted more individual care and attention. While I was able to provide this with the small cohort of students, I wonder if it would be possible for one lecturer to be able to provide care and relationality to larger cohorts of students.

Mirror on Mirror

The next category revolved around the concept of mirroring my modeling of care and relationship. With
their selected child in the case study, they began to share their experiences and model care and relationality. I began to reflect on what I was observing in my journal:

I am starting to see myself in what they are doing. I was a mirror to modeling care and relationality. Now, I can see that they are mirroring what I was trying to do. In our course, we have all become mirrors, looking into one another and sharing experiences. I understand Rogers’ (1961) thinking when he said that the book was about me. The students’ actions are about me—their teacher.

Students’ online blogs began to model the care and relationality for children and families that I had desired. Their blogs formed a part of their first assessment item. An example is provided as follows.

Students’ online blogs began to model the care and relationality for children and families that I had desired. Their blogs formed a part of their first assessment item. An example is provided as follows.

I was heartened by the enthusiasm of “C’s” Mum when talking about the study. I have learned from past experience that positive, reciprocal relationships between the observer and the families are extremely critical to the successful outcome of a study of this nature. It is important to be sensitive to parent’s emotions, as Bentzen highlighted that “they may feel distressed at the possibility of an outside observer discovering deficiencies in their child” (2009, p. 68). I want them to see I care. (Pre-service teacher B)

“Mirroring” my pedagogy was also observed in the online discussion among the students when writing the blogs. Responding to blogs was not a part of the summative assessment item, but pre-service teachers began to provide supportive responses to one another. This organic approach grew out of my modeling of supportive feedback during workshops and emails. My constructive criticism of student work mirrored back my understanding, serving as a purpose for dialogue and professional growth for both. I was surprised to see that the students had moved into a “community of learners” in which they wanted to help and support one another. I observed that the students deepened their understanding by hearing not only what I had to say, but also their fellow colleagues. For example, student F responded to student B (who had lived in another country) with the following:

It definitely sounds like that you have chosen a child that will benefit from your case study. Even as an adult, I find it hard to deal with frustrations, so I can imagine that it must be a difficult strategy to develop as a child. I am very interested to hear how you will help him cope with these everyday interactions. I also found it interesting that you mentioned that he appears to be a fairly intelligent boy. Have you seen any assessment results compared to other children in the class? I am excited to see what you will find! I think that care and understanding will be a strong foundation. Finally, I would find it beneficial to my learning if you could link the above observations of your child with your previous experience in different cultures with social and emotional learning. You have so much experience—you must use it as we learn so much from you. Perhaps you were already considering this method of relating and reconstructing for future reflective logs.

There online blogs, my observations and reflection journal all documented the impact of my pedagogical intent for relationality and care. I could see myself in the teaching actions of the pre-service teachers. I was a mirror to them and they were a mirror to me, as we continually provided information about our care and relationships.

I also began to realize that my mood and level of tiredness also influenced the mirror that I was seeing. If I was tired and slightly short tempered, I observed in my reflection journal that the pre-service teachers would soon embrace a similar mood. From looking at the actions and mood, I could see my own tiredness. I realized that in implementing care and relationality, the teacher educator requires much energy, time and continual positivity to support students.

Building Philosophies of Care and Relationality

The last category moved beyond their “mirroring” of my pedagogical intent for relationality and care into
a pillar of philosophy. The pre-service teachers began to build their own philosophies of teaching and learning as their personal professional knowledge developed. One pre-service teacher wrote:

Over the past semester, I have realized the importance of family involvement in children’s education, thus reconstructing my teaching philosophy. During this professional experience regarding R’s family and in my future teaching practice, I aim to take a family-centered approach that is caring and collaborated with families to ensure that shared goals are achieved. (Pre-service teacher C)

By the end of the semester, the pre-service teacher had come to understand the importance of my pedagogical intent and realized the importance of embedding likeminded beliefs in their philosophies for early years’ classrooms. I was observed that the pre-service teachers were engaged in a new type of dialogue that discussed ways they could care and encourage relationality in their teaching. Some students were interested in studying care and emotional wellbeing in master degrees. Others were interested in finding professional development sessions and networks where they could continue to build and discuss their experiences related to care. Many questioned why care and relationality were not at the forefront of educational policy.

Caring for everyone became a foundation in the class. Towards the end of the semester, the early years pre-service teachers also began to realize when I needed elements of “stimulation” as another adult. The pre-service teachers modeled care for me by surprising me with an anonymous bunch of native flowers after I had encountered a “bad day”. I tried to capture my feelings by writing in my diary “While I cared for the pre-service teachers, they will care for the next generation of children. I feel honored to have met and learnt alongside these future educators. Care had taken a full circle and now they were caring for me”. While care and relationality are not formally assessed in tertiary education or acknowledged in professional teacher registration standards, students have been able to learn, model and embed these elements in their experiences to draw upon as future early years’ professionals. While it had taken considerable time, effort and energy as a teacher educator, it was beneficial to see the impact of my pedagogical intention with this small cohort of students.

Conclusions

Collectively, my experiences have made me realize the importance of learning about teaching future teachers through self-study (Loughran, 2007). The findings of this study indicated that it is possible to witness the intent of pedagogy for care and relationality for a teacher educator. As a teacher educator, I could witness how my teaching would influence these future early childhood teachers. I have been able to recognize myself in what the students are doing. Relational teacher education offered a framework for me to study my experiences in order to better enable the pre-service teachers to develop personal-professional knowledge.

Findings revealed three categories that emerged from the collection of data to show the development of pre-service teacher learning. Findings also suggested that while the outcome was successful, it increased the workload of the teacher educator and took time to embed care and rationality. In my reflection journal, I began to notice that the process had made me tired now. It is for this reason that I suggest that care and relationality should be adapted across all areas of an early childhood teacher educator program, not just in a single subject. By doing so, would reduce the workloads of teacher educators, but still allow the importance of care and relationality to become the foundations of the learning process.

More research into the importance of embedding care and relationality in teacher education programs is needed. Since there are two people in a higher education relationship (lecturer and pre-service teacher), the reciprocality of research into care should also extend to teacher educators. Questions are raised: who did teacher
educators care for? In this study, the pre-service teachers began to care for their teacher educator at the end of the subject. Who else in the university cares for the wellbeing of a teacher educator who is responsible for teaching future teachers? Where does a teacher educator go to receive stimulation and support after depletion? These and other questions are important for the wellbeing of all people involved in early childhood teacher education.

References


AUTHOR’S PEDAGOGY ON DEVELOPING RELATIONALITY AND CARE


Appendix

1. Understanding One’s Own Personal Practical Knowledge

   In understanding my own personal practical knowledge, it is important that “I tell, retell and reexamine” (Clandinin & Connelly, 2000) my experiences as a pre-service teacher, mentor teacher and teacher educator to identify the importance of care and relationality in my pedagogy. In my teaching, I drew upon my experiences with the pre-service teachers. Together, we critiqued my actions of care and relationships. As I was teaching, I allowed pre-service teachers access to my thoughts, ideas and concerns that shape my teaching through the process of thinking aloud (Berry, 2004; 2007; Loughran, 1995; Loughran & Berry, 2005). Articulating the dilemmas I face when teaching around care and relationality exposes the complexities of teaching to the pre-service teacher.

2. Improving One’s Practices in Teacher Education

   Beattie (2001, p. 3) wrote, “Good teachers are centrally concerned with the creation of authentic relationships and a classroom environment in which students can make connections between the curriculum of the classroom and the central concerns of their own lives”. I realized that improving one’s practice in teacher education is a continual process, based on care for the teaching profession.

   My pedagogy of relational teaching to encourage care and relationality was influenced by my experiences in the Graduate Certificate of Higher Education. By studying this course, I discovered more about the power of personal experience methods and learned the importance of community and care in supporting individual learning. The teachers in this course provided educative experiences that nurtured reflection. The teachers created safe spaces in which to negotiate our meaning of higher education individually and collaboratively. From this experience, I wanted to create similar safe spaces for my students.

   A part of my approach also involved providing extensive formative feedback throughout the semester with the child case study. Feedback was intended to help make the transition into working with the child and communicating with the family of the child.

   I also spent a significant amount of time responding to emails and online reflections, helping pre-service teachers make important connections and allowing me to be responsive and caring as a teacher educator. When responding to each pre-service teacher, I would suggest alternative approaches that were unique to the situation.

   I also encouraged pre-service teachers to model their understanding of care and relationality by articulating complex ideas aloud and engaging in peer teaching (Garbett & Ovens, 2010). For pre-service teachers, I wanted the experiences with care and relationality to precede understanding (Russell, 2007).

3. Understanding the Landscape of Teacher Education

   As a teacher educator, it was important to understand the landscape beyond the university context, to frame early childhood education within a societal challenge. For each of these pre-service teachers, it was important that I understood about their school where they were undertaking the case study. I contacted each of the schools to facilitate a relationship that enhanced opportunities for meaningful reflection and collaboration in regard to the child case study. As a teacher educator, I wanted to demonstrate to the school and pre-service teachers my empathy, care, respect and a commitment to the community. This approach allowed me to gain deep insight into the contexts of the pre-service teachers and developed a positive relationship with classroom teachers.

4. Respecting and Empathizing with Pre-service Teachers

   Relational teacher education is based on respect for adult learners and on a belief that each pre-service teacher must construct their own meaning as a curriculum maker (Kitchen, 2005a). As Dominc (2000, p. 83) wrote “each adult learner has his/her own relationship to knowledge, and this relationship is influenced by the social and cultural characteristics of the individual’s life history”. From this perspective, every adult learner must examine his/her individual frame of reference to become successful. In the initial workshop, we undertook an activity based on “care in the classroom”. Pre-service teachers were encouraged to discuss their decisions based on each of the situations. From this experience, pre-service teachers realized that teaching was more than a set of core competencies. It was a complex experience that required professional decision-making based on personal and
professional experiences.

By modeling respect and empathy, I allowed pre-service teachers to become aware of the social context of learning. I tried to model ways of working that were sensitive to diversity and complexity. Drawing on these experiences allowed pre-service teachers to reconcile personal experience with theory.

5. Conveying Respect and Empathy

Letter writing proved to be an effective way of conveying both respect and empathy throughout the subject to pre-service teachers. A total of four letters were sent to students (beginning, before the first day of professional experience, after the first assessment blog post and at the end of the teaching semester). The letters identified the challenges that the pre-service teachers may face, acknowledged their insecurities with the assessment task and expressed my commitment to building a community of early years professionals characterized by collaboration and support. During the semester, I also modeled my commitment to respect and empathy by listening attentively, following up concerns and providing extensive personal commentaries about their reflections and associated assessment items.

By embedding this characteristic, I wanted early year pre-service teachers to develop a strong group identity. Goodlad (1991) suggested in many teacher education programs, students do not develop strong group identities. Developing group identity requires a common goal and efforts to build a community (Beck & Kosnik, 2001). Moving from “cohort to community” requires a skilled and committed faculty team (Beck & Kosnik, 2001). As the only early childhood person on campus, this was my responsibility.

6. Helping Pre-service Teachers Face Problems

Helping pre-service teachers face challenges means providing space for the reconciliation between individual personal-practical knowledge and classroom practice. When students emailed me or visited my office to talk about teaching problems, I would provide opportunities to discuss teaching strategies and personal practical knowledge to help develop reflective practice. Pre-service teachers were respected as curriculum-makers, helping develop their agency to find solutions to problems. I realized that as a teacher educator, it is important to engage in continual reflection on one’s own thinking and practice.

My attention to care was also recognized in what Hackenberg (2005) called stimulation and depletion. For a teacher educator, there is attention given to students’ feelings of depletion (Nicol et al., 2010). Knowing that the pre-service teachers had concern over providing suitable learning experiences for their children in the case study, I structured activities online and during the workshops that were designed to help students feel more confident and comfortable. I wanted to make sure pre-service teachers feel cared for.

7. Receptivity to Growing in Relationship

I have tried to model the importance of receptivity in teacher education. In particular, I have recognized that new understanding about professional experience is enhanced by the “student” defining the problems faced, as opposed to me defining what I anticipate as problems. In online blogs, I have asked pre-service teachers to share their encountered problems with the child case study. Together as a group, we helped each other search for a deeper understanding. This process recognized that each pre-service teacher was unique and that each context and situation was different.

One page reflection: What have I learnt about the scholarship of teaching?

I have been able to pursue my own area of interest with a research study into my scholarship of teaching. I chose to investigate the impact of my pedagogical intent for care and relationality in early childhood teacher education. By engaging in this self-study, I have gained insight into my own practices and also the future teacher educator that I would like to become.

In my teaching, I realized that self-study is important as an investigative tool for teacher educators, especially as much of our work is conducted in isolation. By engaging in self-study, we investigate what has and has not worked in our teaching. In this self-study, I investigated if my intentions for embedding care and relationality could be enacted by the pre-service teachers. I realized that as a teacher educator, it is important to engage in continual reflection on one’s own thinking and practice.

I have also learnt the importance to engage with the academic literature. In this study, I have learnt about relational teacher education and been able to embed the seven characteristics suggested. I have discovered the Journal of Studying Teacher Education that acts as a source of professional learning, especially as a beginning teacher educator.

This study has also provided me with research ideas to pursue in the future about care and relationality in higher education. I am interested in also understanding my current situation of who cares for the wellbeing of teacher educators. In this study, I spent much time and energy trying to embed care and relationality. In reality, such a strategy is not sustainable and may not be possible with large cohorts. It is for this reason that I am interested in teacher educator wellbeing, as it is an important part of the reciprocal relationship with pre-service teachers.

In 2012, I will continue on my journey of understanding higher education (in particular early childhood teacher education) when I embark on a master of higher education. I am hoping to explore two different contexts, Australia and Norway.
How to Motivate US Students to Pursue STEM (Science, Technology, Engineering and Mathematics) Careers

Md. Mokter Hossain, Michael G. Robinson
University of Nevada, Reno, US

STEM (science, technology, engineering and mathematics) has been a powerful engine of prosperity in the US since World War II. Currently, American students’ performances and enthusiasm in STEM education are inadequate for the US to maintain its leadership in STEM professions unless the government takes more actions to motivate a new generation of US students towards STEM careers. Despite of coherent actions taken by the government and various institutions, the US cannot ensure the production of a sufficient number of experts in STEM fields to meet its national and global needs. The current situation is that the US is largely dependent on the foreign-born STEM workforce. This paper starts with a deeper look at the participation rate of American students in STEM careers and the basis of career choices by the US students. The discussion is driven by barriers and misconceptions about STEM education. It concludes with recommendations for how to motivate more US students to pursue STEM careers.

Keywords: STEM (science, technology, engineering and mathematics), career choice, barriers, misconceptions, motivation

Introduction

STEM (science, technology, engineering and mathematic) includes some of the most versatile and important careers in the contemporary world. Most new developments that are making the world a better place to live in are from the contributions of STEM fields. As the world becomes more technologically developed, the economy, power and leadership of the US are becoming more heavily based on effective practice and the number of skilled workers in these fields. As a result, the success, security and leadership position of a nation depend not only on the use of technology, but also the number of native workers in STEM fields. The technology-driven economy and skilled workforce in STEM fields are the driving force for innovation of a nation. The US possesses the most innovative and technologically capable economy in the world. Despite of a glorious record of achievement in technology, the US lags behind many less developed nations in STEM education in elementary, secondary and higher education. As the US invests more money and efforts to promote improvement in STEM education, the number of foreign students and workers in these fields is increasing significantly (Borjas, 2004; Kuenzi, 2008; National Center for Education Statistics, 2009).

In the proportion of 24-year-old that earns degrees in STEM fields, the US currently ranks the 20th in the world (Kuenzi, 2008). Once, for the leader in science and technology, the US is now behind many countries on
several measures in STEM education. Current progress is not satisfactory for the nation to address its ailing economic situation and continue global leadership in technology and innovation. It is assumed that many high-STEM-ability US students fail to realize their full STEM potential at the high-school level, or many of them leave their career choices in STEM fields entirely at the college level. There exist a lot of magnet STEM programs nationwide that are largely responsible for developing much of the talent emerging from the public school system. These programs, however, are not necessarily available to underprivileged students, and some are being cut due to current budget restraints. According to Wasserman (2008), retaining these students in STEM and enhancing their high-school STEM experiences are simpler than recruiting additional students. These students could be considered as the low-hanging fruit in the NSB’s (National Science Board) efforts to produce the next generation of innovators. Sometimes, their talent and potential are overlooked, under-developed and underutilized. However, they should be a target group for the nation’s strategy for developing a STEM workforce. This is apparently the only way to strengthen the economy and leadership of the nation; by preparing a substantive number of American citizens capable of working and leading in the nation science and technology sectors.

Although many US students excel in STEM, as a whole, US students performance in international comparisons on science and mathematics tests are consistently below average or in the third quartile (PCAST—President’s Council of Advisors on Science and Technology, 2010). The situation is that STEM education in the US is failing to motivate American citizens to attain sufficient skills and knowledge required to meet the century’s challenging economic and leadership needs (NSB, 2007). There are wide disparities in STEM achievement among various ethnic groups, and too many American students and parents believe that STEM subjects are too difficult, boring or exclusionary (PCAST, 2010). Research evidence indicated that many of the proficient American students, especially the minority and women groups, have been switching their career choices in STEM fields towards other professions (Denson & Hill, 2010). Although Hispanics and the black students in America’s college-age population are increasing, their participation rates in STEM fields are significantly lower than those of the white and Asian Americans (Sanders, 2004).

As the nation continues to advance through the first quarter of the 21st century, there is a growing need for educators to be less dependent on the foreign or foreign-born STEM workers and take appropriate actions to inspire and prepare native-born American students towards STEM education.

**Statement of the Problem**

Over the past two decades, the US STEM workforce has grown at more than four times the rate of total employment. At the same time, the proportion of US citizens qualified to fill STEM jobs is stagnating (University of California, 2010). According to a 2004 high powered US Education Commission, the STEM workforce in the US largely depends on foreign-born mathematicians, scientists and engineers (Sanders, 2004). In this rapidly growing competitive market, industry prefers graduates who have the potential to meet their research and development needs, and compete effectively with their counterparts worldwide.

Too many highly paid STEM jobs are now occupied by the foreign or foreign-born workers in the US. The overall situation is a warning that it is less likely that the US will maintain its local and global leadership in STEM professions unless the government takes remedial action to produce or import enough experts in these fields. As the nation continues to advance through the second decade of the 21st century, there is a growing need to, not only depend on the foreign-born workforce in STEM fields, but also take appropriate initiatives to
prepare local expertise in these fields. This, problem is causing difficulty for American educators and legislators during the recovery of the current recession and it hinders the US ability to sustain its competitive position. Thus, the question arises as to whether the US should continue its dependence on other countries for required STEM workers or take action to motivate more American middle and high school students towards the STEM pipeline. Maybe both are needed to generate enough scientists, technologists, engineers and mathematicians to create the new ideas, products and entirely new innovations in the 21st century.

The Participation Rate of American Students in STEM Careers

The current pipeline and participation rates for US trained STEM professionals are thought to be inadequate to meet the nation’s needs. Due to lack of proper motivation, many high-STEM-ability students fail to realize their full STEM potential in high school or leave the STEM track in college. According to the EWC (Engineering Workforce Commission) report of 2005, over the past 20 years, the total number of students who received bachelor’s degrees in engineering declined by 19.8% in the US. During the 2000-2010 periods, employment in science and engineering occupations would have been expected to increase about three times faster than the rate for all occupations. According to another report from the Computing Research Association, enrollment in undergraduate degree programs in computer science is more than 50% that is lower than that of five years ago. Between 2005-2006 and 2006-2007, the number of new students declaring computer sciences as a major fell 43%, to 8,021 (eSchool News, 2008a). The report did agree with the US Bureau of Labor Statistics in 2008 that between 2006 and 2016, 854,000 professional IT (information technology) jobs will be added, an increase of about 24% with the estimated 1.6 million IT jobs replaced in the ten-year period fields. According to Gellos, a spokesman for Microsoft Corp, all companies have that person down the hall to help with computer issues (eSchool News, 2008a).

In a 2008 report, a public high school authority in the US discovered an extremely low level of interest for participating in STEM related career academics in high school among middle school students; however, the students showed higher interests in arts, literatures, businesses and entertainment related careers, especially the girls (Rogers, 2009). Thus, it sometimes becomes a challenge for many high schools in the US to get a sufficient number of students to choose to enroll in STEM related academics. If low enrollment in STEM fields and low interest in STEM academics continue, all high school academics that link to STEM majors will be at great risk (Rogers, 2009). The Nashville Area Chamber of Commerce in Tennessee and numerous national sources pointed out that the US needed more workers in STEM fields. Experts warn that the US apathetic performance in encouraging students to enter STEM careers can complicate the troubles of the nation’s already ailing economical situation (Ramirez, 2008).

Furthermore, science and mathematics teachers face inadequate support, including appropriate professional development as well as interesting and challenging or relevant curricula. School systems lack tools for assessing progress and rewarding success. The nation lacks clear and shared standards for science and math that would help all actors in the system set and achieve goals. As a result, too many American students conclude early in their education that STEM subjects are boring, too difficult or unwelcoming, leaving them ill-prepared to meet the challenges that will face their generation, their country and the world. Studies found that many US teachers are not well prepared to teach math and sciences (EducationNews, 2010). Future mathematics teachers are getting weak training and are not prepared to teach the demanding curriculum needed for US students to compete internationally.
If too many students continue to pursue degrees and careers in other fields more than STEM related areas, the US will find it difficult to compete in the global economy. Furthermore, the US will not be able to meet its future workforce needs. The US needs 400,000 new graduates in all STEM fields by 2015 (Obama, 2009). Since only 15% of all college graduates currently choose STEM as majors or minors, which impacts American competitiveness, there is a projected shortfall of more than 280,000 math and science teachers by 2015 (eSchool News, 2008b). Microsoft reported that only 14% of students graduating with bachelor’s degrees in Washington State have the skills that they need (University of California, 2010). Without a solid foundation in STEM, students will not be qualified for many jobs in the workplace, including many jobs beyond traditional engineering and science.

The Basis of Career Choices by US Students

A great number of US students believe that a college degree is an excellent advantage in finding a rewarding job. But many more do not consider postsecondary education as the optimal or even a possible choice. About one-half of US students who leave high school without the knowledge or skills needed to find and maintain a job, and one-third of them are not prepared for even entry-level work (Levinson & Palmer, 2005). Many American students and their parents believe that most of the STEM studies require significant investment and hard work in education. Students who do commit themselves from the very beginning of middle or high school and have the opportunities to take high school or vocational courses in science and mathematics do succeed in the STEM path in their future studies.

A 2004 study found that 72.2% of US parents indicated that the basis of career choice should be based upon a combination of interests/abilities and the job market; 27.6% responded that career choices should be based solely upon interests/abilities, and only 0.2% stated that career choices should be based upon the labor market (J. Taylor, Harris, & S. Taylor, 2004). The study found more than 90% of parents had little or very little influence on their college-age children’s career decisions; fewer than 10% parents had great influence on their children’s career decision-making. Parental support and encouragement were found as influencing factors in children’s vocational outcome. The study also found that regarding influence on students, the father and mother were ranked as the first two, the teacher as the third and the counselor as the fourth in children’s choice for career development. However, most of the parents did agree that they did not have or should not have more influence on their children’s career decisions (J. Taylor et al., 2004). In another study, Robinson and Ochs (2008) found that friends were another important influencing body for pursuing high school students for taking science.

According to a US Bureau of Labor Statistics, in the 2005 FY (fiscal year), STEM workers, as a group, earned about 70% more than the national average, and every major group of STEM workers enjoyed overall median earnings that were above the national average. Fresh college and university graduates with a degree in STEM fields believe that they will not be paid adequately if they teach in a school or college. For instance, in 2005, biophysicists and biochemists, who often have a Ph.D., had median earnings of $71,000; biological technicians, who often have an associate degree or less education, earned a median of $34,270 (Terrel, 2007).

However, many students who graduated with a STEM degree believe that teaching in the middle and high schools is more socially responsible, but is not paid adequately. For instance, median salary offered for the fresh college graduates for teaching in elementary public schools is $30,000, and the median salary for fresh secondary teachers is $36,000. By contrast, the median salary offered to fresh college graduates in certain.
STEM-related fields, including physics, computer science, accounting and engineering, is currently more than $60,000 (PCAST, 2010). Moreover, most of the teaching positions demand a teaching license and/or a teacher education degree that many STEM graduates do not want to acquire.

In addition, STEM teachers’ salaries do not keep pace with salaries paid to other STEM professions (PCAST, 2010). For instance, between 1993 and 2003, the median salary for high school science and mathematics teachers increased by 8% adjusted for inflation, while, during the same period, the salary for other STEM professions increased by 21%-29% (NSB, 2008). In international comparison, teachers in the US are paid less than in many developed countries, even though they have to do more challenging and responsible duties, and work more hours on average (OECD (Organization for Economic Co-operation and Development), 2009). According to the finding of PCAST (2010), relative to per capita GDP, the US ranks in the bottom third of OECD countries in terms of teacher salary. Figure 1 shows that the US teachers are paid less than half of Korean teachers, and lag behind more than half of the 33 OECD countries including Mexico, Japan, Czech Republic, Italy, Austria and France. Thus, it is very likely that many graduates with a STEM degree either do not choose a teaching position or leave within the first few years of their teaching career to a non-teaching position.

**Figure 1.** Secondary teachers’ salary relative to GDP in OECD nations. Source: OECD, 2007 reported in PCAST, 2010.

**Barriers and Misconceptions Toward STEM Education in the US**

According to the NCEE (National Center on Education and the Economy) (2006, p. 8), “The core problem in US STEM education and training systems is that they were built for another era, in which most workers needed only a rudimentary education”. The NCEE believed that teachers who educate elementary to high school level students get their information and attitudes about STEM disciplines from college and university level courses taken in the teacher education programs. However, technology has not reached its potential in teacher education curricula nationwide. Many newly graduated teachers often do not have sufficient experience to use computers in teaching-learning processes (Kurz & Middleton, 2006). A study showed that teacher preparation for technology integration was minimal (Watts-Taffe, Gwinn, Johnson, & Horn, 2003). A more recent study revealed that many technology preparation classes only adequately prepare pre-service teachers
with lower-level technology skills that do not provide pre-service teachers with adequate knowledge to provide sufficient technology-based instructions in their classrooms (Brush, Glazewski, & Hew, 2008).

It is also thought that US STEM education faces barriers and misconceptions that greatly hinder students’ motivations and achievement at all levels. Most of the barriers are related to curriculum, credit and funding issues, lack of qualified teachers, inadequate policies to recruit and retain STEM-educated teachers, difficulty in retaining teachers with a STEM background, difficulty in conducting research and continuing to learn about STEM areas while teaching in the classroom, lack of adequate preparation for teachers in higher education, classroom time constraints and difficulty in attracting and keeping kids in STEM careers. These barriers are fueled by some of the following misconceptions against STEM education in US public schools. They include the following long list: STEM education is just another “fad” in education and will soon go away; colleges will not accept credits for high school courses called STEM; technology means the ability to do basic computing and Internet browsing, STEM education consists only of the two bookends—science and mathematics; STEM education addresses only workforce issues; technology education and engineering are disparate and troublesome; mathematics education is not a part of science education; engineers and technology education teachers cannot teach science or mathematics; STEM education includes a lot of laboratory work or the scientific methods; all STEM educated students will be forced to choose technical fields because they do not have a liberal arts foundation; etc. (Setda.org, 2008). In addition, STEM studies seem to be very hard for many students.

There are severe troubling weaknesses, gaps and disconnection among the quality of math and science instructions in the early grades, the performance of high school students on international tests and the content and harshness of pre- and in-service teacher education programs in the colleges and universities in the US (Sanders, 2004). In many elementary and middle schools, students are not being equipped to achieve expected goals in science and mathematics. A significant number of elementary school teachers lack confidence in their abilities to teach mathematics and science. The problem is particularly severe in the elementary grades and also serious for middle and high schools (National Center for Education Statistics, 2009). During the 2007-2008 school years, only 56% of K-12 public school science and mathematics teachers held undergraduate and/or graduate degrees in science or science education, or mathematics or mathematics education (PCAST, 2010).

Among the nation’s estimated 426,000 middle and high school STEM teachers, each year about 25,000 of them leave their teaching profession (Ingersoll & Perda, 2010). While reasons for leaving job are numerous, nearly two-third of them cited job dissatisfaction as their reasons for leaving. Due to low remuneration but high accountability and workload and lack of professional support, more than 40% of beginning science and math teachers left their jobs in the first five years (Ingersoll & Perda, 2010; NSTA (National Science Teacher Association), 2008; Woullard & Coats, 2004). Although many of them reenter teaching in different schools or locations, or switch to a different branch of STEM careers, to counter the net turnover rate of STEM teachers, the US still needs to attract more students to STEM fields and ensure an ongoing annual average need for 25,000 new STEM teachers (PCAST, 2010).

The issues are not only due to the quantity and quantity of STEM teachers. There is a crucial issue of quality of teacher education programs as well. Many pre- and in-service teacher education programs prepare their graduates with insufficient skills on technology usage. As a result, many newly graduated teachers do not have sufficient experience to use computers in the teaching-learning processes (Kurz & Middleton, 2006). A 2008 study found that many technology preparation classes adequately prepare pre-service teachers with
lower-level technology skills, but do not provide pre-service teachers with adequate knowledge to provide sufficient technology-based instructions in their classrooms (Brush et al., 2008). Even among teachers who obtain college or university degrees, many do not acquire a strong background in technology integration with pedagogical training, and even among the small fraction of teachers trained deeply in pedagogy in STEM fields, there is little evidence to evaluate the quality of instructions they received in STEM content or STEM pedagogy (PCAST, 2010).

**How Do We Motivate More US Students to Pursue Teaching in STEM Areas?**

To address the barriers, misconceptions and problems of STEM education, we need to target STEM education components for students at all levels from elementary to graduate levels. We particularly need to target the pre-service teachers who will become the future STEM undergraduate, graduate or faculty school teachers. To meet the needs of a scientifically and technologically literate workforce, meaningful preparation of STEM teachers needs to be considered as an undoubted necessity. To increase young students’ interests and enthusiasm in STEM careers, there are some actions that can be taken. They include the following: Organizing fundraising events with the community or other projects that increase budgeting and math skills; teaching youth at science summer camps or after-school programs; getting students to join math and science clubs; exploring technology hobbies among school children; helping them to participate in science fairs; basic computing and internet browsing; including them in Internet forums and social networking; giving them books and magazines on science and mathematics; motivating them to pursue science and engineering careers; and helping them to learn about computer parts; etc. (Setda.org, 2008). Moreover, students pursuing degree or certification courses in STEM related subjects should be given additional scholarships or financial support by the government or concerned institutions.

The US Federal Government has pursued some of these initiatives, and if they are successfully implemented by 2020, the US will once again have the prospect for the highest proportion of college graduates in the world. The tax credit and grant programs are some of the programs initiated to make US college education more affordable. They can greatly enhance the US ability to compete for the high-wage and high-tech jobs of the future and foster the next generation of the STEM workforce (Obama, 2009). The US 2010 budget provided $115 millions for the DOE (Department of Energy) to launch a program jointly with the NSE (National Stock Exchange) to inspire tens of thousands of American students to pursue STEM careers, particularly in clean energy (Johnson, Chubin, & Malcom, 2010). Even as the US focuses on low-performing students, it should devote considerable attention and resources to all of our most high-achieving students from across all economic and ethnic groups. In the words of President Obama (2009), “We must educate our children to compete in an age where knowledge is capital, and the marketplace is global”.

To meet US needs for a STEM-capable citizenry, a STEM-proficient workforce and future STEM experts, the US should focus on the following goal: The US should prepare all students, especially minorities and girls who are underrepresented in these fields, to become more motivated and proficient in STEM subjects. To support this goal, partnership and collaboration of private and philanthropic groups with local and state government are essential. To motivate a greater number of students and the non-STEM workforce to join the STEM pipeline, a number of steps at various levels should be taken and monitored closely. Collaborating with other education organizations, the private sector and local community organizations are the most effective and promising way to accomplish the shared vision for motivating workers to join the STEM pipeline. Initiatives
should be started to promote education in the related areas so that students who are enrolled in the industrial areas can do their internships while they are being prepared to study STEM fields in college. Most importantly, students, teachers and educators at all levels should acknowledge that STEM careers require significant investments and hard work during preparation. Students who do commit themselves from the very beginning of middle school and have the opportunities to take high school or vocational courses in science and mathematics can succeed in the STEM path in their future studies.

STEM initiatives should be monitored by the Department of Education and the federal agencies, such as the National Science Foundation and the National Council of Teachers of Mathematics, for effective STEM education in K-12 levels. The Federal Government must actively engage with each of these partners, who must in turn fulfill their own distinctive roles and responsibilities. According to the PCAST (2010), in recent decades, relatively little federal funding has been targeted toward catalytic efforts which have the potential to transform STEM education. Too little attention has been paid to replication and scale-up to disseminate proven programs widely. And, too little capacity at key agencies has been devoted to strategy and coordination.

Most importantly, parents, teachers, school counselors and friends should increase their influences towards STEM careers in multiple ways, such as, become better informed about the need for science literacy in all students; learn more about STEM careers to better advise underserved students on science courses needed for pursuing college majors that lead to STEM career after completing high school or higher education; and present importance of taking high school science and mathematics courses to prepare for future STEM careers, etc.

Thus, coherent strategy and sufficient leadership should be taken by the Federal Government. The Federal Government should provide vigorous support to the state-led effort to develop common standards in STEM subjects by providing technical and financial support to states for high-quality professional development that is aligned with shared standards and the development, evaluation, administration and ongoing improvement of assessments aligned to those standards. Most importantly, the Federal Government should provide vigorous support in setting goals that ensure the recruitment, preparation and induction support of at least 100,000 new middle and high school level STEM teachers with majors in STEM fields and strong content-specific pedagogical knowledge by 2020 (PCAST, 2010).

Last, the US must provide more investment in supporting teacher preparation programs that provide strong content and pedagogical knowledge in STEM subjects. In making investments, special focus should be given on programs that are scalable, because they will have the greatest impact on terms of the number of teachers produced and the greatest opportunity for learning about elements of successful programs (PCAST, 2010).

Conclusions

Despite of coherent actions taken by educators, government and various organizations, the US cannot be certain of producing and certifying the quantity and quality of students, teachers and professionals in STEM fields needed to meet the nation’s current demands. The overall situation indicates that it is unlikely that the US will maintain its local and global leadership in science, math and technology professions unless federal planners take remedial action to produce nationally or import enough experts in these fields. This is not a satisfactory outlook for American educators and legislators who are attempting to recover from the current economic hardship and ensure sustainability as a high technology nation. A vital question is whether the US education system and job markets are failing to motivate and encourage American students to pursue STEM education and careers in these fields.
Success in STEM requires both technical and non-technical skills and dispositions. Curiosity, the ability to think logically and creatively in problem-solving, communication skills and the ability to work in teams are all required to succeed in STEM careers. Mathematics and science knowledge are an important base for all STEM workers. Students need to be inspired in STEM subjects beginning in the middle school grades with coursework and extracurricular activities focusing on honing problem-solving skills in the high school grades. After high school, STEM career requirements are more specific to the specific occupations.

The solution to the STEM education problem should be handled in an interdisciplinary manner, which must be grounded in the STEM discipline departments as well as the Colleges of Education and Human Development. STEM education should be considered as a targeted education component for graduate students who will later after work experience become the future STEM undergraduate and graduate faculty. Meaningful preparation of K-12 and higher education STEM faculty should be considered as an undoubted necessity to meet the needs of a scientifically and technologically literate workforce in a modern and technology-driven nation.

References


HOW TO MOTIVATE US STUDENTS TO PURSUE STEM CAREERS


Voices of Conflict: Students’ and Lecturers’ Perceptions of the Utility of the Bridging Program at University

Chauraya Efiritha, Matope Nogget, Maruzani Nyevero
Midlands State University, Gweru, Zimbabwe

Tertiary institutions in Zimbabwe face the daunting challenge of increased need for university education by students. In response to the challenge, universities in Zimbabwe embark on strategies that increase accessibility to university education by disadvantaged students. One way through which the Zimbabwean universities are addressing the challenge is the BP (Bridging Program). This paper evaluates the BP at a Zimbabwean university by exploring the perceptions and experiences of students who have entered the university through bridging, those who entered through direct entry, as well as those of the lecturers who teach them. The study explored their perceptions and experiences by means of qualitative direct interviews with both students and lecturers and also through a questionnaire to the students. The results indicated a noble purpose of the program, however, voices of conflict between students and lecturers, students and students, and lecturers and lecturers on the intellectual and social frames of the program. The paper made several recommendations, the key of which is the need to: keep the BP as a stopgap measure, financially support the BP and achieve institutional change to remove stigma attached to bridging, and also remove gender discrimination.

Keywords: BP (Bridging Program), functional frame, intellectual frame, social frame, stigma, gender discrimination

Introduction

In his assessment of the state of higher education in Africa, Coombe (1991) pointed out the continued centrality of university education. He noted that universities remain great national storehouses of trained, informed, inquiring and critical intellects and the indispensable means of replenishing national talent. Coombe (1991) further reiterated that in this endeavor, the universities have no substitutes. Universities are critical in the development of any nation and remain engines for economic growth. This could be the reason why, when Zimbabwe gained its independence in 1980, one of its key areas of focus was expansion of university education, as the country moved from an elite to a mass education system. At independence time, there was only one university in the country, but today there are more than a dozen universities in the country. However, as Kariwo (2007) pointed out, even with this increase in the number of universities in the country, “It is estimated that Zimbabwe has an excess of some 8,000 students annually who qualify but fail to enter universities” (Kariwo, 2007, p. 8). Depending on the program, the minimum entry requirement for the universities is five ordinary level passes including English and at least advanced level passes in two subjects. A pass at advanced level is at least two E grades.
Unlike countries like Nigeria, Austria, Switzerland and Belgium (Retrieved from http://www.en.wikipedia.org/wiki/University_and_College) where student admission into university is administered by a centralized unit, Zimbabwe does not have a centralized system for student admissions to undergraduate. In Zimbabwe, students are not only admitted into university as a whole, but also a particular field of study. As the demand for education continues to rise, admission into a university is highly competitive. In most cases, though the government regulations stipulate a minimum of two points, higher points give an admission advantage, and due to competition some departments demand a minimum of 14 or 15 points. In such case, two points are considered just as fail. In Zimbabwe, then, it ends up not just being a case of holding advanced level results, but a satisfactory performance in it is pre-requisite. Academic departments in Zimbabwean universities are known for demanding high points. Lowering of entry points has been practiced to increase enrolments and, sometimes, to deliberately optimize a disadvantaged sex group, but this has attracted condemnation from critics (Bunyi, 2003). The critics have cited that universities are meritocratic institutions and, therefore, allowing some students to enter with lower points than others, not only dilutes standards but endorses the notion of those whose points have been lowered as intellectually weaker. Kariwo (2007, p. 11), on this aspect, hammers home called as “maintaining fitness or purpose by the universities”. However, supporters of this intervention counter argued that those who entered the universities through this route, first and foremost qualify to enter before they are considered under the scheme, it is only due to shortage of places that they would otherwise be locked out.

However, even after lowering of points, it is realized that very few candidates enter subjects that require a strong science-mathematics-technology background, yet, there is an increasing need for university education in these departments. In these cases, the BP has been found a viable alternative by most state universities in Zimbabwe. While the BP has been implemented at the MSU (Midlands State University), in Zimbabwe, for sometime now, there is limited information regarding students and lecturers’ perceptions of the program. Against this background, this study examined perceptions and experiences of students and lecturers of the BP (Bridging Program), for the study feels that their perceptions and experiences are important for the success of the program.

**Literature Review**

**What Is the BP?**

The BP is a strategy that focuses on providing pre-degree assistance to students who are educationally disadvantaged, whether male or female. The goal of the BP is to sequentially bridge the gap between the initial skills of an individual and what the individual needs to enter and succeed in university education (Woollacott & Henning, 2004). This study made one of its aims establish how well the students and lecturers find the program “bridging the gap”. Because of this goal, the BP is, sometimes, called “an enabling course”, because it is supplementary education specifically designed to offer transition services that assist a student who is not otherwise eligible for admission to university (Retrieved from http://www.en.wikipedia.org/wiki/Bridge-Program). Through the BP, the student will attain initial educational level that enables him/her to attend a course and achieve a terminal degree. Nair (2002) in works on “Remedying for Educational Wastage in Educational Training” found most higher education institutions almost the world over, employing BP as an alternative for students who failed to meet tertiary entrance requirements. The BP is provided for particular types of disadvantaged students who need preparation prior to commencing a formal award course. The BP is, thus, in fact, educational support through extra tuition, as it addresses the student’s articulation gap between...
secondary and tertiary education through compensating for the student’s under preparedness by providing the student with additional educational support in preparation for mainstream studies.

Bunyi (2003) reported the successful story of the BP when citing the story of 2002/2003 science and technical intake at Jomo Kenyatta University (Kenya) where none of the 462 female students who entered public university through lowering of points entered courses, such as medicine, surgery, dental, etc.. Masanja (2001), reporting about the university of Dar es Salam’s enrolment statistics of 1997 to 2000 and concurring with Bunyi (2003), noted that the BP seems not to attract as much controversy as lowering of points.

Theoretical Perspective

The focus of this study was on gauging the students and lecturers’ conceptions, perceptions and experiences of the BP at MSU. The theoretical framework that guided and directed this study is the SIT (Symbolic Interactionism Theory), as it is outlined in Ballantine (1997). The founder of this theory is George Herbert Mead and the theory’s stance is that social behavior cannot be understood in the same way as natural scientists understand the behavior of physical events (Ballantine, 1997).

According to Ballantine (1997), this theory emphasizes that raw behavior of human beings in a set up can only be understood within its social context, justifying in here the adoption of the qualitative research paradigm. This study mainly borrowing from the theory as echoed by Ballantine (1997) is on how the studied members acquired, interacted and interpreted a set of meanings, rules and norms that they attach to their experiences of the BP. From this, the study asked questions to understand how the respondents defined and conceptualized the BP. In assessing the students and lecturers’ conceptions and meanings of the BP, this study paid attention to whether it was one strong voice or there were conflicting and contradictory streams of thought in the shared meanings. The voices of conflict were investigated among students themselves, i.e., those who enrolled through bridging and those who entered university through direct entry. Voices of conflict were also investigated between lecturers and students’ perceptions and experiences.

Ideas that also guided this study were borrowed from Melrose’s (1996) views on evaluating a curriculum program. According to Melrose (1996), curriculum program evaluation involves making critical assessments about the effectiveness, value or appropriateness of the curriculum program. One way of making the critical assessment of a curriculum program is examining students and teachers’ experiences. According to this, one of the aims of this study was to assess the students and lecturers’ perceptions of the value and worthiness of the BP. The examination of the students and lecturers’ perceptions and subjective experiences of the BP is of particular importance in this study, because it gives clues to successes and/or failures of the BP. Borrowing directly from this, this study adopted a qualitative focus which is consistent with the intention to explore subjective feelings and experiences of the BP. Again in making this examination, attention was paid to whether any divide existed between students who entered through direct entry and those who entered university through bridging, and between students and lecturers.

Research Methodology

Research Design

Borg and Gall (1996) asserted that the worthy of any study lies in the research design. The two went further to explain a research design as the entire approach or all the procedures elected by a researcher to answer a particular set of questions. Because of the intention to explore the students and lecturers’ subjective perceptions and experiences of the BP, this study adopted a qualitative focus. The students and lecturers’
subjective perceptions and experiences build their subjective meanings of the BP. Crotty (1998; as cited in Dzimiri, 2004) noted that qualitative methods can ascertain what those meanings are. The view of a qualitative study adopted by study is given by Neuman (2003) who defined a qualitative approach as a holistic inquiry into a phenomenon that is examined within its natural setting. According to Merriam (1998), this study’s interest lay in understanding meanings from the participants’ views with the intention of inductively building rather than testing concepts.

**Study Population**

The study targeted a cohort of students doing level 2.2 (i.e., completing their second year) at MSU during September to November, 2010, and the lecturers who taught them. The cohort comprised students who entered the university through direct entry and those who entered through bridging. The level 2.2 rather than first year students were chosen, because the researcher felt that these had ample time in the mainstream study, so had a wider experience with lecturers that enabled them to give their valuable insights into the efficacy of the BP and also not far away from their starting point to forget their experiences during the bridging period (in the case of those who had entered university through bridging). Lecturers considered for the study were only those who taught such a cohort of students in different subject departments in the university.

**Study Sample**

Stratified sampling was employed to come up with participants who represented a cross-section of the population. Students and lecturers were stratified according to their faculties and then subject areas. After stratifying students and lecturers, possible equal numbers of males and females were randomly selected. A total of 30 students (15 entered through bridging and 15 entered through direct entry) and eight lecturers were selected. Of the 30 students, six were from the faculty of hard sciences, six from Faculty of Natural Resources, six from Faculty of Social Sciences and 12 from the Faculty of Commerce. Of the eight lecturers, two were from the identified faculties.

**Data Collection and Analysis Procedures**

All the 30 students filled in the questionnaires. There were two sets of questionnaires—one for those who had entered through bridging and the other for those who entered through direct entry. From the 30 students, formal semi-structured interviews were held with 16 of them in form of four focus group discussions (two with each set of students). Through the use of focus group interviews, students as a group of interviewees being similar were allowed to talk about whatever they considered important to the topic. Focus group interviews have been shown to facilitate greater openness as opposed to the one-to-one interviews (Neuman, 2003). Data collected using these discussions were very valuable in providing insights into shared experiences and revealed details and intricacies that this researcher believed may not have been readily available from the individual interviews. Through use of this instrument, there was sparking of views on the BP which, in particular, enabled capturing of students’ ideas, feelings, opinions and suggestions. By doing so, rich data were generated in a way that validated the study (Creswell, 2005).

Face-to-face and one-on-one interviews were held with the eight lecturers who taught the students that entered university through bridging and those who entered through direct entry together. The interviews consisted of both closed and open-ended questions in order to gather the lecturer’s facts and opinions about the BP.

Through the interview with both students and lecturers, this study was able to acquire supplementary information from the respondents through the respondents’ incidental comments, body languages and tones of voice.
These gestures gave clues to the participants’ attitudes, feelings, achievements and limitations of the BP at MSU.

Data Analysis and Reporting Plan

The data collected were analyzed qualitatively according to what Creswell (2005, p. 231) called a “bottom up approach … (that) consists of developing a general sense of the data, and then coding descriptions and themes about the central phenomenon”.

Research Findings and Discussion

The collected data constituted three sets of results. These were: the set of the lecturers’ results; the set of results of students who entered university through bridging and the set of results from the students who entered university via direct entry. An intersectional approach was employed, where results from the three sets on same aspect of enquiry were compared and contrasted. Broadly, the three sets of data yielded results that were put into three categories depending on the dimensions of the responses. The identified dimensions from the data were functional frames, intellectual frames and social frames of the BP.

Functional Frames of the BP

Much in line with Essack and Quayle’s (2007) main finding, all the three groups of participants found the BP an important avenue for students to enter into university and pursue a degree course, without which they (students) would not have entered. This was a fact confirmed by all the lecturers and all the students who had entered through the bridging and 80% of the students who entered via direct entry. The responses were all in favor of or strongly in favor of the BP. Of the three students who opposed the BP, none strongly opposed. One lecturer categorically stated that:

While it may be debatable whether the BP assists students to tackle a degree program, it is non-debatable that without the program, many students would not be in this university today. I find the BP beneficial. Demand for university education in Zimbabwe is exploding. Zimbabwe cannot afford to waste talent just because of lack of will to foster the talent.

One of the interviewed students from Computer Science Department who entered through direct entry also said, “We learn with them. In some cases, it is not because of lack of potential, but often for reasons of disadvantage”. Indeed, it was the feeling of most of the students who had entered through bridging. They did not consider themselves academically inferior, much as they felt that it was an issue of being either academically under-prepared (a feeling from those who did not have much “hands on” on computers as others) or academically ill prepared as was the case with most who came from poor rural and urban backgrounds.

In a class of 10 taking computer studies, we ended up with only one working computer. I had no chance with computers, so I cannot even half compare myself with my fellow mates from Regina Mundi High School where there is a computer laboratory with functioning computers being more than the number of students. I understand that I was coming from a disadvantaged background. I tell you, with the experience I had from BP, I started my first year much better than some who were coming from school straight. (Interview bridged student)

Another interviewed bridged student had this to say, “For me, it is a stepping stone into the university without which I would not be here. I credit the program for being where I am today”. Indeed, through the focus group discussions, students shared a lot on areas of individual deprivations. Some cited poverties of the schools to acquire and maintain resources, while with some, especially females from rural day schools it was an issue of social-cultural constraints, the main one being the burden of household chores. The bridged students, thus,
shared a “common advantage” of being accorded an avenue to university education and pursue a degree program—an advantage without which they would not be at university. Thus, as Essack and Quayle (2007) found out, all the groups of respondents in this study agreed that the BP was a useful program that enabled a viable and legitimate student route into university of disadvantaged students.

However, while the BP increased entry of disadvantaged groups, most students found the program benefiting more female students than male students to such an extent that 93% of the student respondents believed that the BP was a gender affirmative action program (This aspect had many negative social connotations as will be seen on the section on social dimensions of the program). The lecturers also tended to agree that the BP, though open to males and females, appeared to be skewed in favor of female students in the end. Their arguments were that, since university enrolment policy is 50:50, indisputably, more males than females enter via direct entry. The lecturers further said that most female students even after lowering of entry qualifications could still not qualify precipitating bridging to beef up the pre-requisite advanced level subjects. In the end it is mostly females who then will be bridged. In fact, one lecturer said, to begin with, they used to bridge only female students. Thus, while rhetoric frames the BP in terms of disadvantaged students, the study found out that university practice intervenes on level of gender.

The Intellectual Frames of the BP

Various views were ushered concerning the academic effectiveness of the BP. All the three sectors were of the view that, as its name suggests, the BP’s mandate is to bridge the gap between high school and university education. As one lecturer rightly put it, “It is an equipping program, equipping students with skills and knowledge that lay a solid foundation for their mainstream studies” (interview lecturer).

From the lecturers’ perspectives, the BP is very effective in closing the articulation gap between secondary school and university education. Of the eight lecturers, seven found the program laying threshold concepts on the students’ chosen course. Only one lecturer was somehow in between concerning the effectiveness of the BP. From the lecturers’ experiences, there were no notable differences in performance between the two groups of students afterwards, saying that as they enter the mainstream, it becomes difficult to pick on who came through bridging and who came via direct entry. Once in their mainstream, one can not tell who is who. Performances depend on level of devotion to study and self-directed learning (interview lecturer).

However, from the group of the bridged students, a divide existed in their responses. While two thirds of the group found the program well equipping (as they said that they felt no academic gap between them and others who entered through direct entry), the other one third were of a different view. These felt that they did not much benefit from bridging, as they found themselves relying on direct entry students on threshold concepts.

The same divide existed within the group that had entered through direct entry. Within this group, the divide was a common thread woven from the way they viewed the BP, via their views and feelings about students who had entered through bridging to the sort of recommendations they proffered. While all appreciating the noble purpose for bridging, three quarters found the program wanting in pursuit of its goal. The three quarters maintained that one can tell that so and so entered through bridging

Because when we come to higher order subject concepts, most of them lag behind. Why? Because they lack the foundation, constructions at baseline levels become constituencies at higher levels. Because they lack the constructions at the base, they encounter perpetual difficulties as we go up. (Interview student enrolled through direct entry)

Another student from this group reiterated that, “Even some of our lecturers, like Mr. X, you will hear him
say, ‘If you entered through bridging, you may find this difficult’ (interview student). Pockets of these students said that they were doing a lot in helping the bridged students. Some students, on this issue, blamed the one term period accorded bridging, saying that it was rather too short, while the majority of this lot blamed the problem on the “point gap”. “Surely, a person with 13 points now being put at par with one with two points and say that bridging swallows the gap is rather unrealistic” (interview student).

Thus, voices of conflict existed between students and lecturers and within students themselves as regards the effectiveness of the BP.

Social Frames of the BP

Almost all the bridged students said that the BP gave them the confidence to their studies by way of familiarizing them with how the university works both socially and academically. It, thus, gave them what Bourdieu (1997) called “social capital” or “cultural capital”. The view of social capital taken by this study is as perceived by Thomas (2002) who viewed social capital as being fundamental about how people interact with each other, that is “the glue which helps to move individuals from exclusion to participation”. These students felt that they were prepared to acquire an understanding of university conventions, as they were enculturated into a new academic culture. To these students, the social capital manifested itself in various ways. Key among these was that the BP introduced students to the experience of working in a university environment.

During the BP, I began to develop an understanding of what it means to be a student at a university, as I also observed others who were already in the mainstream. When I was now first year, I was way ahead of those from high school. (Interview bridged student)

From the lectures attended, the BP accustomed the students to the different teaching styles and introduced them to the style of self-directed learning. “Unlike in high school, learning during BP introduced me to self-directed learning styles” (interview bridged student). In this way, the BP increased students’ confidence in them. Self-directed learning has been found by Henderson (2009) to cultivate self-belief in students.

Students, thus, during bridging, learnt what it was like to be a part of the university community, thus, removing a feeling of exclusion and ushering in an era of participation, a feeling of being “a part of” and a “sense of belonging” (Thomas, 2002). It completely removed the culture shock which they said those who had not done bridging during the beginning of their first year.

However, though feeling belonging to the university community, 13/15 said that belonging was mostly negative in the sense that they felt that they were being discriminated against by students in the mainstream, a feeling 6/15 felt up to the time the study was carried out. They said that they felt that others viewed them as academic failures and inferiors, a feeling some of them said even some of their lecturers held up to today.

Now, it is better that we are a part of the mainstream, and those behind us do not know how we got into university and those ahead, are only too busy trying to finish up their courses. But, when we were bridging, I particularly felt isolated from the mainstream and stigmatized from their comments and attitudes. “These are the ones who tried but failed and now are building bridges after failing to cross the river” (Interview bridged student, directly translating from its vernacular version). (Interview bridged student)

There was a lot of satire in the vernacular statement which made the bridging students feel criticized and subtly demeaned for their inadequacies. This is in agreement with what Essack and Quayle (2007) found out. The students in this study said that they felt inferior, inadequate, and different and ridiculed, and hated telling their friends, who were a part of the mainstream then, and they were bridging. “Worse still during our first
year, Mr. Nyepai kept reminding us over and over again that we were bridged” (interview bridged student).

The bridged male students said that they did not share the same degree of disadvantage of stigmatization as with their female counterparts. These male students said that they felt the stigmatization more alluding to a gender asymmetry disadvantage. Drawing heavily from the devaluation perspective as given by England and Li (2006), extrapolating on the Zimbabwean situation, the Zimbabwean culture devalues women, and this leads to devaluation or stigmatization of all that is associated with women, even a field of study. Undisputedly, more females were bridged and the program to begin with at the university was made for females only, so males who were bridging were labeled “females”, and in the Zimbabwean culture, this is the least that any men worth his salt can take. The bridged male students hence felt a removal of their male hood. The bridged male students said that it was worse when they were bridged to enter a field that is traditionally for female. The stigma of a non-traditional choice was stronger for men than women, because when men make a non-traditional choice, they are entering a devalued sphere of things associated with women (Williams, 1995). Thus, though the bridged students shared the same victim mentality and disadvantages of stigma, there was gender asymmetric in the disadvantage, making the bridged male students suffer a double jeopardy.

However, the female students also said that, in fields where only females still happen to be the bridged lot, especially in natural sciences (because of the institutional drive to have gender parity in enrolment), the BP instilled a feeling of being separate and different from the rest of the group who are mainly males. One female student said, “If we encounter difficulties with subject matter, we often hear these male students, even up to today saying, “Did you not meet this during bridging?” The female student went further to say that the impact of such comments on the social and educational experience of the victims is devastating, and in some cases, the female students escape by ceasing seeking help or even ceasing participating in lectures.

Thus, for these students, while the BP gave them confidence to their studies by familiarizing them with the university culture which the victim mentality brought about during the process of eroding the social gains. Seventy five percent of the bridged students felt socially unaccommodated during their bridging, 60% regretted the route they had taken, but the regrets were soon overcome by the realized benefits, for indeed the majority (90%) felt that they were better prepared for their degree studies, because they had completed bridging. Yet again, 75% felt that their fellow students who knew definitely that they were bridged did not well accommodate them during the bridging process.

Only two of the eight lecturers thought that there was stigmatization of the bridged students and all the lecturers said that they do not pass comments or joke in ways that demean bridged students.

The non-bridged students, almost all, agreed that there is indeed stigma attached to attending bridging and that even at the level of 2.2, they were conscious of who got in through bridging and who got in through direct entry. They (73.3%) agreed that they treated bridged students differently and 46.6% felt that they will not recommend the BP to other students, because it was just not in their interests.

Conclusions

This study acknowledged the commendable effort and the landable commitment displayed by the MSU, Zimbabwe, in addressing the increasing demand for university education in the country through the BP. However, despite of this shrill drive and noble purpose of the program, the study also noted that there exist challenges regarding the intellectual and social frames of the program. The study is, however, of the view that when these two frames are revisited with a view to revitalizing them, the BP remains one of the most viable routes through
which students, who otherwise are not eligible for admission to university, can enroll in university.

**Recommendations**

In view of the research findings, this article makes the following recommendations:

1. Results established neither separate nor contradictory streams of thought between the three groups of participants as regards the functional value of the BP. In light of this finding, the study recommends that the BP be kept implemented as a stopgap measure. The program unlocks the potential of students, since it is inarguable that quite a number of Zimbabwe secondary school pupils are not exposed opportunities to optimize, even let alone to realize their potential. In this regard, the program touches and transforms the lives of these individual pupils;

2. While the BP increases access to university education, lecturers especially thought that the government could consider assisting bridging students financially. “Potentials remain untapped, because the vast majority can not afford the fees” (interview lecturer). Bridging is not provided for free. The scenario in Zimbabwe is such that most students who attend rural day schools are from poor families, so do not score high because of a myriad of reasons surrounding their situation, chief among these being poverty. The students score lowly, and cannot access university education through direct entry. The majority of these are then forced to bridge, but bridging is not provided for free. Government assistance is given to those who are in the mainstream. Thus, university affordability may pose a barrier. This study recommends that government assistance be given to bridging students;

3. Mixed feelings towards the BP’s usefulness were registered with both students and lecturers. These are particularly important for the success of the BP, and so need to be gauged. In light of this, there is great need by the university to constantly carry out diagnostic feedback on the successes and limitations of the BP at the institution in order to ensure that the program continues to meet students’ needs. There are many ways in which this can be done. The university authorities could let students and lecturers complete an evaluative questionnaire at the end of their bridging course that gauges their perceptions of the BP. Another fruitful way of doing it is holding qualitative feedback sessions with the lecturers and bridged students in focus groups. This researcher found these a useful way of gauging student perceptions. This will provide stakeholders with insights into lecturers and students’ subjective perceptions and experiences of the program, including its perceived value, effectiveness and appropriateness. Students, especially, should be given a chance to engage in a process of personal reflection on their own development and challenges regarding the program;

4. The study established stigma associated with bridging. The organization of the program at the institution was found to result in perceptions of inferiority and stigma attached to attending bridging. In line with this, the institution is encouraged to adopt an ideology that avoids practical isolation of the bridged students from the mainstream. The university needs to push for an institutional change that demonstrates change in the broader university community so that the community understands and appreciates the program and in the process the bridged students do not feel embarrassed, frightened, hurt, uncomfortable or inferior relative to those in the mainstream, because of their method of entry. The institution can achieve this through carrying intensive and extensive awareness of and sensitivity to the BP. The two terms’ awareness and sensitivity are often taken to mean one thing, but in this recommendation, they are different and distinct. Borrowing from Reeves and Baden’s (2000) distinction of the two words, awareness herein is a recognition of what the BP is all about, i.e., its essence and purpose. Sensitivity is a step ahead of awareness. It is the
translation of awareness into practice which results in changes in perception. It could be that the negative feelings that the mainstream students and indeed some lecturers have about bridging are a result of lack of appreciation and sensitivity to the program;

(5) The bridged male students registered that they suffered a double jeopardy: the intellectual discrimination (this they suffer together with their fellow bridged female students) and a further gender discrimination, (because bridging is considered as female domain). In view of this, the study recommends some gender sensitization of students and staff in the university to awaken them to a culture of running away from negative gender stereotypes that match males and females exclusively with certain subjects and behaviors is necessary. Gender sensitization helps uproot prejudice and stigmatization and other principles that violate fundamental ideas of fairness and justice by discriminating against innocent persons on grounds of sex.

References

Thomas, E. A. M. (2002). Building social capital to improve student success. Retrieved from http://www.staffs.ac.uk/schools/graduate school/access/docs
http://www.en.wikipedia.org/wiki/University_and_College
http://www.en.wikipedia.org/wiki/Bridge-Program
The Heroine of *The Rainbow’s* Research

Tian Bing  
Hubei Vocational College of Bio-technology, Wuhan, China

*The Rainbow* tells a story about the marriage of three generations of a family during the period of British Industrial Revolution. This paper analyzes the charms of Ursula. First, Ursula’s four excellent characters share some similarities with those of modern successful women. Thus, modern women can find sympathetic response and understanding which echo with their inner heart in this book. Second, some personality traits modern people lack but long for are reflected in the heroine of this book. Third, Lawrence’s unconventional writing styles and the unique use of symbolism make the book the liking of modern women. This paper, using examples and argumentations, attempts to analyze the above mentioned points and explains the reason why the book remains popular among young readers for a long period of time.

*Keywords:* Ursula, Lawrence, society, character analysis, symbol

**Introduction**

This paper tries to explore the key to Ursula’s popularity among young readers. By reading the story, young readers are pleasantly reminded of what they are themselves and what queer enterprises they have engaged in before. Through his profound understanding of an excellent girl and the normal history of girlhood, Lawrence expressed his profound unconventional point of view on the presumed rebellious girl who finally becomes an excellent girl. From Ursula, young readers who are presumed to be rebellious girls get some relief. By using her best talents, Lawrence employed his unique style of expression to tell the story to modern girls. Ursula Bran Gwen, on the whole, goes along with young blood’s psychology.

**The Life of D. H. Lawrence**

David Herbert Lawrence (1885-1930), English novelist, storywriter, critic, poet and painter, was very famous. Many of his works have been translated into different languages all over the world. And he has also been a controversial figure in the literary world. *The Rainbow* was probably his most famous novel.

David Herbert Lawrence was born in 1885, in Eastwood, Nottinghamshire, Central England. His father was a coal miner and a heavy drinker. His mother was a schoolteacher, greatly superior in education to her husband. Lawrence’s childhood was dominated by poorness and friction between his parents. He was educated at Nottingham High School, where he had won a scholarship. After he graduated, he worked as a clerk in a surgical appliance factory and then for four years as a pupil teacher. After studying at Nottingham University, Lawrence matriculated at 22 years old and briefly pursued a teaching career.

In 1909, a number of Lawrence’s poems were published in the *English Review*. The appearance of his first novel, *The White Peacock*, made Lawrence into a writing career. In 1912, he met Frieda who was the Professor
Ernest Weekly’s wife and fell in love with her. Then, Frieda left her husband and their three children, and they eloped to Bavaria. In 1914, Lawrence married Frieda and traveled with her in several countries around Europe. Lawrence’s fourth novel was about two sisters growing up in the north of England, *The Rainbow* (1915). Lawrence’s other novels from the 1920s include *Women in Love* (1920), a sequel to *The Rainbow*.

D. H. Lawrence died in Vence, France.

**The Characteristics of Ursula**

**Brave Challenger**

The novel written by D. H. Lawrence pays more attention to the depiction of a figure named Ursula, whose thoughts reflected many internal thinking and aspirations of D. H. Lawrence. He used Ursula’s willing to express his own thoughts. In her way to seek freedom and independence of soul, she criticized and negated the untruthful civilized system constantly. She wanted to resist the man’s world. Being a modern woman, her male principle was much more dominant and demanding than it was in her mother and grandmother. This was Lawrence’s explanation of modern women. Deep in his mind and as his hope, the value of modern women depended on it. Besides, he had some questions about women’s fright in the men’s world. But, the scope for self-realization was limited for a woman in that age, “How to act, that was the question? Whither to go, how to become oneself? One was not oneself, one was merely a half-stated question” (Shaw, 1983, p. 33) that was really a question for her at that time. Ursula was puzzled about all of these. And she also thought about, “What is the value for women? How much freedom of women gets in her marriage?”

**Passion of Ursula**

**Passion for teaching.** After her graduation from high school, Ursula dreamed to become a teacher. She tried hard to get a job at school, but when she arrived in that school, she found that the primary school system was so ugly. She saw many unfair affairs in the school.

Whereas Ursula thought she was going to become the first wise teacher by making the whole business personal and using no inhuman force. She believed in her own education mode. With a strong desire to be an excellent teacher, she had a strong passion to fight against the wrong education system. Though it was very difficult, she tried again and again, because she loves teaching. But at last, she failed at her first time fighting against the old education system. After all, she could not win the strong and ugly education system. But, she never gave up. She had strong faith that her dreams would come true.

**Strong willpower comes from strong passion.** Ursula dreamed to be a teacher in a primary school. It was a strong desire in the girl’s heart. With her beautiful wish, it takes a strong passion with her psychology. The strong passion was a great power, which brought her a strong willpower to overcome the huge difficulties in her way to become a good teacher. As we know, the strong passion comes from a constant dream, which is the true desire in one’s heart. It is the real cause of strong passion. And the strong passion is one of important

---

1. At the south side of Germany, now it is a self-governed country.
2. The city at Westside of Nice, near to the Italy and France.
factors leading to the girl’s success.

She thought that a poor person could not win respect in the world. How dreary and hopeless it made to her! The material richness is a foundation for people living in society (Humma, 1984).

There is a saying, “Pressure of life is more important than respect”. But, self-respect is also very important to a girl. That is another type of psychic enjoyment and taste which are different from physical taste. People need both physical and psychic satisfaction to perfect their life.

**Imagination of Ursula**

There is no creation and development when there is no dream and imagination. The merits of imagination are like the characters of a pure child and it should not be lost in human being’s heart. As we grow up, we do not imagine as much as we did in childhood, because we become more realistic. Some people even think that imagination is a way of killing time. It is wrong. We should imagine and create something and the whole human beings should do this.

**Imagination of the future.** That was what her grandmother wanted. But, Ursula did not want this kind of life which was too calm. Her grandmother lived in a narrow countryside nearly all her life, which was so lonely and too inaccessible. She wanted to go to the outside world which was different from the Cosenxi country. She wanted to go to the city. She did not want the city itself, what she really wanted was to experience new things she had never seen before. This is a pursuit of nice things and it is also an exploration of fine things.

So, even as a girl of 12 years old, she was glad to burst the narrow boundary of Cossethay, where only limited people lived. But, she wanted to own a more widely world. She believed that the outside was all vastness, and a throng of real and proud people whom she would love.

**Imagination of Christianity.** Ursula also has her fantasy and imagination of Christianity. She longed for a happy and beautiful life just like the angel lived in the heaven. She wanted a man who was the son of the God. She believed that the God would ask his son to go to the world to find the daughter of the world. She wanted to be that woman. She believed that she could do well as the wife of the God’s son. When she fell in love with her boyfriend Anton, she thought he was the son of the God. His noble birth and the strong man blood are evidences. She believed that.

**Kindness of Ursula**

**Respect to the elder.** When her grandfather, Tom Brangwen, died in the river, her grandmother became very lonely.

The shock broke her grandmother’s heart and she was terrified about her grandfather’s death. After the death of the father, the Marsh Farm was very quiet. Mrs. Brangwen was unsettled. She could not sit all the evening peacefully, as she could before, and during the day, she was always rising her feet and hesitating, as if she must go somewhere, and were not quite sure. The children, Ursula and Gudrun and Theresa, went by the garden gate on their way to school. The grandmother would call them in each time when they passed; she would call them come to the Marsh for dinner. She wanted children to care about her.

Her chief friend at this period was Ursula. The little girl, and the musing and fragile woman of 60 years old seemed to understand the same language. They talked about many things. Almost every day, Ursula went to see her grandmother and they talked to each other. Till the grandmother’s sayings and stories, told in the complete hush of the Marsh bedroom, accumulated with mystic significance and became a sort of Bible to the child. But, the most they talked about was love.
Generosity to the poor. Many other things can also prove her kindness. One day when Ursula and her boyfriend were dating, they came to a lakeside where there was a family who had a big boat themselves, a happy family with a lovely baby girl. The baby was too young and she did not have a name, Ursula happily talked with them, they suddenly found the name “Ursula” was very nice and they decided to give the name “Ursula” to their little daughter. Ursula said to its mother, “It does sound awfully nice” (Lawrence, 1982), and then, she said, “I must give her something. And I have not got anything at all” (Lawrence, 1997). She thought for a while and said, “Could I give her my necklace?” It was the little necklace made of pieces of amethyst, topaz, pearl and crystal, which were strung at intervals on a little golden chain, given by her Uncle Tom. She was very fond of it. She looked at it lovingly when she took her favorite necklace from her neck. “Is it valuable?”, the man asked her, curiously. “I think so”, she replied. “The stones and pearl are real; it is worth three or four pounds”, said Skrebensky from the wharf above. Ursula could tell that he disapproved of her. “I must give it to your baby—may I?”, she said. “What would your father and mother say?”, cried the woman curiously, from the door.

And as this paper argues, kindness is a very important character for a person, especially for a modern woman in nowadays society. Though modern women are independent, well-educated, smart and excellent, traditional virtues, especially “kindness”, are very important for a modern woman. Luckily, the heroine, Ursula, was very kind and she was also a girl who was independent, smart, educated and competent.

Unique Style of Expression Suitable for Modern Girls
Lawrence’s Unconventional Patterns

Another reason why The Rainbow attracts so many readers is that it departs from the pattern of conventional fiction, which does not go along with modern girls’ psychology. Actually, Ursula attacks earlier feminism literature.

Unlike other writers, Lawrence has a much more profound understanding about what an ordinary girl and the normal history of girlhood should be like (Messenger, 1989). In The Rainbow, Lawrence tried to eliminate those incongruities between fiction and the real life of a girl so as to make the story easier to be accepted by readers.

Lawrence gave up the conventional pattern of character analysis and he trended to analyse the subconscious in every body’s heart and those being oppressed desire. He also used the skill of symbols and with religion. Lawrence hated the modern civilization generated by big industry. And Lawrence also argued that it was just that modern civilianization distorts the normal humanity (Pannill, 1995). So, Lawrence advocated the natural development of human being and nature, especially women and men.

Lawrence described the sex with careful write and the holy and sensitive attitude. In his forth novel, The Rainbow, the sex under his pen is not the dirt part of human being’s mind, but is a mystic taste which he is searching for Lawrence tried to use the extremely careful psychal description to prove his research (Shaw, 1983), but not using halfhearted way to write girl’s emotion and love. All in all, the paper sums up that Lawrence’s opinion about love is the unification of soul and physique (Simpson, 1982).

Lawrence’s Style of Expression

Another unconventional pattern of Lawrence is his use of romantic love keepsake, such as the ring given to Ursula by Anton. She put it around her neck. What Ursula did influenced girls of one generation after
another all over the world. They, from different parts of the world, all imitate Ursula. This ring, as a necklace of Ursula and Anton in *The Rainbow*, becomes such huge modern girl’s delight.

The merry-go-round is another symbol of romantic love, as many teleplays and movies used it as a prop of love. The emergence of this love prop originated from this book. It does not go out of fashion as time goes by. Obviously, it has become a forever prop of love among young people just as the three-sleeve style T-shirt is the symbol of Audrey Hepburn\(^3\), the first woman to wear the shirt. Women all over the world wear three-sleeve style T-shirt with a great passion. This kind of shirt has become a trend, due to Audrey Hepburn. Similarly, merry-go-round is a symbol of Lawrence. It is the shining point in *The Rainbow*.

The last, but not the least that *The Rainbow* is so popular among modern girls is due to Lawrence’s unique style of expression. No matter how good a book is, if the language is boring, it must be beyond young reader’s ability of understanding. Unlike other writers, who often use long words and complex sentences, Lawrence seldom employs them, so young readers can share the experience in *The Rainbow*.

Conclusions

After the period of the World War I, D. H. Lawrence became the most popular and internationally famous English novelist. Being the greatest representative of the English naturalism, he gave us a vivid picture of the daily life of the ordinary people of his time. He created a large number of real-life characters who were well-known, full of life and unforgettable experiences. He had suffered so bitterly himself as a child and had seen so much evilness that he burned with the desire to fight it to the end. Being representative of the hardships born by poor people, he believed that a hard-working and honest man could achieve personal success under capitalism. The success of a great novelist would rely on his career—his work, to support himself.

All of these give charms to Ursula Brangwen through Lawrence’s careful and profound understanding of modern girls, by providing rich and convincing knowledge of modern girls’ psychology, Ursula Brangwen attracts young readers and captures their general feeling one generation after another.

References


---

\(^3\) She was the famous film star who was the heroine of *Roman holiday*, etc..
The Study on the Psychological Problems and Countermeasures of the Full-Time Professional Masters

Tang Hui, Ma Liang*
Wuhan University, Wuhan, China

Mental health education is one of the most important tasks in postgraduate education. Professional master, as a graduate of an emerging group, its mental health education cannot be ignored. This paper focuses on the existence of some mental health problems of Chinese full-time professional master, explores and analyzes their causes and finally concludes the ways to solve these problems.

Keywords: full-time, professional master, mental health, countermeasures

Introduction

In order to meet the need of structure change in graduate education to suit Chinese current socio-economic situation, the Ministry of Education decided that from 2009, other professional degree graduates should be enrolled for professional master graduates and full-time training, except MBA (Master of Business Administration), MPA (Master of Public Administration), Master of Project Management Direction, MPH (Master of Public Health), master of the direction of sports competitions’ organization, Master of Fine Arts and other professional degrees which the graduates are inappropriate to attend. There is a difference between full-time professional master students and those working professional master students (Feng, 2009). Professional degree examinations, which mainly recruit in-service and spare-time study students are usually held in October every year, were called “national in-work personnel master’s degree entrance exam”. They still have their bachelor’s degree when they finished the course, but they have a professional master’s academic qualifications, while full-time professional master students usually take the “unified national graduate entrance examination” at the beginning of each year, and they have their master’s degree as their final degree when they finished the courses (ShangGuan, 2011). Extra attention has been paid to full-time professional master’s degree, as it is one of the professional master’s degree. From 2010, the Ministry of Education made more efforts to educate professional master students. The number of academic master students is required to decrease and the number of professional master students is required to increase. Ultimately, the number of professional master students and academic master students reaches the ratio of 7:3. Take Wuhan University for example, the enrollment ratio of the number of academic and professional students in 2011 is 2:1, while in the Wuhan University master brochures in 2012, this ratio is adjusted to 3:2. From Wuhan University master’s enrollment data, we can see that the proportion of these two kinds of students is gradually achieving the goal which is expected by the Ministry of Education. Therefore, the professional master students are becoming an emerging
group in graduate students training.

As a new type of graduate students training, full-time professional master students are still in lack of relevant training experience (Guo, 2010). Meanwhile, the simultaneous development of Chinese universities and society is in a transition period of comprehensive reform, strengthening the full-time professional master students’ mental health education has become an important issue in higher education in the new period. The expansion of the enrollment, the new type of education and the exploratory and dynamic education mode will have a significant impact on the mental health problems of full-time professional master students (Hua, 2011). But, less attention has been paid to the mental health problems of full-time professional master students. Therefore, it has an important theoretical and practical significance to strengthen and improve the mental health education of these students. Based on this, the authors conduct a research in the study of full-time professional master students.

The Existing Mental Health Problems in Full-Time Professional Master Students

Full-time professional graduate’s training is still at the exploratory stage. After several years of development, we have gained rich experience in the training mode, curriculum and teaching and research, and have established a good management model. But for this special group, the mental health education is almost in its blank state. There also exist common mental health problems in full-time professional graduate students, such as academic pressure, low social acceptance, strong sense of loneliness, love and marriage stress, job stress, etc. (Zhang, 2008). Compared to those academic master students, the full-time professional master students also have some special mental health problems.

Uncertain Future for Their Own Development

The training mode of the professional master students is kind of in-service. The wrong cognition for professional master also led to employment bias, thus affecting their employment prospects. Although full-time professional master students can get dual-card, the actual training methods and degree positioning are still unclear, because they were not set up until 2009, so some schools and academic-based training method cannot fully distinguish the differences between these two masters, leading to un-position in job hunting and vague employment prospects, whether from the prospects of individual or school training mode. Another problem is that full-time professional master students who have a heavy school work and have to participate in internships can easily produce a sense of anxiety and frustration because of long-cherished wishes. As professional master students cannot directly pursue a doctoral degree, for those students who are interested in academic knowledge, doctoral entrance examination has become a tremendous pressure. With the increasing of their ages, they may be confused between hunting a job and getting a doctoral degree, thus feeling worried about their promising future.

The Lack of Theoretical Knowledge and Practical Ability Because of Short Academic Courses

Full-time professional master’s teaching method focuses more on practice. The theoretical knowledge in full-time professional master students is often not as good as those academic master students. And their learning courses are often inconsistent with their researches. Master classes are required at the first year for those professional master students, and they begin to do their researches in the second semester, while they may face the choices between finding jobs or further education. This short academic system limits their practical ability and their capacity cannot be improved.
The Lack of Professional Identity

Although full-time professional master degree is a unified type, each student has his/her centre on the emphasis on group projects. Because of the lack of students in each direction, they often come to the situation that although they are professional students, we cannot fully communicate with each other. This also weakens the identity in their specialized field. They may think that their professional development model is not standardized, which may lead to contradictory emotions. Due to lack of academic exchanges and academic lectures is usually based on basic research, professional master students often find it difficult to get better guide in their field. They can only study alone, thus leading to loneliness and fear of hardship.

Relatively Strong Sense of Inferiority

Full-time professional master education has a short developing time in China, and currently only has a small proportion of post-graduates. There has a difference between professional students and academic students for their master instructors. Some of the master instructors are lack of concern for those professional students; they pay more attention to practice than theoretical knowledge, which leads to limited practice ability. For some students, it is not their first choice to be professional master students because of low scores they have got in the graduate entrance examination. At the same time, the proportion of full-time master’s scholarship is low in full-time professional students in colleges and universities, and most of those students need to pay tuition fees, thus having a high economic pressure. Some schools have discrimination between full-time master degrees and academic degrees which put more stress on those full-time professional students. What’s more, as the master’s degree has a short academic time, they may feel difficult to balance between study and part-time jobs, if they ease their pressure in communities. All of the above factors cause limitations in interpersonal relationships and social activities for those full-time professional students and deepen their sense of inferiority.

The Ways to Solve the Mental Health Problems of the Full-Time Graduate Students

Mental health education for graduate students can improve the quality of their psychological health. However, before carrying out the psychological health education, we must have a correct orientation of it, which is an important prerequisite for successfully carrying out it. We should recognize that psychological health education is external, but graduate students themselves are internal and key points, and which requires students to improve self-regulation skills and social adaptability, and build their social support system; psychological health is a long process of education, and we should provide good environment for their growth and learning; smooth development of psychological health education depends on all aspects of the work together (Yan, 2001). Based on this, the author believes that the ways of solving the psychological health problems of the full-time graduate students are mainly as follows.

Establish Impeccable Psychological Health Education System for the Full-Time Professional Master Students (Liu, 2005)

Currently, full-time graduate students are facing increasingly serious psychological health problems. Therefore, it is imminent to establish a sound service system of psychological health problems. First, we should establish the working mechanism of psychological screening, intervention, tracking and control. We should regard the establishment of a complete psychological health records as a basic work of college student management. In each year, new students have to do a psychological health screening and assessment in order to
establish the students’ psychological crisis early warning system. For students who are in the repository or have a prorupion of psychological crisis, the school should intervene in psychological crisis based on their degree of it, and meanwhile, build students’ psychological health information feedback system. Psychological Health Education Center should promptly give the information of all students’ state of psychological health, the name list of the students who are in the psychological crisis early warning repository, the results of students’ psychological health survey, the evaluation results of the students who have psychological crisis tendencies the academy has reported, and the name list and the evaluation results of the students who have psychological crisis tendencies which get through other ways and other related information back to academy, thus creating a good communication mechanism. Aiming at the list of the students who are in the repository, we have established resistance and control, support, treatment, care, rescue and other systems to ensure that the students return to normal school life as soon as possible. Second, strengthen psychological health education operations of the functional departments of the school. We should set up a leading group of psychological crisis intervention and an expert group to identify and intervene the students’ psychological crisis, made up of school leaders, research ministry, security ministry and logistics ministry. The leading group comprehensively plans, leads the students’ psychological crisis intervention, urges relevant departments or organizations to perform crisis intervention seriously and makes decisions for handling the major crisis events. We should fit the psychological health work into regular work system and supply with political and ideological work. The teachers, political cadres and the backbone of students who are engaged in psychological counseling need to implement regular psychological counseling training, actively form and strongly support students’ psychological health associations, give full play to the backbone of the students’ psychological health associations, and the psychological committee members in class to self-education, self-management and self-service in crisis intervention. Third, we should carry out the “Psychological Health Day” series. We should vigorously popularize the knowledge of psychological health among students, guide them to establish the modern concepts of health, work on the education problems in adaptation to the environment, emotional management, interpersonal relationships and learning issues, help students optimize the quality of personality psychology and improve the level of psychological health. By making use of the consultations, lectures, entertainments, promotional materials and other forms, we can universalize psychological health knowledge, promote a healthy attitude and courage the students to face the psychological problems (Wei, 2005). Fourth, we should implement the plan from the bottom level. In class level, students and political cadres, especially counselors need to actively assist the principal of the student work and student leaders need to make great efforts to the psychological crisis intervention. We should give full play to the student leaders (especially members of the class psychology), members of students’ psychological health associations and the key impact of the party members and league members, extensive contacts and concern about the student through many ways, strengthen ideological and emotional contact and communication to understand their thoughts dynamic and mentality, report to the academy counselor regularly and intervene without delay in the event of unusual circumstances.

**Strengthen the Educational Function of Mentors**

In the stage of graduate, the mentor plays a vital role in students’ learning and growing. As full-time graduate students’ education started late in China and relevant education system is relatively imperfect, there might be personal bias and unfairness in tutoring students, which will lead to the increasing of full-time graduates’ psychological health issues and extremely be negative to their developments. Therefore,
strengthening the tutor’s ability of educating students becomes an important issue in graduates’ education. By actively promoting the concept “be a model for others, impart knowledge and educate students” to the majority of teachers in their minds, and regarding responsibility and love, as the soul of teachers’ morality will play an important role in the full-time graduates’ psychological health and progress.

**Vigorously Carry out Full-Time Master of Social Activity (Zhou, 2011)**

Social practice is the required courses and the necessary links of a full-time master. As a saying goes, “Learn for practice”. If knowledge obtained at school is not for the use of social practice, one may not have a deep understanding of the knowledge, nor may the person apply it to future work or life. Through solid social practice, full-time masters may develop a better understanding of knowledge, be adapted to society and have enough confidence to face the challenges of the future work. Through social practice, the overall quality of full-time masters may be strengthened. They may possess a strong mind and be more confident to meet future challenges.

**Pay Attention to Full-Time Masters’ Studying and Living Conditions, and Help Solve Practical Problems They Face**

Among all psychological problems haunting full-time masters, personal study and living conditions should be the most serious problem which may influence their future career. They are under increasing pressure and have to apply professional knowledge into reality. Moreover, they suffer from the burden of doing research in a short period of time. Accordingly, it is recommended that the majority of instructors and other students help them, so as to equip them with better knowledge and skills and enable them to meet the needs of society. Further, they should be offered internship opportunities, so as to help them accumulate more work experience and improve their professional skills and competence.

In addition, large amount of tuition fees and living pressure coupled with the increasing in commodity prices impose much effect on daily live of full-time applied masters. Therefore, we should take care of full-time applied masters, improve funding institutions and support them economically in terms of scholarships and grants, so as to solve practical problems they face.

**Strengthen Graduate Campus Culture, and Improve the Environment for Graduate Students**

As a vital part in school moral education work, campus culture is also an important aspect in building spiritual civilization, as well as an effective carrier of the full implementation of quality education. It is important to carry out a variety of academic, sports and entertainment activities, to create a relaxed, harmonious, democratic learning and living environment (Fu, 2010). Further, it is vital to encourage graduate students to form their own mental health associations and self-education. We also need to take multiple measures to improve students’ learning, living conditions and environment, such as the establishment of scholarships, work-study opportunities provided by the establishment of graduate teaching assistants, help control post and so on.

**Improve Self-regulation Skills and Social Adaptability**

The level of self-regulatory capacity is determined by personal quality and characteristics. It is necessary to stimulate full-time masters’ desire to enhance personal cultivation, and to improve the quality of self, therefore, to enhance their self-regulatory capacity. The main self-regulatory capacity is defined as student’s choice of dynamic, process and interprets messages as well as outside influence. Therefore, improving the
ability of self-control may promote the development of mental health, and thus, further enhance their social adaptability.

Facing various pressures and difficult circumstances, students’ social resilience must be strengthened. If they are actively guided by the majority of teachers and students, full-time applied masters may communicate with others effectively, do scientific research actively and handle interpersonal relationships appropriately. Accordingly, their social adaptability may be effectively enhanced.

Conclusions

Full-time applied master’s program is set for the implementation of full-time technology, education and sustainable development strategy. It also helps connect scientific, educational and economic development. For China’s industrial and mining enterprises and the construction sector, particularly state-owned enterprises, full-time applied master’s program tend to produce high-level engineers and enhance our business sectors and market competitiveness. To better train high-level application-oriented professionals, we should care more about the mental health problems of full-time masters and the joint efforts of the community to help and solve these problems.

In all, the mental health problems of full-time applied masters need attention of the whole society as well as universities. Efforts should be taken, so as to enable them to have healthy mental conditions.

References

Feng, J. (2009). As for the professional degree graduate students, it will be turn the face to the current year’s graduate this year. The Chinese Electric Power Education, Guangming Daily, 3, 3.
Psycho-social Issues in Females Study of Science and Technology

Omoniyi Mary Banke Iyabo, Oloruntegbe Kunle Oke
Adekunle Ajasin University, Akungba-Akoko, Nigeria

The study investigated the relationship between psycho-social factors with females study of science and technology course at the institutions of higher learning in Nigeria and its counseling implications. Three research questions and hypotheses were raised to guide the study. The subjects for the study comprised 240 undergraduate female students from the Faculty of Education, Adekunle Ajasin University, Akungba Akoko, Ondo State, Nigeria. The causal comparative (ex-post-facto) research design was employed and a self-constructed validated questionnaire used to elicit information from the subjects. Pearson moment correlation inferential statistics were used for data analysis. The results showed that girls’ attitudes towards science had a significant relationship with their anxiety towards mathematics. Societal expectation and teachers’ methods of teaching were weakly related to girls’ performances in science. The counseling implications were discussed and recommendations were made.

Keywords: psycho-social, science, technology, female, teacher

Introduction

Despite of the efforts aiming at improving science and technology in Nigeria, the benefits of scientific and technological development seem to have been unevenly distributed. In particular, the benefits seem not to have been the same for boys and girls. In educational institutions, girls and women over the years have tended not to study science and technology when compared with boys and men (Agueler & Agwagalu, 2007; Djallo, 2004; Ogunleye, 1999). There is a persistent gender stereotype. Djallo (2004) noted that, “Being a scientist appears to be one of the most stereotyped of all occupations and there is quiet a psychological barrier to overcome, if more girls are to be attracted to science subjects”. The problem of dwindling girls’ enrolment in science exists all over Africa. This has necessitated the development of several projects, one of which is “FAMSA (Female Education in Mathematics and Science in Africa)”. This regional NGO (non-governmental organization) aims to improve the participation and performance of girls in science and technological subjects at primary and secondary levels. It sets up national centers to provide teacher capacity building and a forum for brainstorming by women scientists.

From Table 1, it can be seen that the number of females in both primary and secondary schools is greater than that of males. But what percentages of these females offer science, it must be noted that women in developing countries are a repository of indigenous technologies because of the nature of activities in which they are traditionally involved (Daris, 2006). This should be a boost for female participation in science and...
technology, if the knowledge possessed by women is used to relate local learning experiences to science and technology in the school curricula.

Table 1

<table>
<thead>
<tr>
<th>Country</th>
<th>Primary (%)</th>
<th>Secondary (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameroun</td>
<td>85</td>
<td>70</td>
</tr>
<tr>
<td>Kenya</td>
<td>94</td>
<td>93</td>
</tr>
<tr>
<td>Lesotho</td>
<td>100</td>
<td>127</td>
</tr>
<tr>
<td>Malawi</td>
<td>102</td>
<td>81</td>
</tr>
<tr>
<td>Mozambique</td>
<td>83</td>
<td>70</td>
</tr>
<tr>
<td>Nigeria</td>
<td>85</td>
<td>81</td>
</tr>
<tr>
<td>Tanzania</td>
<td>96</td>
<td>-</td>
</tr>
<tr>
<td>Uganda</td>
<td>100</td>
<td>79</td>
</tr>
<tr>
<td>Zambia</td>
<td>96</td>
<td>79</td>
</tr>
</tbody>
</table>


There are, however, some encouraging signs observed (Adetunde & Akinsina, 2008). In Ghana, for example, the government adopted the Science and Technology Clinic for Girls Program aiming at giving girls more accesses to science and technology education, and targeting at girls in secondary schools. In Botswana, also, there is a science and technology road shown for girls. These initiatives were launched in collaboration with the Commonwealth Secretariat and NOG, such as GASAT (gender in science and technology) (Adetunde & Akinsina, 2008).

Girls’ underachievement and low enrolment in science are also pronounced in Nigeria (Agueler & Agwagalu, 2007), and being the most populous nation in Africa and having more females than males who are surprising, as it is a source of worry. According to the 1991 census figures, the population of women was 49.7%. The figure rose to 51.2% in year 2005. There is likely to be a consistent increase following this trend. It is, therefore, said that despite of this large number, women still underachieve and are underrepresented in science and technology in Nigeria. In a cross-national study and educational attainment at the university level, Dorman (2003) established that girls appeared to perform less well than boys in science and technological courses. Also, in the study of employment statistics according to occupation and sex in Nigeria industries, Adeife-Osemiekhan (1997) observed that women were more in secretariat jobs and very few in engineering and technological professions. Gorriz and Medina (2007) equally observed that for years, women have held a minority position in the high-status, high-salaried jobs in computer and technology fields. In their study, they found that many boys and young men are drawn towards these fields at an early age by their involvement with computer games and other high-tech activities. Their findings were also corroborated by the work of Comber, (2006) who also found that girls and young women often were less confident and less interested in computers and the skills associated with science and technology.

Many researchers, DeRemer (2005), Sheila (2004) and Duyilemi (2006) had identified variables, such as religious factors, school environment, poor performances in mathematics, socialization patterns and gender-stereotyping among others as factors militating against the participation of girls and women in science and technological advancement. Added to these factors is girls’ anxiety towards mathematics which is a core subject in science and technology. The counseling implications of girl-math anxiety need to be studied, if the downward
trend in participation of girls in science is to be curbed. Although, a strong correlation has been generally established between students’ performances in mathematics and science, not much has been reported in Nigeria about how this factor is causing wider representation of girls in science and technology. The authors of this paper sought to investigate this girl-math anxiety relationship and draw the implications of it for counseling education.

Statement of the Problem
Science and technology has no small way contributed to improve the living standards in the areas of health, transport and communication to mention but few. In view of the importance of these courses, the Federal Government of Nigeria has consistently reviewed policies that favor the admission of more students into science and science-based careers in the higher institutions of learning—the ratio 60:40, 70:30 and 80:20 in favor of science (Federal Government of Nigeria, 2004). Faculties of science and science-based courses in many universities in Nigeria have not been able to fill this quota. More worrisome about the general dwindling enrolment is the case of under representation of girls. It becomes all the more problematic because of the high and increasing female percentage in the entire population. If females consistently outnumber males in the population and they do not show interest in science, there is going to be a time when there would be no one to make decisions on and fix the ever increasing and demanding science-related problems affecting the generality of the people, particularly women in the society. There is the need for the girl child to brace up and occupy her position. Of the contributing factors to this problem, the authors were concerned about the psycho-social issues related to female study of science and technology courses. The concept of psycho-social reflects the dynamic relationship and interplay between psychological and social issues. How have these contributed to under representation of girls in science? What contributions have societal expectations and teachers’ teaching methods made to this problem? What can be done to increase the confidence and enlist the interest and enhance the performance of girls in mathematics and consequently in science? These are the problems the authors referred to, as psycho-social and are under investigation in this study.

Research Questions
The research questions of this study are as follows:
(1) Is there any relationship between girls’ attitudes towards science and their anxiety towards mathematics?
(2) Is there any relationship between girls’ performances in science and societal expectations?
(3) Is there any relationship between teachers’ methods of teaching and girls’ performance in the science?

Hypotheses
In order to answer the research questions raised in the study, the following null hypotheses were generated:
(1) There is no significant relationship between girls’ attitudes towards science and girls anxiety towards mathematics;
(2) There is no significant relationship between girls’ performances in the science and societal expectations;
(3) There is no significant relationship between teachers’ methods of teaching and girls’ performances in the science.

Method
This study employed the causal comparative (ex-post-facto) research design. The research was conducted
after the variations in the independent variables that have occurred in the natural course of events. There was no manipulation of variables. Data collected were used to describe and interpret existing conditions as they concerned female and science related courses.

Subjects

The subjects were 240 female students in the Faculty of Education of Adekunle Ajasin University, Akungba Akoko, Ondo State, Nigeria. There are four departments in the faculty, namely, guidance and counseling, social science, science and technical and arts education. The data contain the number of students in each of the departments according to sex which was obtained from the academic planning office of the university. The numbers of subjects randomly selected from each department were proportionate to the population of female students in the various departments.

Instrument

The instrument for the study was a self-constructed questionnaire. Some items of the questionnaire were adapted from Tapia (2006), Campell item (1997) and Culler (2003). The 25 item instruments consisted of four sections: A, B, C and D. Section A consisted of items soliciting information about the respondents’ current levels, courses of study and performances in O’level science subjects including mathematics. Section B consisted of questions about the attitudes of respondents towards science courses and mathematics. Such question included, for example, “To be good at mathematics is more important for girls than boys”, “If I do well in mathematics it is usually because I am lucky”, “I do not feel confident about my ability in mathematics”, “I belief science and mathematics are more useful to boys than girls”, etc.. Section C consisted of items soliciting information about their opinions of their science teachers’ methods of teaching. Such questions as: “My science teacher calls on boys to solve mathematical problems more than girls”, “Science teachers are always males”, “My science teacher scold boys that fail mathematics more than girls”, etc.. Section D dealt with items about the society’s expectations for girls in science courses. Items in this section include questions, such as: “In Nigeria, people believe that boys should do better in science and mathematics than girls”, “Parents frown at boys failing in science more than girls”, “People in our society believe that naturally, boys should be better in abstract reasoning than girls”, “It is believed in our society that science courses make girls to be too independent”, etc..

A four-point response format ranging from “Strongly agree” to “Strongly disagree” was used to test the opinion of the subjects. The responses were scored as follows: Strongly agree = 4, Agree = 3, Disagree = 2; and Strongly disagree = 1.

Validation of Instrument

A “panel of experts” method (Coll & Chapman, 2002; Coll, Dalgety, & Salter, 2002) was employed in the validation. The instrument was given to four senior colleagues, two each in the Departments of Counseling and Educational Management, and Science and Technical for scrutinizing and possible corrections. Based on their various opinions, some items were removed completely, while some were added and some reconstructed. The final copy was generally agreed to possess both content and construct validity.

In order to determine the reliability of the instrument, a test-retest reliability method was adopted. This was done by administering the instrument on 30 subjects among the population, but outside the sample at an interval of two weeks. The two sets of scores obtained were subjected the Pearson product moment correlation test. A correlation coefficient of 0.83 was obtained and this was found to be significant at 0.05 levels.
Procedure

The questionnaires were administered on the subjects in the lecture rooms. Permissions were sought from course lecturers for the time in filling up the questionnaires. The purpose of the study was explained to the students. They were encouraged to be as truthful as possible. The entire copies of the questionnaires were collected duly completed by the students at the end of the session.

Data Analysis

Descriptive analysis was carried out using means and standard deviations, while Pearson product moment correlation test was used as inferential statistics.

Results

Hypotheses Testing

The analysis in Table 2 represents the results of the three hypotheses.

Table 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>df</th>
<th>Correlation</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls' attitudes towards science and math anxiety</td>
<td>0.483</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls' performances in science/society’s expectations of girls' performances in science</td>
<td>240 238</td>
<td>0.186</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Teachers' methods of teaching science/girls performances in science</td>
<td>0.151</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. P < 0.05.

The following facts are revealed in Table 2. There are significant relationships between girls’ attitudes towards science and math anxiety, girls’ performances in science and societal expectation and performance in science and teachers’ teaching methods. The relationship was positive but low for girls’ attitudes towards science and math anxiety and very weak in the two others.

Discussion and Conclusions

The study revealed that there was a significant positive relationship between girls’ attitude towards science and anxiety towards the study of mathematics. The findings of the research agreed with the work of Comber (2005) who uncovered some disabling belief and behavior of females about mathematics and science. She observed that females believe that one is either good in science or good in language and that one cannot be good in both. They also believe that there is only a right way to solve mathematical problems. According to her, majority of the females in her study also believe that mathematics and science disciplines are male domains and that for a female to do science, she must be extremely brilliant. She, therefore, asserted that these beliefs are internalized and determine the students’ behaviors and consequent performances in these disciplines.

Wilson (2004) studied girls’ attitude towards science and observed that learning attribution theory plays an important role in females’ attitude towards science. According to him, even when girls succeed, they never took their success with confidence. Girls attribute success to external variables. When males succeed, they attribute their success to ability, while females attribute to “luck”. Furthermore, when males fail, the failure is attributed to not enough effort, while females’ failure is attributed to not enough ability. The attributes that are needed to
succeed in science include high analytical skills, strong ability to compare and contrast, question-finding skills and divergent as opposed to convergent thinking skills (Comber, 2005).

Sadker (2004) also investigated the perspectives and complaints of female students in their science courses. His study revealed that the girls complained about “missing the big picture” for they were unable to understand how everything fit together. Moreover, the girls in her study complained that their science teachers were teaching at too fast a rate, hence they were unable to experience the mastery of the subjects. This assertion goes some ways to confirm that there is a significant relationship between girls’ performances and teachers’ methods. Schmidt (2010) observed that girls learn math anxiety from the female teachers, because they are very few in number boost their ego by making the girls feel that mathematics is a difficult subject and demand more respect from them.

Campell (1997) studied some attitudes of females that negatively affect science study. He found that the girls complained that when the first step is missed in a math question, it was difficult to go on and many of them become anxious about the subject, eventually lose interest and consequently drop out. In their minds, they are kind of leaving the math for the “elite” to continue. This is minus one for the participation of girls, because enrollment into science demands a good knowledge of mathematics.

The results of this research also agreed with the work of Fennema and Sherman (2003) who studied the affective attitudinal variables of females’ study of science and mathematics. Among the girls, they observed that beliefs about the usefulness of science and confidence in learning mathematics were critical factors. Their study also revealed that males were discovered to provide evidence that they were more confident about learning math than females. The males also believed that math and science were more useful to males than females. Jacobs (2004) also observed that while young men did not stereotype mathematics as male domain, while female did. The males also believed as much as the females that math was more appropriate for males than females. This means that the attitudes of students towards the learning of science are largely determined by the kind of interest the students have towards mathematics.

Godwin (2001) described attitude as fundamental to the dynamics of behavior. He opined that students with positive attitudes towards science study, because they are positively inclined to it. Such students, according to him, get satisfaction from acquiring scientific ideas and find it rewarding. He observed that a consistent and defined interest (feeling of intentness, concerned or curiosity about an object) in activity, event or situation may lead to a definite attitude pattern to such activity, event or situation which is revealed in various performances.

In line with the result of this research, Sheila (2004) observed that with normal cognition, the information in the brain flow through the process pathways and on into the memory pathways of the brain. If the input information encounters emotional delays, the output memory pathway is harder to reach. According to her, when information is input, girls tend to have lots of emotional overlay, so that memory cannot be accessed. In line with this observation, Fennema (2003) in her research on autonomous learning behavior found that girls are torn between being agreeable, complacent and feminine as opposed to aggressiveness, assertiveness and autonomy. In her own opinion, in order to succeed, the latter attributes of aggressiveness, assertiveness and autonomy are the most desirable.

Feelings are very important to success. It is of paramount importance for the girl child to be able to identify the reason why she gets anxious during math lessons. She must be able to ask what is making math/science a difficult problem and how she can overcome or make the problem easier. This also encourages
an assertive behavior. According to Wilson (2004), assertiveness will power, focus, discipline and efficiency bring about confidence and confidence will bring about success especially in math/science.

Judith (2005) in her study observed that the girl child because of math anxiety has her brain pathway filled with static. According to her, the girls have learned the materials, yet they are unable to retrieve them. She, therefore, suggested that going back to class to share feelings about math, creating group bonding and changing the group dynamics from teacher-student centered to student-student centered will reduce math anxiety.

The findings of the research also showed that there is a weak relationship between societal expectation and performance of females in the sciences. This result is, however, contrary to the view of Duyilemi (2006) and Bamiro (2006). Duyilemi (2006) observed that the image of the scientist held by people in the society is a stereotype of a male. This, according to them, has had negative impacts on the performances of females in the science and their attitudes about potential for success in science and technology. While Bamiro (2006) in another instance observed that the society has greatly contributed to the low performance of girls in the science by making female to be scared of technology. According to her, girls are discouraged from toying with electrical equipment and discriminated against in their parental socialization process in the choice of toys that parents buy for their kids: baby dolls for girls, toy cars and guns for boys. According to her, many homes in the society replete with sayings, such as “You are only a girl”, “Girls cannot do that”, etc., which are derogatory to the girls. In her opinions, the society and various homes should bubble with “Yes, girls can”, “Girls do” and “Girls should”.

The results of the study also showed that there is weak relationship between teachers’ methods of teaching and females performances in science. This result is also in line with the work of Fennma and Leder (1990) who observed that it is relatively easy to identify differential teacher interactions with girls and boys. In particular, teachers interact more with boys than girls, praise and scold boys more than girls, and call on boys more than girls. However, the impact of these differential treatment and method of teaching is unclear and difficult to ascertain, especially for a weak relationship indicated in this study. In the same vein, Bluemenfield (1995) also observed that differential teacher treatments of boys and girls and different methods of teaching do exist in the teaching/learning process in science and math, but do not support as a cause for gender differences in mathematics and science. Koehler and Ledger (2002) also supported this view but added that other intervening variables do exist and concluded that differential teacher treatment of boys and girls is merely a symptom of many causes of gender differences in mathematics and science and that, as in medical practice, treating the symptom is not sufficient to change the underlying cause.

Peterson and Fennema’s (1996) study of sexist behavior among male and female is also worth mentioning here, such as those indicating that mathematics and science are more important for boys than for girls. They found that such behavior exists, but however, they did not find major examples of overall sexist behavior on the part of teachers. They found small differences in teacher behavior, which when combined with the organization of instruction, made up a pattern of classroom organization that appears to favor males. However, Peterson (2002) in another study found patterns of teacher behavior and classroom organization that influenced boys and girls differently. According to her, for example, the competitive activities in math class encouraged boys learning and had negative influence on girls learning, while the opposite was true for cooperative learning. She, therefore, concluded that since competitive activities were much more prevalent than cooperative activities in science classes, it appeared that classroom was often more favorable to boy’s learning than girls’ learning. A classroom atmosphere that engenders cooperation is more facilitative to girls’ science and math learning than competition.
Implication for Counseling and Recommendations

Without doubt, issues that bother on gender equity in the areas of science and technology are fraught with multifaceted challenges among which changes in attitudes and practice are paramount. As a result of personal belief system of the girls (lowered confidence, attribution style and belief in math/science usefulness), they do not participate in learning activities that enable them to become independent learners of math/science. It is, therefore, advocated that through working in teams to solve math/science problems girls can improve to become assertive in character and later have the confidence to learn independently. Math anxiety female students should be separated and given extra coaching to de-sensitize them of their fears and meet their needs. It is also important to have students understand their learning styles and make the best use of them. Since the good female math students feel in control, and therefore, do better in the course work, efforts should be made by the math teacher to instill confidence in the math anxiety students who do not feel in control and therefore perform poorly. The relationship between teachers and students is of paramount importance in the teaching and learning of science and mathematics. The teacher must always consider the community of learners that he/she is dealing with. He/she must be a good and objective facilitator and a supportive person. Like a mid-wife, teacher must build trust in the students, start out the lesson slowly, and can speed up later. He/she must realize that he/she is not the fountain of all knowledge. He/she must use the students’ experiences to enhance their learning. There is the need for the teachers, therefore, to be familiar with what is going on with students and be prepared to solve their problems.

The methods of teaching math should include both cooperative and competitive experiences. Math competitions should include team problems as well as individual. Teachers must monitor male-female interactions in cooperative learning groups to make sure that those naturally more willing to write and use writing, as their own way of thinking are actually participating.

It is counseled that female should be encouraged to see science as enriching the quality of human life and look for evidence beyond what they can see. It is very important to generate girl-friendly science curriculum. This may include making sure that science experiments are set in context of the topics taught in class.

References


Call for Papers

US-China Education Review A (Education Practice) (ISSN: 2161-623X) and US-China Education Review B (Education Theory) (ISSN: 2161-6248), the earlier title: US-China Education Review (ISSN: 1548-6613) are professional journals published across the United States by David Publishing Company, EL Monte, CA 91713, USA. These journals are regularly published by China National Publication Import & Export Corporation on commission. If you have the idea of making our journal a vehicle for your research interests, please send electronic version of your paper to us.

US-China Education Review A & US-China Education Review B are collected and indexed by the Library of U.S. Congress, on whose official website (http://catalog.loc.gov) an on-line inquiry can be triggered with its publication number ISSN No. as key words in “Basic Search” column. In addition, these journals are also retrieved by some renowned databases:

- Database of EBSCO, Massachusetts, USA
- Chinese Database of CEPs, Airiti Inc. & OCLC, USA
- Chinese Scientific Journals Database, VIP Corporation, Chongqing, P.R.C.
- Ulrich’s Periodicals Directory
- ASSIA Database and LLBA Database of ProQuest
- Excellent paper in ERIC
- Summon Serials Solutions


David Publishing Company is strived to provide the best platform for researchers and scholars worldwide to exchange their latest findings and results. We admire your achievements, and we understand how important your research impact on other peers in the same interest field and other disciplines, and how delighted you would be when communicating with global professional peers. Your contribution to our journals would be very much welcome!

Requirements:
(1) Paper must be empirical or theoretical contributions without being published previously;
(2) All other scholars’ words or remarks as well as their origins must be indicated if quoted;
(3) English title, abstract and key words should be prerequisite;
(4) Patterns or forms should conform to the standard listed in our website;
(5) Automatic paper submission system is strongly recommended, while e-mail attachment can be sent through e-mail at teacher@davidpublishing.com; teacher@davidpublishing.org or edu1658@yahoo.com. Please visit our website at http://www.davidpublishing.com and http://www.davidpublishing.org for our automatic paper submission systems.

Should you have any questions or concerns, please feel free to contact us.

Best regards,

David Publishing Company